

# **USCC 2017 ANNUAL REPORT**





**2017**  
**REPORT TO CONGRESS**  
*of the*  
**U.S.-CHINA ECONOMIC AND  
SECURITY REVIEW COMMISSION**

ONE HUNDRED FIFTEENTH CONGRESS  
FIRST SESSION

---

NOVEMBER 2017

---

Printed for the use of the  
U.S.-China Economic and Security Review Commission  
Available via the World Wide Web: <http://www.uscc.gov>





**2017**  
**REPORT TO CONGRESS**  
*of the*  
**U.S.-CHINA ECONOMIC AND  
SECURITY REVIEW COMMISSION**

ONE HUNDRED FIFTEENTH CONGRESS  
FIRST SESSION

---

NOVEMBER 2017

---

Printed for the use of the  
U.S.-China Economic and Security Review Commission  
Available via the World Wide Web: <http://www.uscc.gov>

---

U.S. GOVERNMENT PUBLISHING OFFICE  
WASHINGTON : 2017

For sale by the Superintendent of Documents, U.S. Government Publishing Office  
Internet: [bookstore.gpo.gov](http://bookstore.gpo.gov) Phone: toll free (866) 512-1800; DC area (202) 512-1800  
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001



## U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

CAROLYN BARTHOLOMEW, *Chairman*  
Hon. DENNIS C. SHEA, *Vice Chairman*

### COMMISSIONERS

ROBIN CLEVELAND  
Hon. BYRON L. DORGAN  
Hon. CARTE P. GOODWIN  
GLENN HUBBARD  
DANIEL M. SLANE

Hon. JONATHAN N. STIVERS  
Hon. JAMES M. TALENT  
Hon. KATHERINE C. TOBIN  
MICHAEL R. WESSEL  
LARRY M. WORTZEL

MICHAEL R. DANIS, *Executive Director*

The Commission was created on October 30, 2000 by the Floyd D. Spence National Defense Authorization Act of 2001, Pub. L. No. 106-398 (codified at 22 U.S.C. §7002), as amended by: The Treasury and General Government Appropriations Act, 2002, Pub. L. No. 107-67 (Nov. 12, 2001) (regarding employment status of staff and changing annual report due date from March to June); The Consolidated Appropriations Resolution, 2003, Pub. L. No. 108-7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of the Commission); The Science, State, Justice, Commerce, and Related Agencies Appropriations Act, 2006, Pub. L. No. 109-108 (Nov. 22, 2005) (regarding responsibilities of the Commission and applicability of FACA); The Consolidated Appropriations Act, 2008, Pub. L. No. 110-161 (Dec. 26, 2007) (regarding submission of accounting reports; printing and binding; compensation for the executive director; changing annual report due date from June to December; and travel by members of the Commission and its staff); The Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291 (Dec. 19, 2014) (regarding responsibilities of the Commission). The Commission’s full charter <http://www.uscc.gov/about/uscc-charter> and Statutory Mandate [http://www.uscc.gov/about/fact\\_sheet](http://www.uscc.gov/about/fact_sheet) are available via the World Wide Web.

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

NOVEMBER 15, 2017

The Honorable Orrin G. Hatch

President Pro Tempore of the U.S. Senate, Washington, DC 20510

The Honorable Paul D. Ryan

Speaker of the U.S. House of Representatives, Washington, DC 20510

DEAR SENATOR HATCH AND SPEAKER RYAN:

On behalf of the U.S.-China Economic and Security Review Commission, we are pleased to transmit the Commission's 2017 Annual Report to the Congress—the fifteenth major Report presented to Congress by the Commission—pursuant to Public Law No. 106–398 (October 30, 2000), as amended by Public Law No. 109–108 (November 22, 2005); as amended by Public Law No. 110–161 (December 26, 2007); as amended by Public Law No. 113–291 (December 19, 2014). This Report responds to the mandate for the Commission “to monitor, investigate, and report to Congress on the national security implications of the bilateral trade and economic relationship between the United States and the People’s Republic of China.” The Commission reached a broad and bipartisan consensus on the contents of this Report, with all 12 members voting to approve and submit it to Congress.

In accordance with our mandate, this Report, which is current as of October 6, includes detailed treatment of our investigations of the areas identified by Congress for our examination and recommendation. These areas are:

- The role of the People’s Republic of China in the proliferation of weapons of mass destruction and other weapon systems (including systems and technologies of a dual use nature), including actions the United States might take to encourage the People’s Republic of China to cease such practices;
- The qualitative and quantitative nature of the transfer of United States production activities to the People’s Republic of China, including the relocation of manufacturing, advanced technology and intellectual property, and research and development facilities, the impact of such transfers on the national security of the United States (including the dependence of the national security industrial base of the United States on imports from China), the economic security of the United States, and employment in the United States, and the adequacy of United States export control laws in relation to the People’s Republic of China;
- The effects of the need for energy and natural resources in the People’s Republic of China on the foreign and military policies of the People’s Republic of China, the impact of the large and growing economy of the People’s Republic of China on world energy and natural resource supplies, prices, and the environment, and the role the United States can play (including through joint research and development efforts and technological assistance) in influencing the energy and natural resource policies of the People’s Republic of China;

- Foreign investment by the United States in the People’s Republic of China and by the People’s Republic of China in the United States, including an assessment of its economic and security implications, the challenges to market access confronting potential United States investment in the People’s Republic of China, and foreign activities by financial institutions in the People’s Republic of China;
- The military plans, strategy and doctrine of the People’s Republic of China, the structure and organization of the People’s Republic of China military, the decision-making process of the People’s Republic of China military, the interaction between the civilian and military leadership in the People’s Republic of China, the development and promotion process for leaders in the People’s Republic of China military, deployments of the People’s Republic of China military, resources available to the People’s Republic of China military (including the development and execution of budgets and the allocation of funds), force modernization objectives and trends for the People’s Republic of China military, and the implications of such objectives and trends for the national security of the United States;
- The strategic economic and security implications of the cyber capabilities and operations of the People’s Republic of China;
- The national budget, fiscal policy, monetary policy, capital controls, and currency management practices of the People’s Republic of China, their impact on internal stability in the People’s Republic of China, and their implications for the United States;
- The drivers, nature, and implications of the growing economic, technological, political, cultural, people-to-people, and security relations of the People’s Republic of China’s with other countries, regions, and international and regional entities (including multilateral organizations), including the relationship among the United States, Taiwan, and the People’s Republic of China;
- The compliance of the People’s Republic of China with its commitments to the World Trade Organization, other multilateral commitments, bilateral agreements signed with the United States, commitments made to bilateral science and technology programs, and any other commitments and agreements strategic to the United States (including agreements on intellectual property rights and prison labor imports), and United States enforcement policies with respect to such agreements;
- The implications of restrictions on speech and access to information in the People’s Republic of China for its relations with the United States in economic and security policy, as well as any potential impact of media control by the People’s Republic of China on United States economic interests; and
- The safety of food, drug, and other products imported from China, the measures used by the People’s Republic of China Government and the United States Government to monitor and enforce product safety, and the role the United States can play (including through technical assistance) to improve product safety in the People’s Republic of China.

The Commission conducted seven public hearings and one public roundtable, taking testimony from 60 expert witnesses from commercial industries, academia, think tanks, research institutions, and other backgrounds. For each of these hearings, the Commission produced a transcript (posted on its website at [www.uscc.gov](http://www.uscc.gov)). The Commission received a number of briefings by executive branch agencies and the Intelligence Community, including classified briefings on China's military modernization, China's defense and security activities in the Asia Pacific, China's advanced weapons, China's relations with Continental Southeast Asia, Northeast Asia, and Hong Kong, China's aviation industry, and China's cyber activities. The Commission is preparing a classified report to Congress on these and other topics. The Commission also received briefs by foreign diplomatic and military officials as well as U.S. and foreign nongovernmental experts.

Commissioners made official delegation visits to Taiwan, Hong Kong, South Korea, Japan, Thailand, and Burma to hear and discuss perspectives on China and its global and regional activities. In these visits, the Commission delegation met with U.S. diplomats, host government officials, business representatives, academics, journalists, and other experts.

The Commission also relied substantially on the work of our excellent professional staff and supported outside research in accordance with our mandate.

The Report includes 26 recommendations for Congressional action. Our ten most important recommendations appear on page 29 at the conclusion of the Executive Summary.

We offer this Report to Congress in the hope that it will be useful as an updated baseline for assessing progress and challenges in U.S.-China relations.

Thank you for the opportunity to serve. We look forward to continuing to work with you in the upcoming year to address issues of concern in the U.S.-China relationship.

Yours truly,

  
Carolyn Bartholomew  
Chairman

  
Dennis C. Shea  
Vice Chairman

**Commissioners Approving the 2017 Report**

  
Carolyn Bartholomew, Chairman

  
Dennis C. Shea, Vice Chairman

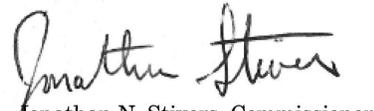
  
Robin Cleveland, Commissioner

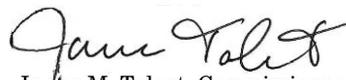
  
Byron L. Dorgan, Commissioner

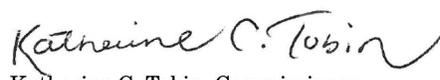
  
Carte P. Goodwin, Commissioner

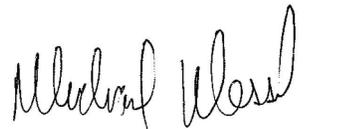
  
Glenn Hubbard, Commissioner

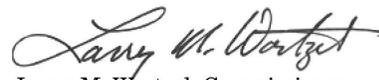
  
Daniel M. Slane, Commissioner

  
Jonathan N. Stivers, Commissioner

  
James M. Talent, Commissioner

  
Katherine C. Tobin, Commissioner

  
Michael R. Wessel, Commissioner

  
Larry M. Wortzel, Commissioner

# CONTENTS

	Page
TRANSMITTAL LETTER TO THE CONGRESS .....	iii
COMMISSIONERS APPROVING THE REPORT .....	vi
EXECUTIVE SUMMARY .....	1
KEY RECOMMENDATIONS .....	29
INTRODUCTION .....	31

## 2017 REPORT TO CONGRESS OF THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

<b>Chapter 1: U.S.-China Economic and Trade Relations</b> .....	35
Section 1: Year in Review: Economics and Trade .....	35
Key Findings .....	35
Introduction .....	36
U.S.-China Bilateral Trade .....	37
China's Domestic Economic Rebalancing .....	42
U.S.-China Bilateral Economic Engagement .....	53
United States and China at the WTO .....	58
Section 2: Chinese Investment in the United States .....	71
Key Findings .....	71
Recommendations .....	72
Introduction .....	73
Chinese Investment in the United States .....	73
Chinese Companies on U.S. Stock Exchanges .....	91
Implications for the United States .....	101
Section 3: U.S. Access to China's Consumer Market .....	112
Key Findings .....	112
Recommendations .....	113
Introduction .....	113
E-Commerce .....	114
Logistics .....	124
Financial Services .....	128
Implications for the United States .....	140
<b>Chapter 2: U.S.-China Security Relations</b> .....	153
Section 1: Year in Review: Security and Foreign Affairs .....	153
Key Findings .....	153
Introduction .....	154
Major Developments in China's Security and Foreign Affairs in 2017 .....	154
China's Global Security Activities in 2017 .....	170
U.S.-China Security Relations in 2017 .....	179
Section 2: China's Military Modernization in 2017 .....	199
Key Findings .....	199
Recommendations .....	199
Introduction .....	200
China's 2017 Defense and Security Budget .....	200
Overview of Guidance for Military Modernization .....	201
PLA Army .....	202
PLA Navy .....	203

## VIII

	Page
PLA Air Force .....	207
PLA Rocket Force .....	211
PLA Strategic Support Force .....	212
Implications for the United States .....	214
<b>Section 3: Hotspots along China's Maritime Periphery .....</b>	<b>232</b>
Key Findings .....	232
Recommendations .....	233
Introduction .....	234
Security Environment .....	235
Chinese Strategists' Thinking about Hotspots .....	239
Contingency Planning .....	245
Contingency Operations along China's Maritime Periphery .....	250
Regional Responses and Implications for the United States .....	256
<b>Chapter 3: China and the World .....</b>	<b>281</b>
<b>Section 1: China and Continental Southeast Asia .....</b>	<b>281</b>
Key Findings .....	281
Recommendations .....	283
Introduction .....	283
Chinese Economic Engagement with Continental Southeast Asia .....	284
China's Relations with Burma .....	294
China's Relations with Cambodia .....	305
China's Relations with Laos .....	307
China's Relations with Thailand .....	309
Implications for the United States .....	314
<b>Section 2: China and Northeast Asia .....</b>	<b>326</b>
Key Findings .....	326
Recommendations .....	327
Introduction .....	327
China-North Korea Relations .....	328
China-South Korea Relations .....	342
China-Japan Relations .....	349
South Korea-Japan Relations and Trilateral Security Cooperation .....	355
Implications for the United States .....	357
<b>Section 3: China and Taiwan .....</b>	<b>371</b>
Key Findings .....	371
Recommendations .....	372
Introduction .....	372
Cross-Strait Relations .....	373
Taiwan's Economy and Cross-Strait Trade and Investment .....	382
Taiwan's International Engagement .....	386
Taiwan Military and Security Issues .....	389
U.S.-Taiwan Relations .....	397
Implications for the United States .....	401
<b>Section 4: China and Hong Kong .....</b>	<b>414</b>
Key Findings .....	414
Recommendations .....	415
Introduction .....	415
Hong Kong's Political Developments .....	416
Beijing's Degradation of Rule of Law in Hong Kong .....	425
Declining Freedom of Expression in Hong Kong .....	427
Economic Relations with Mainland China .....	435
Implications for the United States .....	439
<b>Section 5: China's Domestic Information Controls, Global Media Influence,         and Cyber Diplomacy .....</b>	<b>452</b>
Key Findings .....	452
Recommendations .....	452
Introduction .....	453
China's Domestic Information Controls .....	454
China's Global Media Influence .....	467
Beijing's Concept of "Internet Sovereignty" .....	482
Implications for the United States .....	484

## IX

	Page
<b>Chapter 4: China's High-Tech Development</b> .....	507
Section 1: China's Pursuit of Dominance in Computing, Robotics, and Biotechnology .....	507
Key Findings .....	507
Recommendations .....	508
Introduction .....	508
China's Industrial Policies .....	509
Computing .....	515
Industrial Robotics .....	523
Artificial Intelligence .....	525
Nanotechnology .....	527
Biotechnology .....	528
Implications for the United States .....	531
Section 2: China's Pursuit of Advanced Weapons .....	553
Key Findings .....	553
Introduction .....	554
Drivers of China's Advanced Weapons Programs .....	554
China's Advanced Weapons Programs .....	557
Inputs to China's Advanced Weapons Programs .....	577
Implications for the United States .....	580
<b>Comprehensive List of the Commission's Recommendations</b> .....	597
<b>Additional Views of Commissioners</b> .....	602
<b>Appendices:</b>	
Appendix I: Charter .....	605
Appendix II: Background of Commissioners .....	613
Appendix III: Public Hearings of the Commission During 2017 .....	625
Appendix IIIA: List of Witnesses Testifying Before the Commission During 2017 .....	629
Appendix IV: List of Research Material .....	633
Appendix V: Conflict of Interest and Lobbying Disclosure Reporting .....	637
Appendix VI: Acronyms and Abbreviations .....	639
<b>2017 Commission Staff and Acknowledgements</b> .....	643



## EXECUTIVE SUMMARY

### Chapter 1: U.S.-China Economic and Trade Relations

#### Section 1: Year in Review: Economics and Trade

In 2017, main priorities for the Chinese government appear to be increased Party control and consolidation of political power. Indeed, the administration of the Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping has begun implementing policies in pursuit of these goals to prepare for the leadership transition due to take place at 19th Party Congress in October 2017. Despite President Xi's stated commitment in 2013 to allow market forces to play "a decisive role" in the economy, genuine liberalization has not only stalled, but has also been backsliding.

To stimulate the economy, China's government continues to rely on old standbys, such as investment in infrastructure and real estate, and funding the state sector to the detriment of private enterprise and market orientation. The amount of credit the government is pumping into the economy has swelled to levels not seen since the global financial crisis, and corporate debt has continued to climb to new heights. The Chinese government is dramatically expanding investment in new technology and industries.

The hand of the state is also evident in how Beijing treats foreign companies operating in China and in the impact its trade-distorting policies have on its trade partners. Beijing's discriminatory treatment of U.S. companies and ongoing failure to uphold its World Trade Organization (WTO) obligations continue to damage the bilateral relationship. The U.S. trade deficit in goods with China totaled \$347 billion in 2016, the second-highest deficit on record. In the first eight months of 2017, the goods deficit reached \$239.1 billion, and is on track to surpass last year's deficit. U.S. companies are feeling increasingly pressured by Chinese policies that demand technology transfers as a price of admission and favor domestic competitors. According to a survey by the American Chamber of Commerce in China, 81 percent of U.S. firms doing business in China reported feeling less welcome in 2016 than they did in 2015.

#### ***Key Findings***

- In 2016 and the first half of 2017, the Chinese government has reported it met or exceeded the targets it set for gross domestic product (GDP) growth—an important deliverable in advance of the political leadership transitions at the Chinese Communist Party's 19th Party Congress scheduled for October 2017. The Chinese government has achieved this high growth through reliance on old drivers: credit and real estate. However, the government's unwillingness to allow the market to play a bigger role has resulted in deteriorating investment efficiency,

meaning higher levels of debt are necessary to generate growth. Household consumption—an essential element of China’s economic rebalancing—is growing but at a sluggish pace due to the slow rate of reform.

- China’s high and rising debt levels pose a growing threat to the country’s financial stability. China’s total debt reached \$27.5 trillion, or 257 percent of GDP, at the end of 2016. The dramatic rise in China’s debt burden can be attributed to the relentless expansion of credit the government has relied on to generate growth since the global financial crisis.
- The U.S. trade deficit in goods with China totaled \$347 billion in 2016, the second-highest deficit on record. In the first eight months of 2017, the goods deficit increased 6.2 percent year-on-year to \$239.1 billion, with U.S. exports to China reaching \$80.2 billion, an increase of 15 percent year-on-year, while imports from China grew 8.3 percent year-on-year to \$319.3 billion. In 2016, the U.S. services trade surplus with China reached a record high of \$37 billion, driven almost entirely by an increase in Chinese tourism to the United States.
- China’s foreign investment climate continues to deteriorate as government policy contributes to rising protectionism and unfair regulatory restrictions on U.S. companies operating in China. The newly implemented cybersecurity law illustrates this trend. The law contains data localization requirements and a security review process U.S. and foreign firms claim can be used to discriminatorily advantage Chinese businesses or access proprietary information from foreign firms.
- U.S. government efforts to tackle China’s trade-distorting practices continue to yield limited results. The inaugural Comprehensive Economic Dialogue, created following a meeting between President Trump and President Xi in April 2017, concluded with no concrete agreements or future agenda.
- At the World Trade Organization (WTO), the United States continues to challenge China’s non-compliance with key provisions of its accession agreement, including failure to notify subsidies. In the past year, the United States requested WTO consultations over China’s management of tariff rate quotas for rice, wheat, and corn, and subsidies to select producers of primary aluminum.

## **Section 2: Chinese Investment in the United States**

Flows of Chinese foreign direct investment (FDI) to the United States have increased dramatically in recent years, fueled by Chinese government policies encouraging FDI in pursuit of gaining market access, new technologies, and higher returns abroad. As a result, reviews of Chinese investments by the Committee on Foreign Investment in the United States (CFIUS) are growing in number and complexity. Three important trends have emerged that may impact CFIUS’s ability to review Chinese investments in the United States:

First, Chinese FDI is targeting industries deemed strategic by the Chinese government, including information and communications technology, agriculture, and biotechnology. These investments lead to the transfer of valuable U.S. assets, intellectual property, and technology to China, presenting potential risks to critical U.S. economic and national security interests. In many of these sectors, U.S. firms also lack reciprocal treatment in China and are forced to disclose valuable technologies and source code to gain access to the Chinese market.

Second, some private Chinese companies operating in strategic sectors are private only in name, with the Chinese government using an array of measures, including financial support and other incentives, as well as coercion, to influence private business decisions and achieve state goals. This complicates the job of regulators and puts U.S. companies in these sectors at a distinct disadvantage, with their Chinese counterparts making business decisions based on political interests and with the financial backing of the state.

Third, some Chinese companies are attempting to invest in sensitive U.S. industries without obeying normal U.S. regulatory procedures. Their methods may include facilitating investments through shell companies based outside of China and conducting cyber espionage campaigns to financially weaken and then acquire U.S. firms. These methods not only injure U.S. businesses, but also hinder CFI-US's ability to review investments for potential threats to U.S. national security.

Chinese firms' activities on U.S. capital markets also present challenges for U.S. financial regulators and investors. Chinese laws governing the protection of state secrets and national security prohibit Chinese firms from sharing their audit work reports with foreign regulators, preventing the Public Company Accounting Oversight Board (PCAOB) from inspecting certified public accounting firms in China and Hong Kong. This leaves U.S. investors exposed to potentially exploitative and fraudulent activities by Chinese firms listed in the United States. To date, the Securities and Exchange Commission and PCAOB have been unable to reach an agreement with Chinese regulators to address the inadequacies of China's disclosure practices. After a decade of negotiations with Chinese regulators, it is apparent that, absent a dramatic policy shift, Beijing is unlikely to cooperate with efforts to make Chinese firms more accountable to their U.S. investors.

### ***Key Findings***

- Chinese government policies, coupled with increased investor uncertainty in China, have contributed to increased investment flows to the United States in recent years. In 2017, Chinese investment flows to the United States are expected to decline relative to 2016 as the Chinese government seeks to limit capital outflows and fend off risks from mounting corporate debt.
- Sectors of the U.S. economy deemed strategic by the Chinese government are more likely to be targeted by Chinese firms for investment, while Chinese investments in nonstrategic sectors like entertainment, real estate, and hospitality are declining

amid Chinese Communist Party efforts to limit capital outflows and reduce corporate debt.

- Some Chinese firms seek to obscure their dealings in the United States through U.S.-based shell companies or attempt to drive down the value of U.S. assets through sophisticated cyber espionage campaigns. These firms are becoming more sophisticated in their attempts to circumvent Committee on Foreign Investment in the United States (CFIUS) reviews and other U.S. investment regulations.
- Greenfield investments in the United States are not subject to the CFIUS review process, which may raise national security risks. Although the number of Chinese greenfield investments in the United States remains limited compared to acquisitions of U.S. assets, federal laws and screening mechanisms do not sufficiently require federal authorities to evaluate whether a greenfield investment may pose a national security threat.
- The application of the sovereign immunity defense to commercial cases presents a potential risk for U.S. businesses and individuals, allowing Chinese state-owned enterprises (SOEs) to conduct unlawful activity in the United States without legal consequences. Some Chinese SOEs are evading legal action in the United States by invoking their status as a foreign government entity under the Foreign Sovereign Immunities Act.
- The opaque nature of China's financial system makes it impossible to verify the accuracy of Chinese companies' financial disclosures and auditing reports. Chinese businesses continue to list on U.S. stock exchanges to raise capital, despite operating outside the laws and regulations governing U.S. firms.
- U.S. regulators have struggled to deter Chinese fraud schemes on U.S. exchanges, with Chinese issuers stealing billions of dollars from U.S. investors. Efforts to prosecute the issuers of the fraudulent securities have been unsuccessful, with Chinese regulators choosing not to pursue firms or individuals for crimes committed by Chinese companies listed overseas.
- Some Chinese companies operate with little oversight under China's opaque financial system, leaving U.S. investors exposed to exploitative and fraudulent schemes perpetrated by China-based issuers. Negotiations between the Public Company Accounting Oversight Board and its counterparts in China have resulted in little progress toward securing increased cross-border transparency and accountability.

### **Section 3: U.S. Access to China's Consumer Market**

China's strong income growth, expanding middle class, and stated plans to rebalance to a more consumption-driven economy should further boost U.S. services trade with China. In particular, the rapid growth in China's e-commerce, logistics, and financial services sectors presents opportunities for U.S. companies. Services are the mainstay of the U.S. economy, accounting for 80 percent of private sector jobs. The United States maintains a sizable services trade

surplus with China, which reached \$38 billion in 2016, up from \$438 million in 2006.

Despite the potential for U.S. companies, the playing field in China's consumer market remains uneven and highlights a lack of reciprocity in market access. China maintains market access barriers that restrict U.S. services companies, including caps on foreign equity, discriminatory licensing requirements, and data localization policies. Although China has gradually opened up its services sector to foreign participation, the pace has been slow and it may be increasingly difficult for U.S. companies to become significant players. For example, while China's regulatory framework for foreign investment in the e-commerce sector has undergone significant liberalization over the last two years, China's e-commerce market already is highly saturated, with Alibaba and JD.com holding more than 80 percent market share combined. Still, China's e-commerce boom could offer opportunities for U.S. retailers and brands due to growing Chinese demand for foreign products, particularly in areas where the United States excels, such as high-quality foods and supplements, beauty products, and healthcare-related goods.

China's consumer market is being reshaped by the country's major technology companies. Armed with government support, capital reserves, and troves of consumer data, these companies came to dominate China's market by integrating social media, e-commerce, and financial services to capture increasing swaths of the consumer experience. China's restrictions on foreign participation in the country's digital ecosystem limit the ability of U.S. companies to similarly leverage Chinese consumer data. In addition, state-owned enterprises remain major players in the services sector, particularly in banking, transportation, and telecommunications. U.S. firms cannot go toe-to-toe with China's technology giants and state-owned enterprises, and in most consumer segments, are largely relegated to partnering with domestic firms. U.S. services trade with China cannot reach its full potential as long as these barriers remain.

### ***Key Findings***

- China's rebalancing to a more consumption-driven growth model should present opportunities for U.S. companies in the e-commerce, logistics, and financial services sectors. However, U.S. companies operating in China do not have a level playing field and continue to face significant market access challenges, including informal bans on entry, caps on foreign equity, licensing delays, and data localization policies.
- China is the largest e-commerce market in the world, with e-commerce sales reaching \$787 billion in 2016. According to the U.S. Department of Commerce, by 2019 an estimated one out of every three retail dollars in China will be spent online, the highest percentage in the world. Although China has traditionally provided the world with its manufactured goods, its e-commerce boom should offer increased opportunities for U.S. retailers and brands, with more and more Chinese consumers purchasing foreign goods. Demand is strong in areas where the United States excels, such as high-quality foods and supplements, beauty products, and healthcare-related goods.

- Although China's e-commerce market offers opportunities for U.S. retailers and brands, it is not without its challenges and risks. While the Chinese government has made some improvements in enforcing intellectual property rights, intellectual property issues remain a key challenge for U.S. companies operating in China. In particular, the prevalence of counterfeit goods on Chinese e-commerce platforms continues to hurt U.S. retailers and brands.
- E-commerce has been a key driver of improvements to China's \$2.2-trillion-dollar logistics sector. Yet, China's domestic logistics industry remains underdeveloped, due to the country's historical focus on improving export logistics at the expense of domestic logistics infrastructure. This has caused logistics to become a major bottleneck for China's e-commerce sector. China's efforts to develop and modernize its express delivery industry could offer U.S. logistics firms like FedEx and UPS opportunities to expand their China operations.
- Financial services have been a major driver of growth within China's services sector, increasing 11 percent annually from 2012 to 2016. However, Chinese consumers' access to financial services remains inadequate, and most Chinese consumers lack formal credit histories. Improving their access to financial services will be critical for raising domestic consumption levels. In addition, China has made limited progress in implementing reforms to improve the market orientation and efficiency of its financial sector.
- Financial services are a mainstay of the U.S. economy and a major services export to China. While China has taken some steps to expand foreign firms' access to its financial markets since joining the World Trade Organization, U.S. financial services companies continue to face significant market access barriers in China. These include informal and formal bans on entry, equity caps, licensing restrictions, and data localization requirements. China's new cybersecurity law poses additional challenges for U.S. financial institutions operating in China. As a result, U.S. firms' market share in China's financial sector has been stagnant or declining in recent years.
- China has become a global leader in financial technology. China's Internet giants have emerged as significant players not only in e-commerce and logistics, but also in China's financial services sector, particularly in payments and lending.

## **Chapter 2: U.S.-China Security Relations**

### **Section 1: Year in Review: Security and Foreign Affairs**

The year 2017 saw the continued expansion of China's military and other security activities in pursuit of national interests close to home and far afield. Beijing employed a mix of coercion and engagement to further these interests.

Throughout 2017, Beijing tightened its effective control over the South China Sea by continuing to militarize the artificial islands it occupies there and by pressuring other claimants and regional coun-

tries to accept its dominance. It has not been deterred by, and in fact has rejected, the 2016 ruling by the Permanent Court of Arbitration in The Hague, which found much of China's claims and activities in the South China Sea to be unlawful. China increased tensions in other ways, including by illegally seizing a U.S. Navy underwater unmanned vehicle. China also sought to advance its territorial claims in South Asia by building a road into a disputed portion of the China-Bhutan-India border. This led to a two-month standoff between Chinese and Indian border forces, which ultimately ended peacefully.

China also advanced its interests through its ongoing One Belt, One Road initiative, and enhanced security cooperation with countries around the world. Currently, One Belt, One Road incorporates around 60 countries and reportedly includes \$900 billion worth of current or planned projects. Championed by President Xi, the initiative is ostensibly an economic endeavor intended to bring infrastructure projects, connectivity, and economic growth to Eurasia and beyond. It also has several unspoken strategic objectives: establishing strategic access points for China around the world, primarily via port infrastructure; augmenting China's energy security with a network of pipelines and energy projects; expanding domestic and regional security and stability by countering fundamentalism and terrorism; and gaining influence and leverage (and countering U.S. influence) over other countries.

As China's economic and strategic interests expand outward, China's security engagement has followed. China was the third-largest arms exporter worldwide in aggregate terms in the time period 2012–2016, and has sold arms to 44 countries. Meanwhile, the People's Liberation Army (PLA) has increased military-to-military engagement with other militaries. In 2017, China deployed its 27th naval task group for antipiracy patrols in the Gulf of Aden, where it has conducted more than 1,000 escort missions since 2008. Further, China expanded its involvement in UN peacekeeping activities, deploying a 140-soldier helicopter unit for peacekeeping purposes for the first time (to the Darfur region of Sudan). China also opened its first overseas military base, in Djibouti, in 2017. According to Beijing, the base will mainly be used to provide assistance to Chinese forces conducting antipiracy, peacekeeping, and humanitarian missions in the region. Its strategic location—several miles from Camp Lemonnier, one of the largest and most critical U.S. military installations abroad—may enable the PLA to surveil U.S. military activities.

Despite efforts by the Xi and Trump governments to set a positive tone for U.S.-China ties, tensions over security issues remain at the forefront of the relationship, with the South China Sea, Taiwan, and especially North Korea as the primary flashpoints.

### ***Key Findings***

- China's territorial disputes in the South China Sea and in South Asia flared in 2017. China continued to rely primarily on non-military and semiofficial actors (such as the China Coast Guard and maritime militia) to advance its interests in the disputed South China Sea, straining already-unsettled relations with the

Philippines and Vietnam. The 2016 ruling by the Permanent Court of Arbitration in The Hague, which overwhelmingly sided against China's position, has not deterred Beijing. China's territorial assertiveness was also on display when Chinese armed forces attempted to consolidate control over territory disputed by Bhutan and India. Ultimately, India was more successful than the Philippines and Vietnam in countering Chinese coercion.

- China's One Belt, One Road initiative continued to expand in 2017. Although China claims the mega-project is primarily economic in nature, strategic imperatives are at the heart of the initiative. China aims to use One Belt, One Road projects to expand its access to strategically important places, particularly in the Indian Ocean; to enhance its energy security; and to increase its leverage and influence over other countries.
- The People's Liberation Army continues to extend its presence outside of China's immediate periphery by opening its first overseas military base in Djibouti, increasing its contributions to UN peacekeeping operations, and conducting more bilateral and multilateral exercises. China's arms exports continued to grow in volume and sophistication in 2017, although they remain limited to low- and middle-income countries and are dwarfed by U.S. and Russian sales in value. The People's Liberation Army's expanded exercise portfolio includes new partners, such as Burma and Nepal, as well as long-time partners Pakistan and Russia. China's defense ties with Russia continued an upward trend in 2017.
- U.S.-China security relations saw new dialogue formats emerge following the U.S. presidential transition, but were marked by growing tension due to disagreements over issues such as North Korean denuclearization and China's continued coercive actions in regional territorial disputes.

## **Section 2: China's Military Modernization in 2017**

China is pursuing military modernization efforts to improve its antiaccess/area denial, warfighting, force projection, and nuclear deterrence capabilities, in addition to developing capabilities to conduct operations in space and cyberspace. The forces under development, supported by a still-growing military budget (announced to be \$151.1 billion for 2017, but likely to be much higher), provide China the capability to conduct military operations beyond its land borders and into disputed waters along its maritime periphery in the East and South China seas. China's ongoing military modernization disrupts stability in East and Southeast Asia and creates challenges for U.S. freedom of action in the region.

The ground forces remain relevant to many PLA missions, such as defending China's land borders and responding to a Taiwan crisis. PLA Army modernization efforts are focused on developing a smaller and more mobile force that is well-suited for offensive operations and overseas missions. This ground force modernization into a "new-type Army" is focused on the development of special operations, helicopter, electronic warfare, light mechanized, and long-range artillery

units. This expanding capability could result in U.S. and Chinese forces conducting missions within the same operational space.

To extend the PLA Navy's operational presence in line with Beijing's new strategic assessment that "the traditional mentality that land outweighs sea must be abandoned," China is developing aircraft carriers and carrier aviation, large amphibious ships suited for expeditionary operations, and multi-mission surface combatants and corvette class ships, and is modernizing the submarine force. This is resulting in Chinese ships conducting missions further from China and in proximity to U.S. forces operating in the Indo-Pacific. The U.S. Navy should anticipate a larger forward operational presence by the PLA Navy in the Indo-Pacific at the outset of conflict should a crisis escalate to hostilities.

The PLA Air Force's efforts are focused on developing long-range strike, fifth-generation fighter, airborne early warning and control, aerial refueling, strategic lift, air defense, and intelligence, surveillance, and reconnaissance aircraft. These types of developments are enhancing the ability of the PLA Air Force to conduct air operations farther from China's coast. These air operations have included simulated strike training and patrols over waters between Japan and Taiwan (the Miyako Strait) and between Taiwan and the Philippines (the Bashi Channel), which are sensitive and strategic waters for U.S. allies, friends, and partners in the region.

The PLA Rocket Force continues to improve both its conventional and nuclear forces to enhance long-range strike and deterrence capabilities and is modernizing its forces to increase the reliability and effectiveness of both conventional and nuclear missile systems. One objective of missile force modernization is for China to maintain nuclear forces capable of inflicting enough damage to deter a nuclear attack. China likewise seeks to extend the range of its conventional precision strike capabilities to hold adversary assets at risk at greater distances from China's coastline in the event of a regional conflict, eroding the United States' ability to operate freely in the Western Pacific.

The Strategic Support Force—with responsibility for cyber, electronic, information, and space operations—was established in December 2015 as part of China's military reform and reorganization. This force has incorporated signals intelligence capabilities, electronic warfare and electronic countermeasures, as well as aerospace reconnaissance capabilities. Considering the type of support the Strategic Support Force is expected to provide China's ground, naval, air, and missile forces, the United States must assume it will contribute to antiaccess/area denial operations against forward-deployed U.S. troops should a conflict occur in the region.

### ***Key Findings***

- China's military modernization program seeks to advance Beijing's security interests, prevent other countries from challenging those interests, and defend China's sovereignty claims to disputed areas along its border and maritime periphery. The weapons and systems under development and those that are being fielded by China's military—such as intermediate-range ballistic missiles, bombers with long-range precision strike capabilities, and guided missile nuclear attack submarines—are

intended to provide China the capability to strike targets further from shore, such as Guam, and potentially complicate U.S. responses to crises involving China in the Indo-Pacific.

- China will continue to modernize strategic air and sea lift capabilities, which will enable China's military to conduct expeditionary operations. The continued production of the Chinese navy's amphibious lift ships and the air force's heavy lift transport aircraft will increase China's ability to deliver troops abroad and to conduct expeditionary operations beyond the first island chain, humanitarian assistance operations, and noncombatant evacuation operations.
- China's increasingly accurate and advanced missile forces are intended to erode the ability of the United States to operate freely in the region in the event of a conflict and are capable of holding U.S. forces in the region at risk.
- China's continued focus on developing counterspace capabilities indicates Beijing seeks to hold U.S. intelligence, surveillance, and reconnaissance satellites at risk in the event of conflict.
- The consolidation of space, cyber, electronic warfare, signals, and potentially human intelligence capabilities under the Strategic Support Force provides China a centralized all-source intelligence apparatus to support national-level decision makers. Furthermore, this development could strengthen the Chinese military's ability to conduct integrated joint operations by providing a wide range of collection capabilities including intelligence, surveillance, and reconnaissance support to commanders responsible for operational forces under the military's five theater commands.

### **Section 3: Hotspots along China's Maritime Periphery**

Taiwan, the South China Sea (particularly the Spratly Islands), and the East China Sea (particularly the Senkaku Islands) are major national security interests for China. They also are major sources of tension between China and its neighbors. Complex challenges related to sovereignty and control, access to strategic waterways and resources, nationalism, and alliance and competition dynamics make these areas "hotspots" that could result in armed conflict between China and its neighbors. China's expanding territorial ambitions and its desire to exploit the current so-called "period of strategic opportunity" could invite the risk of conflict, and so the PLA is preparing contingency plans accordingly.

Chinese strategic writings insist unification with Taiwan is "inevitable," and unification by force remains the primary mission for which the PLA trains. Although the risk of large-scale war is remote, brinkmanship or a crisis compounded by miscommunication or miscalculation could spiral into conflict. Cross-Strait instability, which has been exacerbated by Beijing's recent pressure campaign against Taiwan's current government, is increasing the risk of hostilities between China and Taiwan. The PLA is planning for a range of Taiwan contingency operations that likely scale from punitive missile strikes to coerce Taiwan's political leadership to a full-scale invasion of the island. However, a Taiwan landing operation is the most difficult option for the PLA and would require China taking

and holding ports and airfields, in addition to conducting amphibious landings, in an effort to seize the island.

Disputes over islands and other land features in the South China Sea could easily escalate into crises, and in fact already have (notably with China's seizure and effective blockade of Philippines-claimed Scarborough Reef in 2012 and the destructive skirmish between Chinese and Vietnamese non-naval forces over a Chinese oil rig in 2014). Should China perceive an intolerable challenge to its claimed sovereignty over one of these disputed areas, it could employ a range of options—including island landing operations, blockades, or missile strikes—to seize control of disputed features. Such operations likely would involve (perhaps even exclusively) its non-naval maritime forces, such as the China Coast Guard and maritime militia, creating operational uncertainty and “grey zone” challenges for adversaries. A conflict involving the Philippines would raise the prospect of the United States—a treaty ally of the Philippines—becoming involved.

The risk of conflict in the East China Sea shifts as overall tensions in the region ebb and flow, but the nature of the China-Japan rivalry is such that any confrontation over the disputed Senkaku Islands could quickly escalate into an armed conflict. As with a South China Sea contingency, non-naval forces likely would play a leading role with naval assets waiting over the horizon. Other potential avenues for seizing the islands could involve China feigning a naval exercise near the islands that quickly turns into an island seizure campaign, or executing a joint amphibious assault to capture and occupy the islands. A Chinese attack on the Senkakus, which are covered by the U.S.-Japan Defense Treaty, would prompt U.S. involvement.

### ***Key Findings***

- U.S. presence and alliance commitments have helped maintain regional stability in Asia. China's aggressive actions in the East China Sea, South China Sea, and Taiwan Strait threaten principles such as freedom of navigation, the use of international law to settle disputes, and free trade. If Beijing continues to increase its control over the East and South China seas, the United States could receive requests for additional assistance by allies, friends, and partners to improve their capabilities to defend themselves, along with calls for the United States to remain engaged in the region to maintain security and stability.
- With China actively preparing contingency plans for operations against U.S. allies, friends, and partners along China's maritime periphery, the United States and China could quickly become involved in a conflict if Beijing escalates. This risk becomes greater depending on the level of tensions associated with any of the following flashpoints: the Korean Peninsula, the South China Sea, the East China Sea, and cross-Strait relations.
- Chinese leaders are cautious about letting a crisis escalate into conflict, and Chinese military thinkers study “war control” as a method for limiting the scope of a conflict to minimize negative consequences and achieve a victory at minimal cost. However, if Beijing believes the risk of a response to Chinese action is low, China may be tempted to risk brinkmanship to achieve its national objectives. Furthermore, if Beijing is unable to avoid es-

calation, any crises involving the use of the People's Liberation Army (PLA) create opportunities to widen a crisis into a conflict that results in the use of force.

- China has emphasized building a military capable of responding to situations in multiple regions and has developed theater commands capable of planning and executing missions in their respective areas of responsibility. A key element of success in achieving operational objectives, however, will be managing resources across multiple theaters should China find itself challenged in multiple directions simultaneously. This could create an opportunity to dissuade Chinese aggression or potentially result in Beijing escalating or accelerating a conflict.
- The PLA presently lacks the amphibious lift to directly assault Taiwan, and would instead have to successfully seize ports and airfields for the flow of follow-on forces to conduct on-island operations. Likewise, sustaining a prolonged air and maritime blockade against Taiwan is likely to strain PLA logistical capabilities, potentially disrupt trade routes through East Asia, and inhibit freedom of navigation in the region. These are high-risk operations for China, and may be conducted only after other coercive options are exhausted.
- Military facilities currently under construction in the Spratly Islands are intended to improve the PLA's operational reach by strengthening logistical support, extending operational reach, and bolstering the military's capability to monitor potential adversaries. Once these outposts are completed, they will improve the PLA's ability to take action against Vietnamese or Filipino forces on adjacent features if so ordered. China's militarization of these features is therefore inherently destabilizing for its neighbors who have overlapping sovereignty claims.
- There are several U.S. alliances and other commitments that could be activated by a maritime hotspot conflict with Japan, the Philippines, or Taiwan. Depending on the scenario, the United States could be expected to become involved in a conflict, although China will seek to discourage this by many means, possibly to include ensuring conflict remains in the "grey zone" where U.S. defense commitments are uncertain and the onus of escalation is shifted to China's adversary.
- The forward presence of U.S. forces in East Asia, coupled with the treaty alliances and partnerships of the United States in the region, constitute the most important factor in deterring Chinese adventurism. Nevertheless, they also increase the likelihood, should deterrence fail, that the United States becomes involved in armed conflict. The Commission has documented in previous reports how the balance of military power in the region has shifted in China's direction. Should that shift continue without a change in U.S. policy, there is a danger that Chinese leaders will consider the United States an obstacle to their ambitions that must be removed. In that event, Beijing may decide to escalate a crisis when the circumstances seem favorable to the achievement of China's larger ambitions.

## Chapter 3: China and the World

### Section 1: China and Continental Southeast Asia

China's relations with Burma (Myanmar), Cambodia, Laos, and Thailand are driven by two broad goals: taking advantage of Southeast Asia's economic potential and balancing the region's geopolitical opportunities against its security vulnerabilities. In pursuit of these goals, China has leveraged its economic importance to Southeast Asia and capitalized on regional countries' infrastructure needs. China has also forged ties with key regional political groups, particularly in Burma where China has supported different sides of Burma's ethnic conflict.

Economically, the region boasts some of the highest growth rates in the world as well as valuable mineral and agricultural resources, such as Burma's \$31 billion jade trade. China uses a number of tactics to exploit the region—including trade links, infrastructure projects, and assistance packages—in a way that benefits China's economic interests. For example, Chinese infrastructure projects in the region will help give Chinese exporters a competitive edge in regional markets and ameliorate excess capacity in China's construction sector. Chinese firms have also invested in plantations and mineral extraction projects that have harmed host countries, including jade smuggling in Burma and pesticide-heavy plantations in Laos that have left thousands of workers sick.

Geopolitically, China desires stability and leverage along its 1,370 mile border with Burma where fighting between ethnic armed groups and Burma's army has claimed the lives of Chinese citizens. China sees an opportunity to bypass its energy supply vulnerabilities in the Strait of Malacca by establishing transportation corridors through Burma and has built oil and natural gas pipelines connecting China to Burma's Indian Ocean coast, where China seeks to control a key port. China has used regional countries' membership in the Association of Southeast Nations (ASEAN) to its advantage—China's financial support and close relationship with Cambodia has been pivotal to preventing joint ASEAN opposition to China's land reclamation in the South China Sea. Finally, following the coup in Thailand, China has sought to move closer to the U.S. treaty ally, and has exceeded the United States in arms sales to Thailand, although the degree to which Thai-China ties have improved is uncertain.

China's engagement with the region has challenged U.S. commercial interests and political values. China's business and development model often runs counter to U.S. priorities, such as fostering transparent, accountable government in a region where democracy is challenged. Chinese firms exploit corruption, particularly in Cambodia where quid-pro-quo relationships between Chinese businesses and Cambodian officials thrive. These corrupt environments put U.S. firms at a disadvantage. Chinese projects also exacerbate social instability through environmental damage and community displacement. In particular, Chinese dams on the Mekong River threaten the food security of 60 million people, creating significant stability risks. Despite the region's importance to U.S. interests, U.S. assistance appears to lag significantly behind China's commitments, creating a risk that U.S. priorities will continue to be undermined by China's engagement.

**Key Findings**

- China's pursuit of strategic and economic interests in Burma (Myanmar), Thailand, Cambodia, and Laos often jeopardizes regional environmental conditions, threatens government accountability, and undermines commercial opportunities for U.S. firms.
- China has promoted a model of development in continental Southeast Asia that focuses on economic growth, to the exclusion of political liberalization and social capacity building. This model runs counter to U.S. geopolitical and business interests as Chinese business practices place U.S. firms at a disadvantage in some of Southeast Asia's fastest-growing economies, particularly through behavior that facilitates corruption.
- China pursues several complementary goals in continental Southeast Asia, including bypassing the Strait of Malacca via an overland route in Burma, constructing north-south infrastructure networks linking Kunming to Singapore through Laos, Thailand, Burma, and Vietnam, and increasing export opportunities in the region. The Chinese government also desires to increase control and leverage over Burma along its 1,370-mile-long border, which is both porous and the setting for conflict between ethnic armed groups (EAGs) and the Burmese military. Chinese firms have invested in exploiting natural resources, particularly jade in Burma, agricultural land in Laos, and hydropower resources in Burma and along the Mekong River. China also seeks closer relations with Thailand, a U.S. treaty ally, particularly through military cooperation.
- As much as 82 percent of Chinese imported oil is shipped through the Strait of Malacca making it vulnerable to disruption. To reduce this vulnerability, China has been investing in oil and natural gas pipelines across Burma, which will partially alleviate this problem, supplying China with up to 5 percent of its oil imports and 6 percent of its natural gas imports based on 2016 data.
- Chinese dams on the Mekong River threaten Laos, Cambodia, and Vietnam's food security by blocking sediment necessary for agriculture and restricting fish migration. Chinese dams are poised to block half of the sediment in the river system and the dam network on the Lower Mekong is estimated to reduce the fish stock of the entire river system by 42 percent.
- Local resistance to Chinese development has stalled or closed several important Chinese projects, including the \$3.6 billion Myitson Dam in Burma and a railway linking Kunming to the Indian Ocean. Protests against Chinese projects have emerged over environmental concerns, use of Chinese laborers, and contract terms that primarily benefit Chinese firms. Chinese business practices have created friction in Laos and Thailand where Chinese businesses have been closed by the government.
- Japan remains a competitor in continental Southeast Asia for infrastructure development. In 2016, Japan pledged to provide \$6.8 billion in infrastructure finance for Mekong River countries. Japan typically supports infrastructure projects that run

east-west across the region while China constructs projects that run north-south.

- Cambodia has advocated for China's interests in the Association of Southeast Asian Nations (ASEAN), particularly regarding Chinese land reclamation in the South China Sea. In 2012 and 2016 Cambodia vetoed joint ASEAN resolutions containing language regarding the South China Sea objectionable to the Chinese government, reportedly in concert with Beijing. Beijing has contributed significantly more aid to Cambodia than the United States and other Western countries. Cambodia's government has also granted Chinese businesses special privileges in violation of its own regulations. These privileges appear linked to favors paid to Cambodian officials by Chinese firms.
- Laos has sought good relations with China and turned to China for infrastructure development and investment, but has grown uneasy over the influence China has gained through investment. This unease has caused Laos to rethink its relations with China. In 2016 the Lao People's Revolutionary Party removed Choummaly Sayasone, who was associated with granting economic concessions to Chinese firms as chief of the party.
- China faces a more complicated political landscape in Burma, including the National League for Democracy (NLD) government; the military, which retains considerable political power; and EAGs that control large segments of Burma and conduct military actions against the Burmese government and military. In response, China has leveraged its connections with all three groups to maximize its influence, establishing better relations with the NLD, maintaining contact with military leaders, and using its ties to EAGs to demonstrate its ability to influence Burma's peace process. In leveraging its ties with EAGs, China faces tension between securing stability in its borders and using EAGs and Burma's peace process to obtain influence over the NLD government.
- After U.S.-Thailand relations deteriorated following the 2014 coup, China and Thailand have signed a series of arms deals, including a \$393 million submarine purchase. Thailand may be following its historical tradition of balancing multiple powers in its closer military relationship with Beijing.

## **Section 2: China and Northeast Asia**

Northeast Asia—encompassing China, Japan, North Korea, and South Korea—is the locus of some of the most pressing security challenges in Asia. Two of these countries—Japan and South Korea—are U.S. treaty allies. North Korea, on the other hand, is highly antagonistic to the United States and a threat to global peace and security.

Although Beijing increasingly is frustrated and concerned by Pyongyang's missile and nuclear testing and escalatory rhetoric, China is North Korea's top trading partner, most reliable supporter, and treaty ally. China is necessarily a key player in any significant international effort to manage the North Korean threat, and took some steps to strengthen international sanctions against North Ko-

rea in 2017. It is too soon to measure China's compliance with the latest rounds of sanctions, which, if implemented fully, would significantly constrain the North Korean regime's ability to fund its nuclear and conventional weapons programs. Given China's lackluster record of previous sanctions enforcement and continued sanctions violations by Chinese companies exporting dual-use items to North Korea, however, the United States and the international community should keep their expectations low. China's reluctance to assist with the U.S.-led effort to neutralize the North Korean threat is also driven by Beijing's belief that Washington's North Korea policy is designed to strengthen U.S. regional alliances and military posture to contain China.

China-South Korea relations are evidence of this belief. After years of generally positive bilateral relations buoyed by robust trade and cooperative efforts by the countries' top leaders, the China-South Korea relationship took a negative turn starting in 2016 over the planned deployment of a U.S. Terminal High Altitude Area Defense (THAAD) missile defense system to South Korea. China indicated its displeasure with this development by mounting a massive economic retaliation campaign against South Korea, causing millions of dollars in losses and forcing one South Korean company to cut back on operations in China. Comparing China's harsh rhetorical response to THAAD and its lukewarm response to North Korea's provocations, it appears Beijing finds U.S.-South Korea missile defense cooperation to be a greater threat to Chinese interests than a nuclear-armed North Korea. China has clearly signaled to South Korea that cooperation with the United States will be met with punishment from Beijing. This puts Seoul, which already struggles to balance its relations with Washington and Beijing, in a strategically difficult position, and will necessarily complicate U.S. efforts to enhance cooperation with South Korea going forward.

China-Japan relations continue to be strained as well, with the East China Sea dispute remaining the central flashpoint. Although tensions there have declined since their peak in 2012–2013, the dispute continued to simmer in 2017 with persistent Chinese maritime operations near the Senkaku Islands and sharply increasing Chinese air operations in the East China Sea.

In the near term, Chinese aggression toward Japan and economic coercion against South Korea seem to be driving both countries toward closer security cooperation with the United States. Prospects for enhanced South Korea-Japan security cooperation are less certain, however, and longstanding tensions between the two countries complicate U.S. efforts to evolve Northeast Asia's security architecture from a "hub and spokes" model to a more integrated trilateral cooperative structure.

### ***Key Findings***

- China's and the United States' divergent approaches to North Korea reflect their fundamentally different priorities in Northeast Asia. The United States has made denuclearization its priority in its North Korea policy, whereas China appears willing to accept a nuclear North Korea rather than upset the status quo. Efforts by Washington to compromise in other areas of

the U.S.-China relationship in the hopes of winning Beijing's support in pressuring North Korea risk disappointing results.

- Chinese actors appear to have complied with some provisions of UN sanctions against North Korea and violated others. Despite restrictions on the trade in coal and other goods, China-North Korea trade is robust, with Chinese exports to North Korea increasing significantly in 2017.
- China's objections to the deployment of a U.S. Terminal High Altitude Area Defense (THAAD) missile defense battery in South Korea most likely reflect a deep-seated desire to counter perceived encirclement by the United States by limiting the expansion of the U.S.-allied missile defense system in the region, rather than substantive objections to the practical effect of THAAD's presence in South Korea on China's security environment.
- China's efforts to punish South Korea for hosting THAAD marked a turning point in South Korean attitudes toward China, which until 2016 had been fairly positive. This trend likely will lead to warming U.S.-South Korea defense relations. At the same time, however, Seoul will continue to seek positive relations with Beijing, in part because South Korea is economically dependent on China and relies on China's support to manage the North Korean situation.
- China's continued regional assertiveness and military modernization is contributing to deteriorating Japan-China relations. Japan is likely to continue pursuing military capabilities that would enable it to counter China's expanding military might, as well as North Korea's growing nuclear and missile arsenal.
- Despite North Korea's advancing nuclear and missile programs and China's growing military capabilities, South Korea and Japan have not substantially increased their bilateral defense cooperation and have taken only small steps toward greater trilateral cooperation with the United States. Poor South Korea-Japan relations could hinder the United States' ability to harness its alliances with each country to pursue U.S. interests in the region.
- Most Korean Peninsula conflict or crisis scenarios would require large-scale evacuations of U.S. and other citizens from South Korea. Planning and coordination for noncombatant evacuation operations remain a challenge for the United States, South Korea, and Japan.

### **Section 3: China and Taiwan**

Cross-Strait relations entered a period of increased tension after President Tsai Ing-wen was elected in January 2016, as Beijing steadily increased pressure on Taiwan. Despite President Tsai's cross-Strait policy of "maintaining the status quo," Beijing has been displeased with her unwillingness to endorse the "one China" framework for cross-Strait relations (a 1992 framework Taipei and Beijing endorsed during the previous administration in Taiwan that acknowledges there is "one China," but that allows each side to

maintain its own interpretation of the meaning of “one China”). The measures Beijing is employing to pressure Taiwan include suspending official and semiofficial cross-Strait communication and meetings; establishing diplomatic relations with three of Taiwan’s former diplomatic partners (The Gambia, Sao Tome and Principe, and Panama); reducing the number of Chinese group tours to Taiwan and Chinese students who can attend Taiwan universities; refusing to facilitate repatriation to Taiwan of citizens accused of telecommunications fraud in countries with which Taiwan does not have diplomatic relations; and blocking Taiwan’s participation in certain international fora, such as the International Civil Aviation Organization and the UN World Health Assembly. A complicating factor in cross-Strait relations is Taiwan’s dependence on China-bound exports. China remains Taiwan’s largest trading partner, biggest export market, and top source of imports, giving Beijing significant economic leverage over Taipei. President Tsai has sought to reduce Taiwan’s reliance on China by diversifying Taiwan’s economic ties. Central to this effort is President Tsai’s New Southbound Policy, which seeks to strengthen trade, investment, people-to-people, and other links with countries in Southeast Asia, South Asia, and Oceania. The policy already has led to increased tourism to Taiwan, with the number of visitors from New Southbound Policy target countries increasing 28.6 percent in the first six months after the policy was enacted.

China’s military modernization program remains focused on deterring Taiwan from moving toward formal independence and preparing the Chinese military for a cross-Strait conflict. Faced with a growing threat from China’s military modernization, Taiwan has sought to enhance its own military capabilities in part by indigenously developing combat ships, aircraft, and weapons systems. Advanced antiship cruise missiles, air defense missiles, and fast attack and stealthy catamaran-style patrol ships are among the newest platforms and weapons systems Taiwan has produced. In 2017, Taiwan launched programs to build submarines and advanced jet trainers. Taiwan also seeks to enhance its military capabilities through the procurement of military equipment from the United States. In June 2017, the U.S. Department of State announced its approval of seven foreign military sales and one direct commercial sale to Taiwan valued at \$1.4 billion, including AGM–154C joint stand-off weapon air-to-ground missiles and AGM–88B high-speed antiradiation missiles, among other items.

President Tsai has emphasized enhancing Taiwan’s economic relations with the United States as a top priority for her administration. Although there remain obstacles for U.S.-Taiwan trade (particularly the decade-long dispute over Taiwan’s ban on U.S. pork products), both Washington and Taipei remain committed to furthering their economic relationship. Beyond commercial and security ties, U.S.-Taiwan cooperation spans many other areas, including environmental protection, cybersecurity, education, public health, and science and technology. Taiwan’s robust democracy, civil society, and technology sector, and its vast expertise and experience in areas such as humanitarian assistance and disaster relief, make it a strong partner for the United States.

**Key Findings**

- Taiwan President Tsai Ing-wen has pursued a cross-Strait policy of “maintaining the status quo,” demonstrating goodwill toward Beijing, and reassuring her counterparts across the Taiwan Strait. However, Beijing insists she endorse the “1992 Consensus” and continues to increase its pressure on Taipei in response to her refusal to do so. At the same time, Beijing is bypassing the government of Taiwan in its pursuit of “deepening economic and social integrated development” across the Taiwan Strait. It is doing so through efforts to enhance its economic leverage over Taiwan and increase the number of young people from Taiwan traveling, studying, and working in China.
- China remains Taiwan’s largest trading partner and largest source of foreign direct investment. Taiwan’s continued economic reliance on China makes it vulnerable to political pressure from Beijing and susceptible to fluctuations in China’s economy. To help reduce this dependence, President Tsai is pursuing an agenda, referred to as the New Southbound Policy, to diversify Taiwan’s economic ties, particularly with Southeast Asia, Australia, India, New Zealand, and other South Asian countries.
- The threat to Taiwan posed by Chinese military modernization continues to grow as the cross-Strait military balance has shifted toward China. Taiwan is engaged in a robust program to enhance its defensive capabilities through its domestic defense industrial production, the procurement of U.S. weapons systems, and its transition to an all-volunteer force. However, these efforts face a major challenge from the scope and speed of the modernization of the People’s Liberation Army.
- In an attempt to delegitimize Taiwan on the global stage, Beijing’s pressure on Taipei over its participation in the international community has become more pronounced over the past year. Since December 2016, two countries have severed diplomatic relations with Taiwan and established official ties with China, and Beijing has blocked Taiwan’s participation in multiple international fora in which it has participated in recent years. Beijing has also pressured countries to downgrade unofficial ties with Taipei.
- Beijing seeks to undermine Taiwan’s democracy through collaboration with various individuals and groups in Taiwan and spreading disinformation through social media and other online tools. In July, Taiwan media reported, based on Taiwan government information, that “Chinese influence” was involved in protests and the spread of disinformation against the Tsai Administration.
- Despite uncertainties conferred by a change in administration in the United States, the trend in U.S.-Taiwan relations remains positive. President Tsai has made enhancing Taiwan’s economic relations with the United States a top priority for her Administration. Nonetheless, the two sides have not made progress resolving a long-standing dispute over imports of U.S. pork. In U.S.-Taiwan security cooperation, the Trump Administration’s approval of arms sales to Taiwan was a sign of continued support for Taiwan.

#### **Section 4: China and Hong Kong**

In 2017, 20 years after Hong Kong's handover from the United Kingdom to China, Beijing continued to erode the spirit of the "one country, two systems" policy that has guided its relationship with Hong Kong since 1997. (This policy grants Hong Kong and Macau the right to self-govern their economy and political system to a certain extent, excluding foreign affairs and defense.) The Chinese government increased its interference in the territory's political affairs, becoming more pervasive in Hong Kong's government and civil society. Several notable examples include Beijing's use of legal measures to vacate the seats of six democratically-elected legislators for altering their oaths of office before taking office; its reported involvement in the apparent extralegal abduction of a Chinese billionaire from Hong Kong; and its active efforts to ensure Carrie Lam Cheng Yuet-ngor was selected as the territory's new chief executive. Hong Kong's rule of law, widely viewed as central to its unique status and a key distinguishing characteristic from the Mainland, is being challenged on many fronts. Freedom of expression in the territory—as guaranteed by China's handover agreement with the UK and the Basic Law, Hong Kong's mini constitution—also faces mounting challenges; these range from a crackdown on prodemocracy activists to pressure on the media, universities, and others to self-censor and conform to Beijing's views.

As it has done in other aspects of Hong Kong's politics and society, Beijing has become more active in asserting its presence in Hong Kong's economy. For example, in 2017, Hong Kong-listed Chinese state-owned enterprises were ordered to include a formal role for the CCP in their articles of association, raising concerns among investors who feel the Chinese government is interfering in business operations. Integration of the mainland and Hong Kong economies continues to deepen, with the launch of the Shenzhen-Hong Kong Stock Connect and the China-Hong Kong Bond Connect serving as the latest in a series of measures aimed at attracting global investors to China's domestic markets. Hong Kong's strong rule of law and economic openness have long made it an important destination for international trade and investment. However, some observers are beginning to question Hong Kong's ability to maintain its status as Asia's premier financial center if companies and individuals lose confidence in the territory's rule of law, political autonomy, and other freedoms as they are eroded by Beijing.

Mainland China's increasing encroachment on Hong Kong's promised "high degree of autonomy" poses obstacles for the United States in carrying out its policy objectives in the territory. Hong Kong is a major destination and partner for U.S. trade and investment and plays a valuable role as a participant in important international economic organizations. In light of China's recent intrusions into Hong Kong's democratic institutions, some observers argue the territory is losing its unique characteristics that make it a close U.S. partner in the Asia Pacific. U.S. allies and partners in the region, particularly Taiwan, also are closely watching these developments with unease. The Mainland's adherence to its commitments regarding Hong Kong is necessary to ensure continued strong ties between the United States and the territory.

**Key Findings**

- Beijing’s increasing pressure on Hong Kong has called into question the “one country, two systems” framework. Mainland China’s interpretation of the Basic Law (Hong Kong’s mini constitution) on Hong Kong lawmakers’ oaths of office—while a legal case on the matter was ongoing—has raised widespread concerns about the level of autonomy in Hong Kong’s judiciary. It has also caused apprehension in Hong Kong about the implications for political life and freedom of speech in the territory. Six prodemocracy legislators-elect were barred from office following the decision and two additional lawmakers face criminal charges, which could result in their seats being vacated in Hong Kong’s legislature. This poses a significant threat to the representation of prodemocracy voices in the legislature.
- Mainland China continues to either disregard or ignore Hong Kong’s rule of law and its related commitments to the international community. In addition to the disappearance of five Hong Kong book sellers in late 2015 (a case that remains unresolved as this Report went to print), mainland agents in January 2017 apparently abducted a Chinese-born billionaire with Canadian citizenship and close ties to senior Chinese government officials, taking him from a hotel in Hong Kong. These incidents have raised concerns about Hong Kong’s legal protections.
- The 2017 chief executive election, which used the existing voting system by an election committee comprising mostly pro-Beijing electors, resulted in the Mainland’s preferred candidate Carrie Lam taking the most votes. Having served as the second-most senior official under the previous administration, which was deeply unpopular, and being seen as loyal to Beijing, Chief Executive Lam is unlikely to advance prodemocracy advocates’ goal of universal suffrage in chief executive elections.
- Consistent with its downward trajectory in recent years, press freedom in Hong Kong continues to decline, according to journalists in Hong Kong and leading international nongovernmental watchdogs. These observers point to mainland China’s rising interference in local Hong Kong media, erosion of media autonomy, and increasing difficulty in covering sensitive stories.
- As Beijing’s fears regarding Hong Kong’s political dynamics appear to be rising with the increase in prodemocracy advocates pushing for greater autonomy from mainland China, pressure on prodemocracy activists is on the upswing. In the lead up to Chief Executive Lam’s formal inauguration on July 1, 2017, Hong Kong authorities arrested numerous prodemocracy legislators and activists. This was followed by the August 2017 jailing of Joshua Wong and two other student leaders from the 2014 Occupy protests—escalating a wide-scale crackdown that has further eroded freedom of expression in Hong Kong.
- Concerns persist among prodemocracy advocates in Hong Kong and among international observers that the territory is sliding away from “one country, two systems” and moving ever closer to

the Mainland. In the process, they argue, Hong Kong is losing the unique characteristics and legal protections that make the territory a key U.S. partner in the Asia Pacific. As Beijing moves to tighten its control over Hong Kong, the territory also faces economic pressure from mainland China.

- Hong Kong continues on the path of greater economic integration with the Mainland. Initiatives like the Shenzhen-Hong Kong Stock Connect and the China-Hong Kong Bond Connect allow Beijing to deepen economic integration with the world, attract foreign investment, and enhance the international use of the renminbi. At the same time, signs are emerging that Hong Kong's importance as a gateway to China may be reduced in the future as China's own markets gain sufficient international standing.

### **Section 5: China's Domestic Information Controls, Global Media Influence, and Cyber Diplomacy**

In 2017, the CCP tightened its control over media and online content. Authorities shut down independent media, penalized companies for disseminating news content without authorization, and eroded the privacy of Internet users in China by forcing them to connect their online profiles to their real names. As a result of a crackdown on "unauthorized" virtual private networks (VPNs), many popular VPN apps have been removed from online stores, and some VPN distributors based in China have been prosecuted and harassed by the state. VPNs have historically been one of the only reliable methods of circumventing China's censorship of the Internet; this censorship functions as a "tax" by forcing users to spend more time and money to access blocked content. The Chinese government's nascent "social credit" program, which relies on accumulated user data to build comprehensive profiles of Chinese citizens, is set to usher in a period of pervasive personal surveillance and social engineering. Multinational corporations with operations in China also have become unsettled by the tightening information controls, which many said negatively impact their business.

Amid the crackdown on independent media, and as journalists increasingly fear the repercussions of pursuing sensitive stories, investigative reporting in China has gradually diminished. Foreign journalists and their local assistants in China now face more restrictions and harassment than at any other time in recent history. The Chinese government also delays or denies visas from foreign journalists; in at least one case in 2016, Chinese authorities held up a visa for a foreign journalist until they were satisfied that another recent hire by the same press agency would not be covering human rights. Foreign correspondents also are increasingly being summoned by local authorities for informal interrogations.

Meanwhile, Beijing has rapidly expanded its overseas media influence by growing its overseas press corps and by exerting pressure on foreign publications both indirectly and directly. In April, the Chinese government also launched a major international media campaign to discredit a Chinese whistleblower living in the United States. In August, the Turkish foreign minister vowed to eliminate anti-China media reports in that country. Chinese authorities also

(ultimately unsuccessfully) pressured Cambridge University Press to censor several of its academic publications. At the same time, China's influence over Hollywood and the U.S. entertainment industry has grown.

The Chinese government has been promoting its views of "Internet sovereignty," including in international fora, to legitimize its monitoring and control the Internet in China. This concept entails that a government has the right to monitor and control the networks in its territory and the content that Internet users there access and transmit. Beijing also advocates for a "multilateral" system of Internet governance in which national governments are the main actors. These views sharply contrast with longstanding U.S. support for the "multistakeholder" model, in which governmental, industry, academic, and other nonstate organizations have an equal role in the management of the Internet.

### ***Key Findings***

- China's current information controls, including the government's new social credit initiative, represent a significant escalation in censorship, surveillance, and invasion of privacy by the authorities.
- The Chinese state's repression of journalists has expanded to target foreign reporters and their local Chinese staff. It is now much more difficult for all journalists to investigate politically sensitive stories.
- The investment activities of large, Chinese Communist Party-linked corporations in the U.S. media industry risk undermining the independence of film studios by forcing them to consider self-censorship in order to gain access to the Chinese market.
- China's overseas influence operations to pressure foreign media have become much more assertive. In some cases, even without direct pressure by Chinese entities, Western media companies now self-censor out of deference to Chinese sensitivity.
- Beijing is promoting its concept of "Internet sovereignty" to justify restrictions on freedom of expression in China. These policies act as trade barriers to U.S. companies through both censorship and restrictions on cross-border data transfers, and they are fundamental points of disagreement between Washington and Beijing.
- In its participation in international negotiations on global Internet governance, norms in cyberspace, and cybersecurity, Beijing seeks to ensure continued control of networks and information in China and to reduce the risk of actions by other countries that are not in its interest. Fearing that international law will be used by other countries against China, Beijing is unwilling to agree on specific applications of international law to cyberspace.

## Chapter 4: China's High Tech Development

### Section 1: China's Pursuit of Dominance in Computing, Robotics, and Biotechnology

The Chinese government is implementing a comprehensive, long-term industrial strategy to ensure its global dominance in computing, robotics, artificial intelligence (AI), nanotechnology, and biotechnology. This strategy is laid out in the 13th Five-Year Plan, and the Made in China 2025 and Internet Plus initiatives and continues China's state-directed approach over the last six decades to build internationally competitive domestic firms. Beijing's ultimate goal is for domestic companies to replace foreign companies as designers and manufacturers of key technology and products first at home, then abroad. It utilizes state funding, regulations, China-specific standards, localization targets, government procurement, foreign investment restrictions, recruitment of foreign talent, close integration of civilian and military technology development, and, in some cases, industrial espionage.

China is also leveraging the openness of the United States and other market-based economies to gain access to advanced research and data, recruit a globally talented workforce, acquire and invest in leading edge firms, and freely sell their products and services abroad. The scale and volume of government resources directed toward these sectors undermines the ability of foreign firms to fairly compete in China's market and creates distorted global and domestic market conditions and rampant overproduction and overcapacity. In addition, China's high market access barriers for foreign firms, localization targets, and China-specific standards further restrict foreign competition's access to China's rapidly growing market, a major loss of market and job opportunities.

The United States remains a global technological and innovation leader in many cutting-edge, dual-use technologies due to its world-renowned universities, innovation ecosystem, federal funding of basic research and development (R&D), and recruitment of the world's brightest minds. But falling and inconsistent federal R&D spending, reduced openness to global talent, and lack of interagency coordination are undermining these drivers of U.S. innovation to China's advantage. Loss of global leadership in these key high-value-added, dual-use sectors is detrimental to U.S. long-term economic growth, weakening U.S. firms' competitive edge, and reducing the capabilities, capacity, and resilience of the U.S. defense industrial base.

#### ***Key Findings***

- China has laid out an ambitious whole-of-government plan to achieve dominance in advanced technology. This state-led approach utilizes government financing and regulations, high market access and investment barriers for foreign firms, overseas acquisitions and talent recruitment, and, in some cases, industrial espionage to create globally competitive firms.
- China's close integration of civilian and military technology development raises concerns that technology, expertise, and intellectual property shared by U.S. firms with Chinese commercial partners could be transferred to China's military.

- *Artificial intelligence*: China—led by Baidu—is now on par with the United States in artificial intelligence due in part to robust Chinese government support, establishment of research institutes in the United States, recruitment of U.S.-based talent, investment in U.S. artificial intelligence-related startups and firms, and commercial and academic partnerships.
- *Quantum information science*: China has closed the technological gap with the United States in quantum information science—a sector the United States has long dominated—due to a concerted strategy by the Chinese government and inconsistent and unstable levels of R&D funding and limited government coordination by the United States.
- *High performance computing*: Through multilevel government support, China now has the world’s two fastest supercomputers and is on track to surpass the United States in the next generation of supercomputers—exascale computers—with an expected rollout by 2020 compared to the accelerated U.S. timeline of 2021.
- *Biotechnology*: The United States’ robust biotechnology ecosystem continues to drive U.S. leadership in this sector, but China’s state-directed policies have subsidized the establishment of the world’s largest genomic sequencing firms and supported China’s rapid rise in genomics and biotechnology-related publications.
- *Robotics*: China is developing its industrial and military robotics sector through subsidization of domestic robotics firms, acquisition of foreign knowledge and technology, and recruitment of overseas expertise. This is strengthening the quality and competitiveness of China’s manufacturing and its military capabilities.
- *Nanotechnology*: While consistent federal government funding to the National Nanotechnology Initiative has kept the United States at the forefront of nanotechnology, China has become the fastest-growing country for nanotechnology publications and industrialization due to massive government funding, recruitment of overseas talent, and creation of nanotechnology science parks.
- *Cloud computing*: China has largely closed off its cloud computing market to U.S. cloud computing firms—the global leaders—with unfair market access restrictions and onerous regulations. In addition, Chinese cloud computing firms’ close ties to the Chinese government raise security concerns over the protection of U.S. customers’ sensitive data, including intellectual property and personal information.

## **Section 2: China’s Pursuit of Advanced Weapons**

China is pursuing a wide range of military technologies at the global frontier—weapons just now being developed or not yet developed by any country. Advanced systems such as maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned and AI-equipped weapons contribute to China’s longstanding goal of military modernization and its efforts to compete militarily with

the United States. They also go hand in hand with Beijing's desire for the country to become a leading high technology power across commercial and dual-use areas. China's government has taken a comprehensive approach to the development of key dual-use technologies, leveraging state funding, licit and illicit technological exchange, foreign investment, and talent recruitment opportunities to build national champions and advance its military capabilities.

Although information regarding China's advanced weapons programs is not always publicly available, numerous open source writings, government statements, and testing and deployment activities indicate Beijing has undertaken vigorous efforts in these areas. China revealed two antiship ballistic missile systems with reported **maneuverable reentry vehicle** capabilities in 2010 and 2015, respectively, and has taken steps toward developing the reconnaissance-strike complex necessary to successfully strike a moving target at sea, still unproven. China's **hypersonic weapons** program appears to be in developmental stages but progressing rapidly, featuring seven likely hypersonic glide vehicle tests since 2014 and a reported scramjet engine flight test in 2015. Following a deep history of research into **directed energy weapons**, China's progress includes reported advancements in developing a high-power microwave antimissile system in 2017, at least one chemical high energy laser designed to damage or blind imaging satellites as of 2006 (with likely further developments), and recent marketing of low-power solid state laser weapons. China has reportedly built experimental **electromagnetic rail-guns**, and numerous research institutes in China are studying aspects of electromagnetic launch technology. China's technology tests applicable to **counterspace weapons** include direct-ascent antisatellite missiles, ground-based directed energy weapons, and rendezvous and proximity operations; and its writings and capabilities indicate the potential for directed energy weapons based on co-orbital platforms. Finally, in addition to developing and marketing a wide range of **unmanned systems**, China has conducted research into autonomous systems such as AI-equipped cruise missiles, autonomous vehicles, and drone swarms, alongside its rapid rise in the global commercial AI sector.

While the United States appears to retain a lead in developing most of these systems according to public reports, China likely possesses the key factors (scientific knowledge, critical components, and skills and techniques) necessary to successfully develop advanced weapons. China is able to access scientific knowledge through publicly available information, academic exchanges, and strong efforts to cultivate human talent. Its advances in computing and robotics provide critical components for next frontier weapons: semiconductors are key to intelligent weapons systems; supercomputing is crucial for weapons design and testing; industrial robotics enhances the quality and efficiency of manufacturing; and national champions in the commercial robotics and AI sectors are well positioned to provide next frontier military applications. Finally, while China currently trails the United States in developing relevant skills and techniques, the only fundamental barriers to achieving these will be effort: time, will, and financial support. China appears to have

the long-term plans, consistent funding, and human talent in place to eventually overcome these barriers. China may in fact be moving toward a phase of higher-end innovation, given cutting-edge advances in emerging technologies such as artificial intelligence, high-performance computing, and quantum information science. Should the United States falter in its own efforts, China is well prepared to close the gap further than it already has.

China's advanced weapons programs present both direct implications for U.S. security interests and broader implications for long-term U.S.-China defense technological competition. Breakthroughs in any of the aforementioned advanced weapons categories would contribute to China's antiaccess/area denial capabilities and directly challenge U.S. advantages. Notable examples include the potential for antiship ballistic missiles to hold U.S. surface ships at risk; for hypersonic weapons to defeat kinetic missile defenses, if capable of sufficient speed and maneuverability; for directed energy weapons and railguns to undermine future U.S. military concepts such as using distributed low-cost platforms to assure access to contested environments; for counterspace weapons to deny key space-based systems to the U.S. military in a contingency; and for unmanned and AI-equipped weapons in large numbers to saturate U.S. air defenses, particularly by using swarm technology. China is poised to challenge U.S. technological leadership in an environment in which dual-use commercial technology increasingly contributes to military technological strength. As the United States seeks to ensure it is prepared to deter aggression and defend key interests in the Asia Pacific, such as the security of allies and partners, the peaceful resolution of disputes, and freedom of navigation, recognizing these critical challenges will be crucial.

### ***Key Findings***

- China is pursuing a range of advanced weapons with disruptive military potential. Six types that China's leaders have prioritized are maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned and artificial intelligence-equipped weapons.
- China's advanced weapons programs align with the People's Liberation Army's overall modernization drive over the past several decades, but appear to reflect a more careful degree of planning as to the U.S. weaknesses they are designed to exploit.
- Current technological trends increase the difficulty of preserving an advantage in developing advanced weapons. The United States for the first time faces a peer technological competitor—a country that is also one of its largest trading partners and that trades extensively with other high-tech powers—in an era in which private sector research and development with dual-use implications increasingly outpaces and contributes to military developments.
- The requirements for developing advanced weapons are fundamental scientific knowledge, unique materials, and abstract skill-based enablers (i.e., abilities, tools, and techniques). China

has clear policies to exploit government funding, commercial technological exchange, foreign investment and acquisitions, and talent recruitment to bolster its dual-use technological advances. For China, the only ultimate barrier to such advances is likely to be effort—time, will, and money—and it will be difficult for the United States and its allies and partners to deter this.

- While China has only achieved incremental innovation in military technologies in the past, its research efforts at the technological frontier indicate it may be moving from a phase of “catching-up” to pursuing “leap-ahead” technologies. China’s limited returns on science and technology investments indicate shortcomings that may render its development of innovative advanced weapons more costly or protracted, but do not rule out successful innovation.
- China’s achievement of a surprise breakthrough in one of these technologies is possible, due to the secrecy surrounding these programs and the uncertain nature of advanced weapons development in general. Such a breakthrough could have significant strategic implications for the United States, particularly in its potential to further existing access challenges and hold forward deployed U.S. forces at risk.
- Given Beijing’s commitment to its current trajectory, and the lack of fundamental barriers to advanced weapons development apart from time and funding, the United States cannot assume it will have an enduring advantage in developing weapons at the technological frontier.

### THE COMMISSION'S KEY RECOMMENDATIONS

The Commission considers 10 of its 26 recommendations to Congress to be of particular significance. The complete list of recommendations appears at the Report's conclusion on page 597.

The Commission recommends:

- Congress consider legislation updating the Committee on Foreign Investment in the United States (CFIUS) statute to address current and evolving security risks. Among the issues Congress should consider are:
  - Prohibiting the acquisition of U.S. assets by Chinese state-owned or state-controlled entities, including sovereign wealth funds.
  - Requiring a mandatory review of any transaction involving the acquisition of a controlling interest in U.S. assets by Chinese entities not falling under the above class of acquiring entities.
  - Requiring reviews of investments in U.S.-based greenfield assets by Chinese-controlled entities to assess any potential harm to U.S. national and economic security.
  - Expanding the definition of “control” to include joint ventures, venture capital funds, licensing agreements, and other arrangements or agreements that enable Chinese entities to access and/or determine the disposition of any asset.
  - Prohibiting any acquisition or investment that would confer “control” with regard to critical technologies or infrastructure. The U.S. Departments of Homeland Security, Commerce, and Defense shall prepare and regularly update a list of critical technologies or infrastructure that would not be eligible for acquisition or investment by any Chinese entities to ensure U.S. economic and national security interests are protected.
  - Including a net economic benefit test to assess the impact of acquisitions by Chinese entities in the United States to ensure they advance U.S. national economic interests.
  - Requiring that any proposed acquisition of a media property by a Chinese entity be assessed in terms of the acquiring entity's history of adhering to Chinese Communist Party propaganda objectives and its potential to influence public opinion in the United States.
  - Authorizing an independent review panel, appointed by Congress, to review the actions and activities of CFIUS on a continuing basis.
  - Allowing any CFIUS member agency to bring a transaction up for review and investigation.
- Congress amend the Foreign Sovereign Immunities Act (FSIA) of 1976 to:
  - Allow U.S. courts to hear cases against a foreign state's corporate affiliates under the commercial activity exception.
  - Require Chinese firms to waive any potential claim of sovereign immunity if they do business in the United States.

- Congress strengthen the Foreign Agents Registration Act to require the registration of all staff of Chinese state-run media entities, given that Chinese intelligence gathering and information warfare efforts are known to involve staff of Chinese state-run media organizations and in light of the present uneven enforcement of the Act.
- Congress urge the Administration to invite Taiwan to participate, at least as an observer, in U.S.-led bilateral and multilateral military and security-related exercises, including the Rim of the Pacific (RIMPAC) maritime exercise, Red Flag air-to-air combat training exercises, and Cyber Storm cybersecurity exercise, in order to support Taiwan's efforts to enhance its defense capabilities, expand opportunities for Taiwan to contribute to regional and international security, and counter China's efforts to limit Taiwan's international space.
- Congress consider legislation to ban and delist companies seeking to list on U.S. stock exchanges that are based in countries that have not signed a reciprocity agreement with the Public Company Accounting Oversight Board (PCAOB).
- Congress authorize U.S. defense spending at levels sufficient to address the growing challenge to U.S. interests posed by China's ongoing military modernization program and to ensure the United States will have the capacity to maintain readiness and presence in the Asia Pacific.
- Congress direct the National Science and Technology Council, in coordination with the National Economic Council and relevant agencies, to identify gaps in U.S. technological development vis-à-vis China, including funding, science, technology, engineering, and mathematics workforce development, interagency coordination, and utilization of existing innovation and manufacturing institutes, and, following this assessment, develop and update biennially a comprehensive strategic plan to enhance U.S. competitiveness in advanced science and technology.
- Congress reauthorize annual reporting requirements of the United States-Hong Kong Policy Act of 1992, in an effort to ensure policymakers have the most up-to-date and authoritative information about developments in Hong Kong. The report should include an assessment of whether Hong Kong has maintained a "sufficient degree of autonomy" under the "one country, two systems" policy, among other developments of interest to the United States.
- Congress direct the Office of the U.S. Trade Representative to develop criteria for the Notorious Markets List to ensure listed companies can be held accountable for engaging in or facilitating copyright piracy and trademark counterfeiting.
- Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.

## INTRODUCTION

As the Commission's Annual Report was going to print in October 2017, the Chinese Communist Party (CCP) was preparing to hold its 19th Party Congress, where it would appoint China's new leadership team and set the agenda for the next five years of economic, political, and strategic development. Chinese President and CCP General Secretary Xi Jinping, who has been methodically consolidating his political power since ascending to China's highest office, is poised to emerge as the most powerful Chinese leader since Deng Xiaoping.

What will China's leaders prioritize over the next five years? How will they go about implementing these goals? And what will these priorities mean for the United States, economically, geopolitically, and militarily? In following Chinese government actions over the past decade, the Commission has observed several trends that we expect will continue.

In the economic realm, despite early promises of free-market reforms, the Xi government has ushered in a period of increased state control as the government takes a firmer lead in driving China's development agenda. Over the course of several five-year plans—Chinese government blueprints for guiding the country's economic and technological evolution—Chinese leaders have articulated a vision of China as an economically dynamic technological powerhouse. The government has exploited a full range of tools at its disposal to implement this vision, from providing subsidies to help Chinese companies expand at home and abroad to setting standards that favor domestic technology. As new laws come into effect choking off the ability of foreign companies to access and transfer vital business intelligence across China's borders, malicious Chinese actors engage in cyber-enabled theft of foreign intellectual property.

U.S. companies wishing to participate in China's market have had to pay an increasingly steep price for admission, surrendering technology and meeting regulatory requirements that favor Chinese firms. Large and lucrative portions of China's economy, including many high-tech sectors and financial services, are closed to foreign firms. Meanwhile, over the last couple of years, government largesse has enabled Chinese companies to go around the world acquiring valuable assets in cutting-edge industries like semiconductors, robotics, and artificial intelligence. Foreign companies cannot do the same in China.

President Xi has done more than any other modern Chinese leader to expand China's presence on the world stage. Part coercion, part charm offensive, his ambitious global agenda is creating pockets of influence, leverage, and control from the East and South China seas to Africa to Europe.

The charm offensive is typified by "One Belt, One Road," the hallmark initiative of President Xi's administration, which seeks to

bring more than 60 countries into China's economic and strategic orbit. China's engagement with continental Southeast Asia, which is profiled in this Report, is also characterized by this kind of engagement. In Thailand, for example, Beijing has taken advantage of the rift between Washington and the Thai military junta to grow its influence there, primarily through economic engagement. China's push for global influence has recently expanded to the media realm—including the U.S. entertainment industry—with Beijing using various tactics to encourage foreign media to portray China in a positive light. Meanwhile, in its effort to develop a truly global military, China reached a major milestone this year when it established its first-ever overseas military base in Djibouti.

In addition to its charm offensive, China increasingly relies on coercion as a means to control its neighbors and its claimed territory. The Commission has long monitored China's use of coercion in the South and East China seas. This pattern continued in 2017 despite the fact that in 2016 a UN arbitral tribunal ruled that major elements of China's claims in the South China Sea—including its nine-dash line, land reclamation activities, and other activities in Philippine waters—were unlawful. China's use of economic coercion reached new heights this year when Beijing expressed its displeasure with South Korea's decision to deploy a U.S. missile defense battery against the growing North Korean threat, which China has been unwilling to sufficiently counter. Over the course of several months, China systematically harassed South Korean businesses in China, banning the sale of some South Korean products, and apparently slashing Chinese tourism to South Korea, causing millions of dollars in losses and forcing one company to cut back on operations in China. Meanwhile, Beijing has stubbornly refused to leverage the full weight of its influence to rein in the region's most dangerous threat, North Korea. Closer to home, China has been encroaching on Taiwan and Hong Kong's freedoms and increasing its pressure on Taiwan and Hong Kong leaders, activists, and citizens.

Domestically, China's information controls and censorship have tightened significantly under President Xi. The death of the imprisoned Chinese activist and Nobel peace prize winner Liu Xiaobo—which was heavily censored in China—is a reminder of the tragic consequences of China's longstanding commitment to controlling its citizens by sacrificing their human and civil rights.

President Xi's willingness to employ coercion to advance China's global goals is all the more disconcerting against the backdrop of China's impressive military modernization. He is undertaking ambitious reforms to cement control over the military apparatus and transform China's armed forces into a more powerful joint force capable of undertaking sophisticated operations, particularly in "hotspots" like the East and South China seas and against Taiwan. China's military modernization is being augmented by a centrally-directed effort to develop advanced military technologies at the global frontier—weapons just now being developed or not yet developed by any country. These advanced systems, such as maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned

and artificial intelligence-equipped weapons, will enable China to compete militarily with the United States.

Taken together, these developments paint a clear picture of China's goals and ambitions. As China expands its role on the world stage, it seeks to diminish the role and influence of the United States in Asia and beyond. It is incumbent on U.S. policymakers to advance a coordinated and comprehensive economic, geostrategic, and military strategy that ensures these goals and ambitions do not disrupt U.S. interests at home or abroad.



# **CHAPTER 1**

## **U.S.-CHINA ECONOMIC AND TRADE RELATIONS**

### **SECTION 1: YEAR IN REVIEW: ECONOMICS AND TRADE**

#### **Key Findings**

- In 2016 and the first half of 2017, the Chinese government has reported it met or exceeded the targets it set for gross domestic product (GDP) growth—an important deliverable in advance of the political leadership transitions at the Chinese Communist Party’s 19th Party Congress scheduled for October 2017. The Chinese government has achieved this high growth through reliance on old drivers: credit and real estate. However, the government’s unwillingness to allow the market to play a bigger role has resulted in deteriorating investment efficiency, meaning higher levels of debt are necessary to generate growth. Household consumption—an essential element of China’s economic rebalancing—is growing but at a sluggish pace due to the slow rate of reform.
- China’s high and rising debt levels pose a growing threat to the country’s financial stability. China’s total debt reached \$27.5 trillion, or 257 percent of GDP, at the end of 2016. The dramatic rise in China’s debt burden can be attributed to the relentless expansion of credit the government has relied on to generate growth since the global financial crisis.
- The U.S. trade deficit in goods with China totaled \$347 billion in 2016, the second-highest deficit on record. In the first eight months of 2017, the goods deficit increased 6.2 percent year-on-year to \$239.1 billion, with U.S. exports to China reaching \$80.2 billion, an increase of 15 percent year-on-year, while imports from China grew 8.3 percent year-on-year to \$319.3 billion. In 2016, the U.S. services trade surplus with China reached a record high of \$37 billion, driven almost entirely by an increase in Chinese tourism to the United States.
- China’s foreign investment climate continues to deteriorate as government policy contributes to rising protectionism and unfair regulatory restrictions on U.S. companies operating in China. The newly implemented cybersecurity law illustrates this trend. The law contains data localization requirements and a security review process U.S. and foreign firms claim can be used

to discriminatorily advantage Chinese businesses or access proprietary information from foreign firms.

- U.S. government efforts to tackle China’s trade-distorting practices continue to yield limited results. The inaugural Comprehensive Economic Dialogue, created following a meeting between President Trump and President Xi in April 2017, concluded with no concrete agreements or future agenda.
- At the World Trade Organization (WTO), the United States continues to challenge China’s non-compliance with key provisions of its accession agreement, including failure to notify subsidies. In the past year, the United States requested WTO consultations over China’s management of tariff rate quotas for rice, wheat, and corn, and subsidies to select producers of primary aluminum.

### **Introduction**

In 2017, main priorities for the Chinese government include increased Party control and consolidation of political power. Indeed, the administration of the Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping has begun implementing policies in pursuit of these goals to prepare for the leadership transition due to take place at the 19th Party Congress in October 2017.\* Despite President Xi’s stated commitment in 2013 to allow market forces to play “a decisive role” in the economy, genuine liberalization has stalled; instead, growth and stability are among the key economic objectives for the government.

To stimulate the economy, China’s government continues to rely on old standbys, such as investment in infrastructure and real estate, and funnels funding to the state sector to the detriment of private enterprise and market orientation. The amount of credit the government is pumping into the economy has swelled to levels not seen since the global financial crisis, and corporate debt has continued to climb to new heights. The hand of the state is also evident in how Beijing treats foreign companies operating in China and in the impact its trade-distorting policies have on its trade partners. This year, U.S. companies reported feeling less welcome in China than ever before—the continuation of a troubling trend.

This section examines China’s domestic and external economic rebalancing as well as key developments in U.S.-China bilateral and multilateral economic engagement since the Commission’s *2016 Annual Report to Congress*. For analysis of Chinese foreign direct investment (FDI) in the United States and presence of Chinese companies on U.S. stock exchanges, see Chapter 1, Section 2, “Chinese Investment in the United States.” U.S. ability to access China’s financial services, e-commerce, and logistics industries is discussed in Chapter 1, Section 3, “U.S. Access to China’s Consumer Market.” Finally, industrial policies driving Chinese advancement in cutting-edge technologies are analyzed in Chapter 4, Section 1, “China’s Pursuit of Dominance in Computing, Robotics, and Biotechnology.”

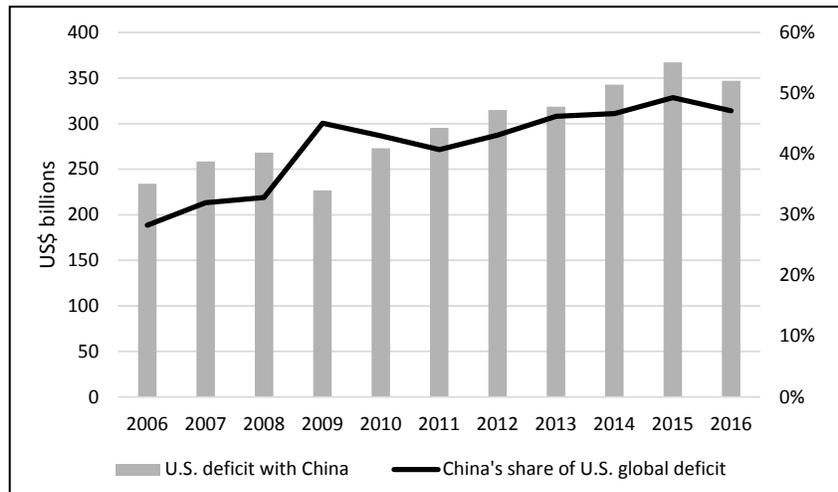
---

\*The Commission’s Report is current as of October 6, 2017, and does not capture the outcomes of the 19th Party Congress, which is scheduled to start on October 18, 2017.

### U.S.-China Bilateral Trade

The U.S. trade relationship with China remains extremely unbalanced, as evidenced by a substantial goods deficit, which totaled \$347 billion in 2016, the second-highest deficit on record (see Figure 1).<sup>1</sup> The goods deficit decreased 5.5 percent year-on-year in 2016, driven by declining U.S. imports from China, which dropped 4.3 percent year-on-year to \$463 billion.<sup>2</sup> U.S. goods exports remained flat, declining 0.3 percent over 2015 levels to \$116 billion.<sup>3</sup> China continues to dominate the United States' global deficit in trade in goods. As seen in Figure 1, in 2016 the United States' goods deficit with China was equal to 47 percent of its total deficit, down from 49 percent in 2015.<sup>4</sup>

**Figure 1: U.S. Goods Trade Deficit with China, 2006–2016**



Source: U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.

In the first eight months of 2017, U.S. exports to China reached \$80.2 billion, an increase of 15 percent over the same period in 2016 (see Table 1). U.S. goods imports from China have also picked up, increasing 8.3 percent year-on-year to \$319.3 billion, with the overall goods deficit increasing 6.2 percent year-on-year to \$239.1 billion.<sup>5</sup>

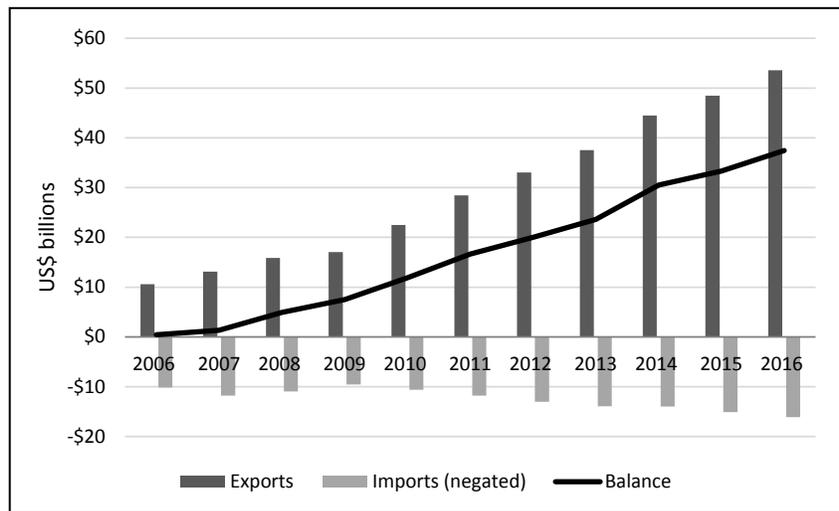
**Table 1: U.S.-China Goods Trade, January–August 2017**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Exports	\$10.1	\$9.8	\$9.6	\$9.8	\$10.2	\$9.7	\$10.1	\$10.9
Imports	\$41.4	\$32.8	\$34.2	\$37.5	\$41.8	\$42.3	\$43.6	\$45.8
Balance	(\$31.3)	(\$23.0)	(\$24.6)	(\$27.6)	(\$31.6)	(\$32.6)	(\$33.6)	(\$34.9)

Source: U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.

The United States' surplus in services with China continues to grow, reaching a record of \$37 billion in 2016, driven primarily by an increase in Chinese tourism to the United States.\* U.S. services exports increased 10.5 percent in 2016 year-on-year, from \$48 billion in 2015 to a record high of \$54 billion in 2016 (see Figure 2).<sup>6</sup> Growth in Chinese tourism over the same period accounted for 94 percent of this increase.<sup>7</sup> U.S. services imports from China grew at 6.6 percent over 2015, reaching a record \$16 billion.<sup>8</sup>

**Figure 2: U.S.-China Services Trade, 2006–2016**



Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3 U.S. International Transactions, Expanded Detail by Area and Country*, July 18, 2017.

### **Challenges for U.S. Companies in China**

The combination of China's changing economic conditions, rising costs, and tightening regulations continues to make China a less attractive place to do business. In 2016, global FDI flows into China fell for a second year in a row—a trend continued in the first half of 2017.<sup>9</sup> In the *2017 Business Climate Survey*† released by the American Chamber of Commerce (AmCham) in China in January 2017, 81 percent of companies surveyed reported feeling less welcome in China in 2016 than they did in 2015.<sup>10</sup> Thirty-one percent of companies reported a deteriorating investment environment, compared to 19 percent in 2012; only 24 percent thought the overall environment was improving. This is the least optimistic U.S. companies have been since AmCham China began asking this question in 2011.

\*Under international and U.S. standards, tourism is broadly defined to include travel and related expenses for business purposes and travel and expenses for personal purposes, such as vacation, education, and medical services. International Monetary Fund, *Balance of Payments and International Investment Position Manual*, 2009; U.S. Department of Commerce, *Comprehensive Restructuring of the International Economic Accounts: New International Guidelines Redefine Travel*; U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3 U.S. International Transactions, Expanded Detail by Area and Country*, July 18, 2017.

†AmCham China asked a total of 849 companies, of which 522 responded in whole or in part. American Chamber of Commerce in Republic of China, "2017 China Business Climate Survey Report," January 2017.

The report's list of the top five challenges U.S. businesses face in the coming year helps explain this pessimism. In 2017, firms anticipate inconsistent regulations and increasing labor costs to be the biggest challenges (see Table 2). This is the fifth consecutive year these were among the top two challenges. Despite increasing profits, only 10 percent of technology and research and development companies are optimistic about the implementation and enforcement of regulations over the next two years. Services, consumer, and industrial and resources firms were a little more sanguine; about one-fifth of these firms were optimistic about future regulation. Among companies surveyed, concerns over labor expenses and regulations were compounded by uncertainty over investment restrictions. Two-thirds of companies either doubt or are unsure whether China will further open markets to foreign investment, and domestic protectionism in general became their third-biggest reported challenge in 2017.<sup>11</sup> Systemic corruption in China, which has historically been a major problem for foreign companies, has fallen off the list of top five business challenges in 2014.

**Table 2: Top Five Business Challenges in China for U.S. Firms, 2013–2017**

2013	2014	2015	2016	2017
Labor costs: 44%	Labor costs: 46%	Labor costs: 61%	Inconsistent regulatory interpretation and unclear laws: 57%	Inconsistent regulatory interpretation and unclear laws: 58%
Inconsistent regulatory interpretation and unclear laws: 38%	Inconsistent regulatory interpretation and unclear laws: 39%	Inconsistent regulatory interpretation and unclear laws: 47%	Labor costs: 54%	Labor costs: 58%
Shortage of qualified employees: 35%	Shortage of qualified employees: 37%	Shortage of qualified employees: 42%	Obtaining required licenses: 29%	Increasing Chinese protectionism: 32%
Corruption: 30%	Shortage of qualified management: 31%	Shortage of qualified management: 32%	Shortage of qualified employees: 29%	Shortage of qualified management: 30%
Shortage of qualified management: 30%	Obtaining required licenses: 31%	Increasing Chinese protectionism: 30%	Industry over-capacity: 29%	Obtaining required licenses: 29%

*Source:* American Chamber of Commerce in the People's Republic of China, "2017 China Business Climate Survey Report," January 2017.

In light of China's continued reliance on trade-distorting practices, James McGregor, chairman of the greater China region for the consulting firm APCO Worldwide and former AmCham China chairman, called for reciprocity to become "the bedrock underlying trade and investment agreements between China and the United States." He elaborated:

*No Chinese-connected entity should be allowed to invest in or acquire U.S. assets unless American companies have equal market and acquisition access in China. This would require applying “regulatory reciprocity” that takes into account the real on-the-ground situation in China. Rather than accepting China’s assertions of openness, the United States must carefully assess China’s market-distorting policies that block foreign business.*<sup>12</sup>

During an April 2017 visit to Washington as part of an AmCham China delegation, Mr. McGregor noted that, prompted by China’s worsening treatment of foreign companies, reciprocity is gaining traction among U.S. businesses and policymakers as a new framework for conducting economic relations with China.<sup>13</sup>

### *Cybersecurity Law*

China’s cybersecurity law, first approved last November, entered into effect June 1 despite calls from 54 foreign business associations\* to reconsider the law and delay its implementation.<sup>14</sup> The law imposes sweeping restrictions on data transfer out of China. Under the law, firms must seek permission from the government to transfer any datasets in excess of 1 terabyte; datasets pertaining to more than 500,000 people; data related to geographic, chemical, engineering, or military matters;† or data pertaining to “critical information infrastructure”—an expansive category, the scope of which is ultimately determined by China’s State Council. To date, “critical infrastructure” has been interpreted very broadly; banks, energy, and transportation companies and firms that provide services to public Chinese entities or are important to national security are included in the law, and the State Council can expand the scope further.<sup>15</sup> Chinese regulators have ruled that even fast food delivery companies are included due to the large number of people they service.<sup>16</sup> The law also permits Chinese regulators to prohibit any overseas data transfers they deem necessary through their own regulations.<sup>17</sup>

Under the law, firms that fall under critical information infrastructure are required to store their data inside China, although China appears to have granted firms a grace period until 2018 to comply with some data storage requirements.‡ As U.S. businesses

\*In May 2017, a broad set of business associations including the U.S.-China Business Council, AmCham China, Business Europe, the Japan Chamber of Commerce and Industry, and the Korea-Business Council sent a letter to the Chinese government urging a delay in the law’s implementation. These groups expressed serious concerns that the law may discriminate against foreign businesses, and stated that the impact of the law encompasses “enormously consequential issues for China’s economy, its relations with economic and commercial partners, and the global economy. Eva Dou, “Global Tech Companies Call on China to Delay Cybersecurity Law,” *Wall Street Journal*, May 15, 2017.

†The law requires approval for transfer of data related to nuclear facilities, chemical biology, national defense, large engineering activities, ocean environmental protection, and sensitive geographic information. In the past, China has interpreted sensitive geographic information very broadly. In 2010, a U.S. geologist was jailed for purchasing information about Chinese oil reserves—which were deemed a state secret—and civilian aviation corridors in China are notoriously narrow as the majority of China’s airspace is under the control of the military, ostensibly for national security purposes. Steven Jiang, “Flying Pains as China Struggles to Keep up with Aviation Growth,” CNN, August 26, 2014; Keith Richburg, “China Sentences American Geologist to 8 Years for Stealing State Secrets,” *Washington Post*, July 5, 2010; Scott Theil, “China’s New Cyber Security Law Is Only 6 Weeks Away,” *DLA Piper*, April 21, 2017.

‡On June 1, Chinese authorities stated that requirements under the law to store personal and “significant” data in China had been waived until 2018; however, Paul McKenzie, a partner at Beijing-based law firm Morrison and Foerster, said implementation of data storage requirements

typically transfer data between their foreign and domestic business operations and many rely on cross-border data transfer to interact with Chinese suppliers and customers, these restrictions will likely complicate the ability of U.S. firms to conduct business in China. For example, companies are starting to fear tightening restrictions will materially impede their ability to run day-to-day business operations, including cross-border communications, obtaining business-critical information, and using collaborative tools such as Google Docs.<sup>18</sup> The U.S. Chamber of Commerce also argues that domestic data storage requirements jeopardize the privacy of companies' and customers' data, as firms are forced to split their data protection resources across multiple data centers, resulting in less protection at each site.<sup>19</sup>

The law also requires firms that interact with critical information infrastructure or that provide services that may affect national security to be subject to a security review by Chinese authorities.<sup>20</sup> If in this review Chinese regulators decide to demand these services be "secure and controllable," foreign firms may be compelled to hand over important intellectual property assets such as source code to Chinese authorities for inspection.<sup>21</sup> A proposed supplementary law published in April empowers the government to compel companies to decrypt data—for example, decrypting secure online communications or unlocking the smartphone of an individual identified by the Chinese government.<sup>22</sup>

These regulations add to several others China adopted over the past two years to gain greater control over Internet firms and online activity. China has already passed a national security law that may compel foreign Internet information firms to hand over source code to Chinese authorities through "secure and controllable" requirements, and has enacted rules restricting the use of virtual private networks (VPNs), which are used by individuals and businesses to circumvent China's extensive censorship apparatus.<sup>23</sup> (For an in-depth assessment of these and other measures used by the Chinese government to control information, see Chapter 3, Section 5, "China's Domestic Information Controls, Global Media Influence, and Cyber Diplomacy.")

U.S. business associations have raised concerns that Chinese restrictions on the flow of information could serve as vehicles for protectionism.<sup>24</sup> For example, restrictions on international data transfer could impede the ability of Chinese consumers to access U.S. cloud computing services, advantaging Chinese firms such as Alibaba that already store most of their data locally.<sup>25</sup> The security review also has no clear criteria for deeming whether a technology firm's products are trustworthy, and may give Chinese authorities license to favor domestic suppliers over U.S. firms on the basis of cybersecurity.<sup>26</sup> According to a survey by the European Union Chamber of Commerce, 22 percent of responding foreign firms reported that China's Internet restrictions had affected 10 percent or more of their revenue in 2017, up from 16 percent of respondents in 2015.<sup>27</sup> A similar survey conducted by AmCham China found that 92 percent of surveyed firms were negatively affected by Chinese restrictions preventing the use of online tools in 2016, a significant increase from 56 percent of respondents in 2015.<sup>28</sup>

---

<sup>18</sup> is still "murky." Sherisse Pham, "China's New Cyber Law Just Kicked in and Nobody's Sure How It Works," CNN, June 1, 2017.

## China's Domestic Economic Rebalancing

Over the past year, the Chinese government has focused on enhancing and sustaining economic growth in advance of the political leadership transitions at the CCP's 19th Party Congress scheduled for October 2017, when the National People's Congress, China's parliament, will appoint officials to the CCP's most important leadership bodies: the Central Committee, the Politburo, and the Politburo Standing Committee.\* The reshuffle of the Politburo Standing Committee will be particularly consequential as it is the primary locus of power within the CCP, and five of its seven members are due to retire in 2017.<sup>29</sup> The CCP maintains power, in part, by delivering economic growth, and President Xi has been focused on ensuring the economy stays stable ahead of the Party Congress, since an economic shock could call into question his ability to lead, and undercut his base of support within the CCP.<sup>30</sup>

According to official statistics, in 2016, China's gross domestic product (GDP)† grew 6.7 percent, comfortably within the 6.5–7 percent target range set by the government.<sup>31</sup> For 2017, the official GDP growth target was lowered to 6.5 percent.‡<sup>32</sup> State-led investment, higher industrial output, and greater domestic consumption allowed China's economic growth to exceed this target, reaching an average 6.9 percent growth in the first half of 2017.<sup>33</sup>

Although the Chinese government has stabilized the economy, it has done so by relying on old growth drivers, like credit-fueled investment (heavily concentrated in the real estate sector), which only adds to China's debt troubles just as the returns from these investments are slowing (see “Debt and Lending Continue to Rise,” later in this section). Progress in enacting policies that would fundamentally reform China's economic model has been limited.<sup>34</sup> Household consumption—an essential element of China's economic rebalancing—is growing but at a sluggish pace due to slow progress in opening the financial sector. Expanding government spending on the social safety net (including healthcare, pensions, education, and poverty alleviation), which would free consumers from the need to save such a large share of their income, would also help boost consumer spending.<sup>35</sup> Repeated pledges to permit greater market access for private domestic and foreign firms remain unfulfilled due to concerns over employment and loss of state control.§ Progress in financial reform faced setbacks in 2016 and 2017 as enormous cap-

\*The CCP Central Committee is a political body comprising China's top political leadership (currently 205 members and 168 alternates). According to the CCP constitution, the Central Committee is vested with the power to select the Politburo (a group of 25 people who oversee the CCP). Within the Chinese political system, the ultimate power resides with the Politburo Standing Committee (nominally elected by the Central Committee). The current Politburo Standing Committee has seven members, with Xi Jinping serving as the General Secretary of the CCP and China's head of state.

†In July 2017, China's National Bureau of Statistics revised its 2002 GDP calculation method to align with international standards and include contributions from new economy sectors such as healthcare and tourism. The methodology will be rolled out gradually and was not used to calculate the data for the first half of 2017. Yawen Chen, “China Revises GDP Calculation Method to Add Healthcare, ‘New Economy,’” Reuters, July 14, 2017; Zheping Huang, “China's Economic Growth Is Driven by All the Things It Says It Wants to Get Rid of,” *Quartz*, July 17, 2017.

‡The Chinese government sets a GDP growth target for every year. In 2005–2011, the target was set at 8 percent, and easily exceeded each year, leading some analysts to call it a minimum acceptable level, rather than a goal in and of itself. However, the GDP target has been gradually reduced since 2012 as the government began to acknowledge China's economic slowdown.

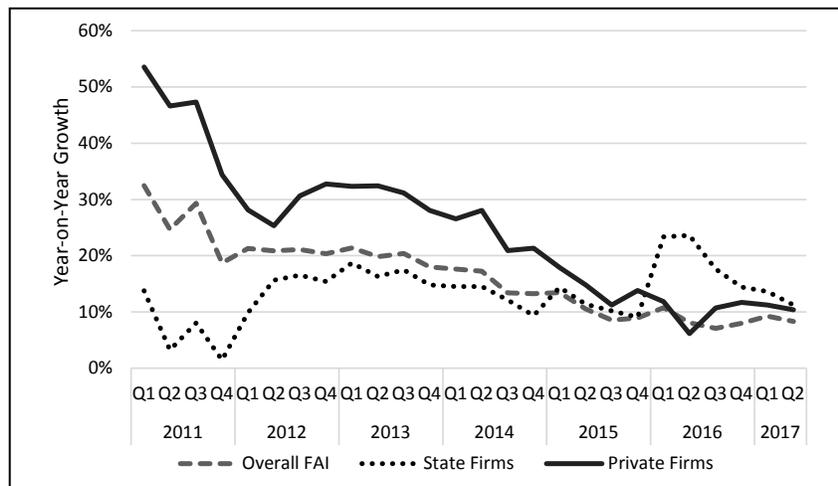
§For more information on China's state-owned enterprises and announced reforms, see U.S.-China Economic and Security Review Commission, “State-Owned Enterprises, Overcapac-

ital outflows forced the Chinese government to defend its currency and reinstitute official and unofficial capital controls (see “Renminbi Reforms and Capital Outflows,” later in this section).

### ***Investment and Real Estate Remain Key Drivers***

Fixed asset investment\*—a traditional driver of China’s growth—continues to buttress China’s economy, but compared with past performance, its contribution is weakening. In the first half of 2017, growth in fixed asset investment slowed to 8.8 percent year-on-year driven primarily by government infrastructure spending (see Figure 3).<sup>36</sup> Of note, since 2015, investment by state-owned enterprises (SOEs) has grown faster than investment by private firms, reversing a long-term trend. In addition, these investments are producing less growth per renminbi (RMB) spent, creating a vicious cycle of high debt levels and investment misallocation. Brian McCarthy, Managing Director and Chief Strategist at the Emerging Sovereign Group, who participated in the Commission’s June 2017 roundtable on the health of China’s economy characterized China as “a fine-tuned capital misallocation regime... rife with market distortions.”<sup>37</sup>

**Figure 3: Growth in Fixed Asset Investment, 2011–Q2 2017**



Source: China’s National Bureau of Statistics via CEIC database.

Real estate is a major driver of fixed asset investment and consumer of industrial manufacturing goods such as steel, aluminum, cement, and glass.<sup>38</sup> In 2015, the Chinese government eased credit access and home purchase restrictions, accelerating property sector growth through 2016.<sup>39</sup> Beginning in mid-2016, the Chinese government, fearing a bubble, attempted to moderate property price growth by increasing mortgage interest rates and slow new development through restricting access of real estate developers to financ-

ity, and China’s Market Economy Status,” in *2016 Annual Report to Congress*, November 2016, 91–114.

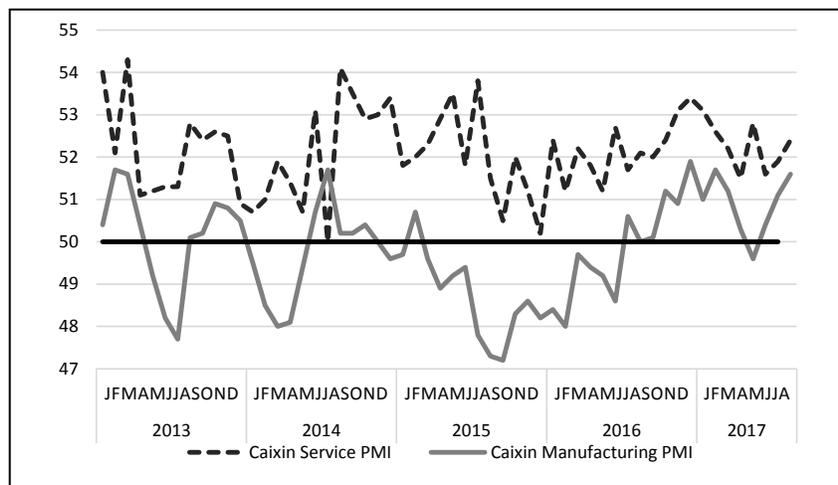
\*Fixed asset investment is a measure of capital spending, or any type of investment by government and the private sector in physical assets such as buildings, machinery, or equipment.

ing, but was only successful in moderating the property prices.<sup>40</sup> In a positive development, average property price growth moderated to 4 percent year-on-year in the first eight months of 2017 compared with 10.5 percent year-on-year increase in the first eight months of 2016.<sup>41</sup> Real estate investment, however, continued to accelerate in 2016 despite government measures to tamp it down, growing 7.9 percent year-on-year in the first eight months of 2017 compared with 5.4 percent year-on-year in the first eight months of 2016.<sup>42</sup>

### **Manufacturing and Exports Rebound**

Beginning in the second half of 2016, China's manufacturing and industrial production recovered from its 2015 and early 2016 slowdown in part due to a rally in the property market and global growth.<sup>43</sup> Unofficial estimates by the Chinese financial media firm Caixin found China's manufacturing Purchasing Managers' Index (PMI),\* a measure of economic expansion and industrial utilization, improved over the last year to reach 51.6 in August 2017 (see Figure 4).<sup>44</sup> A reading below 50 indicates a contraction of the manufacturing sector. The services sector—one of the new sources of economic growth—has continued to expand, with Caixin's service PMI remaining above 50 since mid-2014.<sup>45</sup> Value-added industrial growth—another growth indicator—expanded 6 percent year-on-year in the first eight months of 2017.<sup>46</sup> This recovery is in part due to the pickup of global growth, leading Chinese exports to increase 3.8 percent year-on-year in the first eight months of 2017.<sup>47</sup>

**Figure 4: Caixin Service and Manufacturing PMIs, 2013–August 2017**



### ***Domestic Consumption and Service Sector***

The Chinese government seeks to leverage the consumer spending of the world's second largest economy as a new source of growth. Retail sales of consumer goods—a proxy for overall consumption—showed steady growth increasing 10.5 percent year-on-year in 2016 and 10.6 percent year-on-year in the first eight months of 2017.<sup>48</sup> Consumption's contribution to GDP increased from 60 percent in 2015 to 65 percent in 2016, but fell to 63 percent in the first half of 2017.<sup>49</sup>

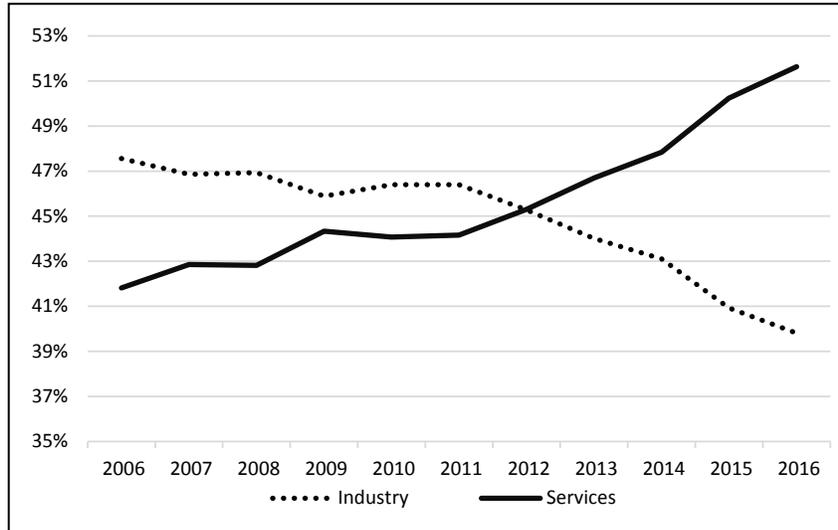
Despite these positive changes, growth in Chinese households' disposable income\* is slowing.<sup>50</sup> In 2016, China's annual national disposable income per capita increased 8.4 percent year-on-year—its slowest annual growth rate in the last five years—to reach \$3,518 (RMB 23,821).<sup>†</sup><sup>51</sup> By comparison, U.S. annual national disposable per capita income totaled \$43,194 in 2016.<sup>52</sup> As the economy rebounded in the first half of 2017, growth of national disposable income per capita accelerated to 8.8 percent year-on-year, but growth in consumption expenditure per capita increased only 7.6 percent year-on-year in the first half of 2017 compared with 8.8 percent in the first half of 2016.<sup>53</sup> Speaking at the Commission's roundtable on the health of China's economy, Gene Ma, chief China economist at the Institute of International Finance, noted household debt was on the rise, likely due to the fact that Chinese households' borrowing is higher to afford the ever more expensive housing.<sup>54</sup> (Because they lack other options due to limited financial reforms, Chinese households continue to favor real estate purchases as a form of investment.)

The contribution of the service sector to GDP continued to grow from 45.3 percent of GDP in 2012 to 51.6 percent in 2016 (see Figure 5).<sup>55</sup> In the first half of 2017, services continued their upward trend, growing 11.5 percent year-on-year.<sup>56</sup> The service sector could grow faster—thus accelerating the rebalance—if the Chinese government reduced regulatory barriers for private domestic and foreign firms and eliminated preferential treatment for SOEs.<sup>57</sup> Debt-ridden SOEs remain a drag on the economy with lower profitability and weaker efficiency than the private sector.<sup>58</sup> In the first seven months of 2017, industrial SOE profits increased just 9.8 percent year-on-year compared with the 14 percent year-on-year growth in the private industrial enterprises' profits over the same time period.<sup>59</sup> In addition, SOEs only accounted for 20 percent of industrial value-added despite controlling 40 percent of industrial assets.<sup>60</sup>

---

\* Disposable personal income is the amount of income households have for spending and saving after income tax.

† Unless noted otherwise, this section uses the following exchange rate throughout: \$1 = RMB 6.77.

**Figure 5: Service Sector as a Share of GDP, 2006–2016**

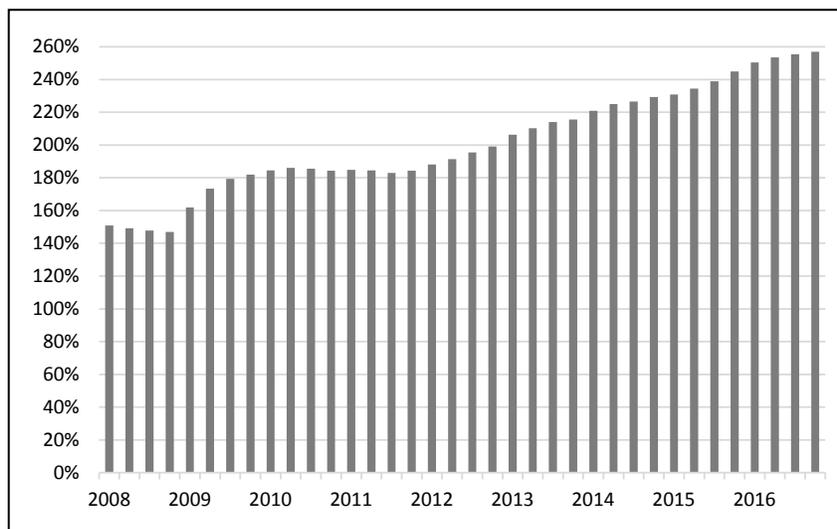
Source: China's National Bureau of Statistics via CEIC database.

### ***Debt and Lending Continue to Rise***

China's high and rising debt levels pose a growing threat to the country's long-term economic stability. In May 2017, Moody's Investors Service downgraded China's sovereign debt rating from Aa3 to A1\* due to "expectation that China's financial strength will erode somewhat over the coming years, with economy-wide debt continuing to rise as potential growth slows."<sup>61</sup> China's total debt (government and private) reached \$27.5 trillion, or 257 percent of GDP, in fourth quarter of 2016, according to data from the Bank for International Settlements, up from 147 percent at the end of 2008 (see Figure 6).<sup>†</sup>

\*The highest investment-grade rating is Aaa, representing minimum credit risk, while the lowest is Baa3, which is listed as medium-grade. China moved from a high-grade rating, Aa3, to an upper-medium grade A1, which remains within the investment grade rating range. Moody's Investors Service, "Moody's Rating System in Brief."

<sup>†</sup>In comparison, the United States' total debt reached \$47 trillion, or 252 percent of GDP, in the fourth quarter of 2016. Bank for International Settlements, "Credit to the Non-Financial Sector," June 6, 2017.

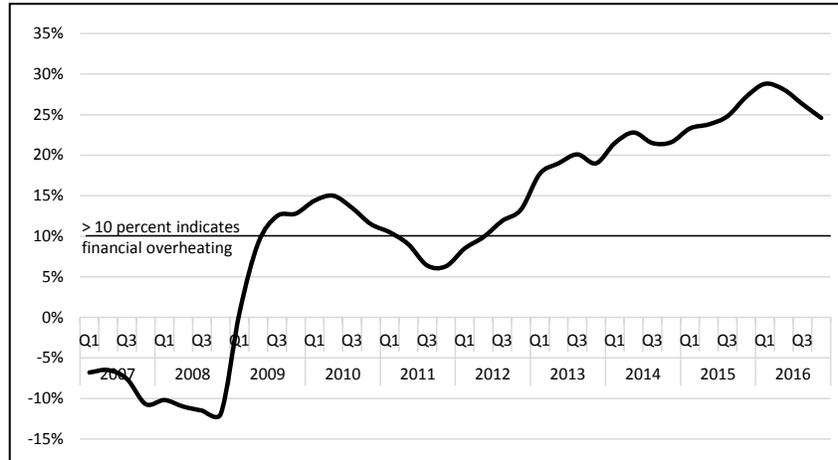
**Figure 6: China's Total Debt-to-GDP Ratio, 2008–2016**

Source: Bank for International Settlements, “Long Series on Total Credit to the Non-Financial Sectors,” June 6, 2017.

Analysts are particularly concerned about the speed of China’s debt buildup.<sup>62</sup> According to Bank for International Settlement data, China’s credit-to-GDP gap,\* a measure of debt accumulation, hit a record 28.8 percent in the first quarter of 2016 before falling to 24.6 percent in the fourth quarter of 2016 (see Figure 7).<sup>63</sup> Based on Bank for International Settlement research, a credit-to-GDP gap above 10 percent signals excessive credit growth and elevated risk of a banking crisis.<sup>†</sup><sup>64</sup>

\*The Bank for International Settlements defines the credit-to-GDP gap as the difference between the credit-to-GDP ratio and its long-term trend. Bank for International Settlements, “Credit-to-GDP Gaps,” December 11, 2016.

†According to IMF economists Luc Laeven and Fabian Valencia, in a systemic banking crisis “a country’s corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. As a result, non-performing loans increase sharply and all or most of the aggregate banking system capital is exhausted.” Based on an analysis of a large cross-section of countries over the past three decades, Bank for International Settlements considers the credit-to-GDP gap a robust early warning indicator for banking crises. For example, prior to the 1997 Asian financial crisis, Thailand’s credit-to-GDP gap in 1995 and 1996 averaged 26.3 percent. In the United States, the credit-to-GDP gap reached a high of 12.4 percent a few months before the global financial crisis began. Bank for International Settlements, “Credit-to-GDP Gaps and Underlying Input,” June 6, 2017; Mathias Drehmann and Kostas Tsatsaronis, “The Credit-to-GDP Gap and Countercyclical Capital Buffers: Questions and Answers,” *Bank for International Settlements*, March 9, 2014, 66; Luc Laeven and Fabian Valencia, “Systemic Banking Crises: A New Database,” *International Monetary Fund Working Paper*, November 2008, 5.

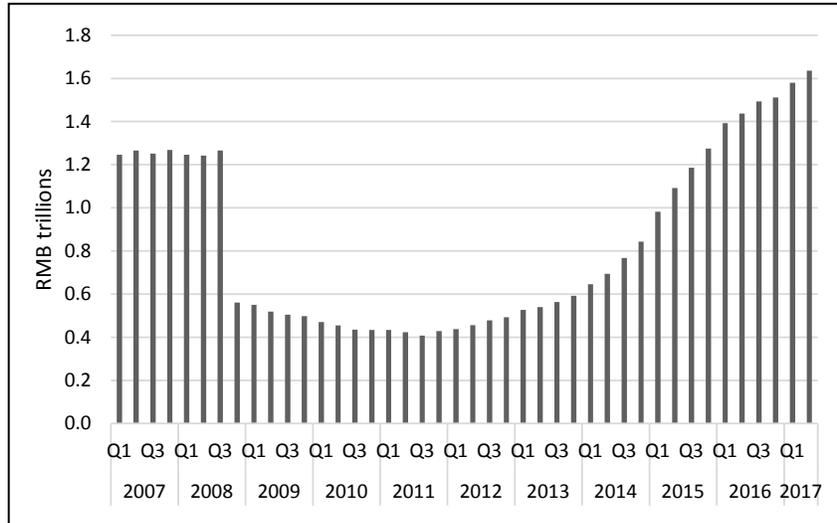
**Figure 7: China's Credit-to-GDP Gap, 2007–2016**

Source: Bank for International Settlements, "Credit-to-GDP Gaps and Underlying Input," June 6, 2017.

The largest category of debt is held by nonfinancial corporations, which comprises two thirds of China's total debt.<sup>65</sup> Corporate debt reached 166 percent of GDP in the fourth quarter of 2016, up from 96 percent in the fourth quarter of 2008.<sup>66</sup> China's corporate debt largely consists of loans made to SOEs by state-owned banks; SOEs continue to enjoy privileged access to bank loans in return for delivering investments and public services in line with Chinese government interests.<sup>67</sup> According to estimates from the International Monetary Fund (IMF), SOEs account for around 55 percent of corporate debt.<sup>68</sup>

Meanwhile, nonperforming loans (NPLs)—loans that are unlikely to be paid back—continue to rise. According to the China Banking Regulatory Commission, the amount of NPLs held by Chinese commercial banks climbed from \$77 billion (RMB 518 billion) in the second quarter of 2009 to \$242 billion (RMB 1.64 trillion) in the second quarter of 2017.<sup>69</sup> While that accounted for 1.74 percent of total loans at the end of June 2017, private estimates suggest the actual NPL ratio may be much higher.\* For example, Fitch Ratings said in a 2016 report that NPLs account for as much as 15 percent to 21 percent of total loans.<sup>70</sup> However, even official data show China's NPL rates have been gaining rapidly since the global financial crisis of 2008 and China's massive stimulus package that kept the economy going (see Figure 8).

\*The discrepancy between the official NPL ratio and unofficial estimates comes from how banks categorize NPLs. The IMF considers a loan nonperforming if interest and principal payments are more than 90 days overdue. In China, a loan more than 90 days overdue is considered nonperforming only if loans are doubtful or loss making. As SOE borrowers are presumed to have government backing, it can be difficult for banks to characterize their loans as nonperforming. Reuters, "China Commercial Banks' NPL Ratio 1.74 Percent at End-June—Regulator," August 14, 2017; Shuli Ren, "CLSA: 15–19% of China's Bank Loans Are Bad," *Barron's Asia*, May 6, 2016; International Monetary Fund, "The Treatment of Nonperforming Loans," June 2005, 4.

**Figure 8: NPLs Held by Chinese Commercial Banks, 2007–Q2 2017**

Source: China Banking Regulatory Commission via CEIC database.

The rapid growth of China's opaque and lightly regulated shadow banking sector is another cause for concern due to the risks it poses to financial stability.\*<sup>71</sup> According to estimates from Moody's, China's shadow banking sector grew 21 percent in 2016 to \$9.5 trillion (RMB 64.5 trillion), equivalent to 87 percent of GDP, up from less than 10 percent a decade ago.<sup>72</sup> Particularly troubling has been the rapid growth in wealth management products (WMPs), the largest component of shadow banking, which rose 30 percent year-on-year to reach \$3.8 trillion (RMB 26 trillion) at the end of 2016.<sup>73</sup>

### What are China's Wealth Management Products?

WMPs are investment products packaged and sold by banks, and then transferred from banks' balance sheets to nonbank financial institutions to circumvent capital reserve requirements and restrictions on bank investment in certain sectors. WMPs promise higher returns on investment than standard bank deposits, but are not insured by the government—although many investors erroneously believe they are—and typically contain various types of assets (including stocks, bonds, and loans) that carry different risks, meaning investors know very little about the product they are buying.<sup>74</sup>

Chinese banks often invest in WMPs packaged by other banks; thus, a single default could spread widely through the banking system, and as the stock of these products grows, so do the risks.<sup>75</sup> In the event of a credit crunch, the growing inter-

\*Shadow banking is lending that occurs outside of the formal banking sector. Examples include wealth management products, credit guarantees, entrusted loans, and peer-to-peer lending.

**What are China's Wealth Management Products?—  
Continued**

dependence between banks could result in large losses for both banks and investors.<sup>76</sup> Some investors find parallels between the buildup of WMPs in China and the growth of complex investment assets in the United States in advance of the financial crisis in 2008. For example, Charlene Chu, senior partner at Autonomous Research said, “We’re starting to see layers of liabilities built upon the same underlying assets, much like we did with subprime asset-backed securities, collateralized debt obligations [CDOs], and CDOs-squared in the [United States].”<sup>77</sup>

The dramatic rise in China’s debt burden can be attributed to the relentless expansion of credit following the global financial crisis, which the government has relied on to generate growth. In 2016, Chinese banks issued a record \$1.87 trillion (RMB 12.65 trillion) in new loans.<sup>78</sup> Credit expansion continued in the first half of 2017, with new loans reaching \$1.18 trillion (RMB 7.97 trillion), a 6 percent increase year-on-year.<sup>79</sup> According to a People’s Bank of China (PBOC) official, 82.5 percent of new lending in the first half of 2017 went to service and high-tech manufacturing industries, while 5.4 percent went to “industries with excess capacity.”<sup>80</sup> Total social financing, a broad measure of credit that includes both bank loans and off-balance-sheet financing, reached \$1.65 trillion (RMB 11.17 trillion) in the first half of 2017, up from \$1.45 trillion (RMB 9.8 trillion) in the first half of 2016, driven by a surge in off-balance-sheet lending.<sup>81</sup> At the same time, credit efficiency declined. The IMF estimates that China’s credit intensity—the amount of new lending needed for an additional unit of output—grew from an average of 1.1 before the global financial crisis to a post-crisis average of 2.7.\*<sup>82</sup>

Chinese leaders have identified the containment of debt and financial risks as a top priority for 2017.<sup>83</sup> In the first quarter of 2017, the PBOC tightened monetary policy by guiding short-term interest rates higher to curb leverage.<sup>84</sup> In addition, financial regulators issued tighter regulations and cracked down on shadow banking.<sup>85</sup> At the July 2017 National Financial Work Conference, a high-level meeting held twice a decade, President Xi Jinping announced the creation of the Financial Stability and Development Committee, a cabinet-level body tasked with coordinating financial regulation and oversight.†

\*In comparison, the United States’ credit intensity dropped from an average of 2.8 before the global financial crisis to a post-crisis average of 1. International Monetary Fund, *Regional Economic Outlook: Asia and Pacific*, April 2014, 36.

†China has separate regulatory bodies for the banking, insurance, and securities industries. China’s financial regulators have at times acted in isolation and even at odds with one another. Lingling Wei, “China’s Xi Jinping Forges New Body to Tighten Financial Controls,” *Wall Street Journal*, July 15, 2017.

### U.S. Financial Exposure to China

A May 2017 report prepared by Commission staff examines the scope of the U.S. financial sector's exposure to China.<sup>86</sup> China's direct financial linkages with the United States are growing but remain modest relative to bilateral trade linkages. Beijing has taken steps to gradually open its financial sector to foreign participation, but U.S. financial firms and investors have displayed limited interest since the reforms are happening as Chinese policymakers impose tighter restrictions on foreign currency conversions and outbound capital flows.<sup>87</sup> The report's key findings include:

- The U.S. financial sector's greatest direct exposure is through China's holdings of U.S. government securities. At the end of 2016, China held \$1.06 trillion in U.S. Treasuries, or 7 percent of publicly held U.S. debt, placing it behind Japan as the second-largest foreign holder of U.S. Treasuries.<sup>88</sup> Nonetheless, the Commission report finds that moves by Beijing to cut its Treasury holdings in 2016 to defend the RMB have had limited effects on the U.S. economy.<sup>89</sup> In the first half of 2017, China increased its holding of U.S. Treasuries, which reached \$1.17 trillion in July 2017.<sup>90</sup>
- U.S. banks have limited direct exposure to China's banking sector. In the fourth quarter of 2016, U.S. banks' exposure to China reached \$78.7 billion—0.6 percent of total U.S. banking assets.<sup>91</sup>
- U.S. investors have very low direct exposure to China's domestic equity markets. At the end of 2016, U.S. investors held \$104 billion in Chinese stocks, just 0.4 percent of their total equity holdings.<sup>92</sup> However, the June 2017 decision of leading index provider MSCI to include RMB-denominated shares of 222\* Chinese companies in its benchmark emerging markets index (effective June 2018) is expected to attract more foreign capital into Chinese stocks.† According to MSCI, the decision will initially draw about \$17 billion of global assets into Chinese stocks and could eventually attract more than \$340 billion of foreign capital if China achieves full inclusion in the index.<sup>93</sup> (For more on U.S. investors' exposure to Chinese companies listed on U.S. stock exchanges, see Chapter 1, Section 2, "Chinese Investment in the United States.")

The Commission report finds economic and financial developments in China can affect U.S. financial markets more substantially through indirect channels, as was evident in the reaction of U.S. equities to China's stock market crashes in 2015 and 2016.<sup>94</sup> More broadly, the impact of China's slowing growth and economic reforms on trade, commodities demand, and investor confidence affects global financial markets, which in turn influence U.S. financial markets.‡<sup>95</sup>

\* Of the 222 firms included in MSCI's decision, 50 are finance firms and 44 industrial firms. Dion Rabouin and Michelle Price, "China Shares Get MSCI Nod in Landmark Moment for Beijing," Reuters, June 21, 2017.

† For more background on MSCI's decision, see U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, July 6, 2017, 4–5.

‡ Goldman Sachs estimates that a 1 percent decline in China's GDP growth reduces U.S. GDP growth by 0.1 percent. Estimates from economists at the Federal Reserve Bank of Dallas are slightly higher: they assess that a 1 percent decline in China's GDP lowers U.S. output growth

### ***Renminbi Reforms and Capital Outflows***

Amid rising financial sector vulnerabilities, Beijing has found it difficult to strike a balance between internationalizing the RMB by making its exchange rate more flexible and relaxing controls on capital flows, and maintaining stability by preventing excessive capital outflows. After the PBOC revised its method for setting the daily reference rate for the RMB in the onshore currency market in August 2015\* and introduced a new basket for setting the RMB daily rate in November 2015 (see Figure 9),† expectations were high for a more market-determined RMB exchange rate.

Yet over the past two years, as China's economic growth moderated and pressure rose on the RMB to depreciate, the Chinese government has intervened repeatedly to support the value of the currency‡ rather than let the market determine its exchange rate.<sup>96</sup> The PBOC is seeking to manage the volatility of the RMB's exchange rate in order to prevent a destabilizing devaluation and reassure global and domestic investors about the stability of China's state-led economic growth.<sup>97</sup> But this policy comes at a significant cost: the PBOC has to buy RMB with its foreign reserves to artificially create demand and support the RMB's value. As a result, China's foreign reserves§ have fallen \$936 billion from their \$3.99 trillion peak in June 2014 to \$3.06 trillion in June 2017.<sup>98</sup>

In attempting to simultaneously defend its exchange rate, control interest rates, and keep its capital account closed China faces an “impossible trinity” problem. Under the “impossible trinity” concept a government can maintain only two of the following three policies: (1) a fixed (or managed) exchange rate, (2) an independent monetary policy, or (3) free international capital flows.<sup>99</sup> The United States maintains open capital markets and control over both the money supply and interest rates, but has relinquished control over the dollar exchange rate. In contrast, Chinese policymakers are trying to control all aspects of the trinity. At the moment, China is choosing to manage its currency and tighten its monetary policy at the expense of choking off capital flows, but it has not resolved the fundamental contradictions in China's economy. If the exchange rate stabilizes, the government may allow more flexibility in the capital controls. In essence, Mr. McCarthy noted during his presentation, Chinese policymakers are “just bouncing around to whatever is the most vulnerable.”<sup>100</sup>

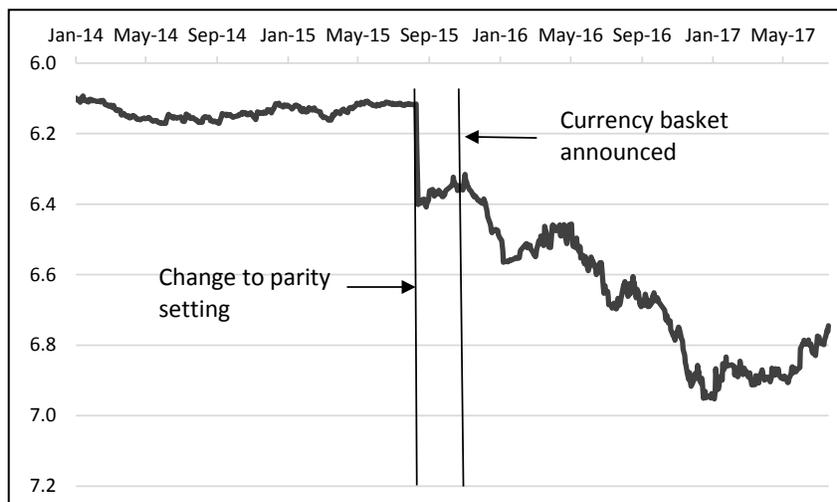
by 0.2 percent. Sharmin Mossavar-Rahmani, “China's Toughest Test Is within Its Walls,” *Financial Times*, January 26, 2016; Goldman Sachs, “Walled In: China's Great Dilemma,” *Investment Strategy Group*, January 2016, 13; Alexander Chudik and Arthur Hinojosa, “Impact of Chinese Slowdown on U.S. No Longer Negligible,” *Federal Reserve Bank of Dallas*, May 2016.

\*The PBOC said it would take into account the previous day's closing exchange rate—which could rise or fall up to 2 percent under the currency's trading band—as well as the exchange rate movements of other major currencies. Nicholas Lardy, “China's Latest Currency Actions Are Market Driven,” *China Economic Watch* (Peterson Institute for International Economics blog), August 11, 2015.

†As of 2017, the China Foreign Exchange Trade Center (CFETC) currency basket includes currencies of China's 24 major trade partners. The U.S. dollar carries a 22.4 percent weight in the basket, followed by the euro with 16.3 percent and the Japanese yen with 11.5 percent. China Foreign Exchange Trade System, “Public Announcement of China Foreign Exchange Trade System on Adjusting Rules for Currency Baskets of CFETC RMB Indices,” December 29, 2016.

‡The PBOC prevents RMB's depreciation in two main ways: Resetting the daily reference rate to a stronger value and buying up the RMB while selling U.S. dollars from its foreign exchange reserves.

§While the exact composition of China's foreign exchange reserves is a state secret, analysts estimate about 60 percent is held in U.S. dollar-denominated assets, mostly U.S. Treasury securities.

**Figure 9: RMB to U.S. Dollar Exchange Rate, January 2014–July 2017**

Source: State Administration of Foreign Exchange via CEIC database.

In addition, the State Administration of Foreign Exchange has sought to slow the pace of RMB leaving the country by tightening controls on outflows.<sup>101</sup> But this approach has lowered China's attractiveness for foreign investors. As Dr. Ma noted in his presentation, investors are really discouraged by the uncertainty of China's capital controls, which has had a significant chilling effect on capital inflows.<sup>102</sup> It has also stalled the RMB's international usage: Based on data from the Society of Worldwide Interbank Financial Telecommunications (SWIFT), in June 2017 only 1.98 percent of global payments were made in RMB, down from 2.09 percent in June 2015.\*<sup>103</sup> Restrictions on capital outflows and foreign currency transactions have also affected Chinese FDI abroad, which declined significantly at the end of 2016 and in early 2017 as new rules took effect (for more on Chinese outbound FDI, see Chapter 1, Section 2, "Chinese Investment in the United States").

## U.S.-China Bilateral Economic Engagement

### *The Trump-Xi Summit*

On April 7, 2017, President Donald Trump hosted a summit with President Xi in Florida. While the daylong meeting led to little in the way of tangible results, the two sides laid the groundwork for future interaction by establishing new diplomatic channels, a timeline for discussion on trade issues, and a cooperative stance on North Korea.<sup>104</sup> After the meeting, the two sides announced the restruc-

\*RMB's international presence is boosted, albeit in a small way, by its inclusion (effective October 2016) in the IMF's Special Drawing Rights (SDR) basket. The SDR is IMF's international reserve asset made up of five major reserve currencies. For more information, see Eswar S. Prasad, "China's Efforts to Expand the International Use of the Renminbi" (prepared for the U.S.-China Economic and Security Review Commission), February 4, 2016, 82–89.

turing of a key bilateral dialogue and established a 100-day plan to tackle outstanding trade and investment issues.

#### *The 100-Day Plan*

The first announcement was a 100-day plan to address trade and investment issues between the United States and China.<sup>105</sup> In May 2017, the U.S. Department of Commerce announced the first deliverable of the 100-day plan: a new agreement with China to promote market access in a range of sectors, including agriculture, financial services, and energy—though in most cases these were promises China had already made in the past.<sup>106</sup> While Secretary of Commerce Wilbur Ross hailed the ten-point agreement as a “herculean accomplishment” that “will help us to bring down the deficit for sure,” observers pointed out that many of the items in the deal are long-time obligations China has failed to meet.<sup>107</sup> Most of the items had a deadline of July 16, 2017, the 100th day after the Trump-Xi meeting.<sup>108</sup> In most cases, while China has adhered to the letter of its commitments made under this agreement, in practice, U.S. companies will continue to face challenges. Table 3 summarizes the progress on key issues addressed in the 100-day plan; a more in-depth assessment follows the table.

**Table 3: The 100-Day Plan Scorecard**

Sector	Status	Notes
U.S. Beef	Complete	First shipments of U.S. beef delivered in June 2017, but only a small minority of U.S. beef producers meet the standards.
Chinese Poultry	Complete	U.S. Department of Agriculture determined China’s poultry slaughter inspection system meets U.S. food safety standards.
U.S. Biotechnology	Partial	Only four of eight pending U.S. biotech products approved.
Electronic Payments	Partial	China released new guidelines for licensing foreign electronic services processing companies, but the licensing process would result in long delays.
U.S. Liquefied Natural Gas (LNG)	Complete	The United States affirmed China’s eligibility to import U.S. LNG.

*Source:* Compiled by Commission staff.

- **U.S. beef:** On June 12, 2017, China and the United States finalized technical standards for U.S. beef exports to China, lifting a 14-year ban.<sup>109</sup> This agreement mirrors a September 2016 announcement by China’s Ministry of Agriculture and the General Administration of Quality Supervision, Inspection and Quarantine that they would lift the ban on U.S. bone-in and boneless beef for livestock under 30 months contingent upon mutually agreed traceability, inspection, and quarantine requirements.<sup>110</sup> China, the world’s second-largest importer of beef, will now permit imports of U.S. bone-in and boneless beef for livestock under

30 months that can be traceable to a U.S. birth farm or first place of residence or port of entry.<sup>111</sup> Because only 15 percent of U.S. cattle are verified through this voluntary beef traceability system, gains for U.S. exporters hoping to reach the Chinese market will be limited.<sup>112</sup>

- **Chinese poultry:** In return for gaining market access for U.S. beef, the United States will allow imports of Chinese cooked poultry.<sup>113</sup> Chinese poultry has been banned in the United States due to food safety concerns (China is prone to outbreaks of avian flu and has a long history of food safety scandals).<sup>114</sup> In March 2016, an audit report published by the U.S. Department of Agriculture’s Food and Safety Inspection Service (FSIS) found China’s poultry slaughter inspection system meets U.S. food safety standards.<sup>115</sup> With this satisfactory audit, on June 16, 2017, the FSIS proposed a regulatory amendment adding China to the list of countries eligible to export poultry products from birds raised and slaughtered in China.<sup>116</sup> The amendment was open for public comment until August 15, after which the FSIS was expected to make a final determination.<sup>117</sup> Meanwhile, China continues to maintain a ban on U.S. poultry, which has been in effect since 2015 after bird flu was discovered in a wild duck. In July 2017 a group of three dozen senators sent a letter to the U.S. Secretary of Agriculture urging him to press China to end this ban.<sup>118</sup>
- **Electronic payments:** China agreed to issue guidelines to allow U.S.-owned suppliers of electronic payment services to “begin the licensing process” in a sector that has been dominated by UnionPay, China’s state-owned payments network.<sup>119</sup> U.S. companies hoped for a speedy access to the Chinese bank card payments market, which, according to the PBOC, reached \$8.4 trillion in 2015 and is projected to become the world’s largest by 2020.<sup>120</sup> Instead, the guidelines released by the PBOC on June 30 lay out a two-step licensing process, possibly with a national security review provision, which means U.S. companies would have to wait two or more years before they can participate in the Chinese market.<sup>121</sup> The release of the guideline marks another in a long line of delays and obstructions used by the Chinese government to deny foreign companies access. China had committed to granting access to foreign payment companies as part of its accession to the World Trade Organization (WTO) in 2000, but did not honor that commitment, prompting a U.S. challenge.<sup>122</sup> In 2012, the WTO ruled China’s rules governing access to its domestic electronic payments market unfairly discriminated against foreign payment card companies. By the time China started taking steps to implement the WTO ruling in 2015, most foreign companies had formed joint ventures in China to gain access.<sup>123</sup> (For an in-depth assessment of U.S. market access to China’s financial services market, see Chapter 1, Section 3, “U.S. Access to China’s Consumer Market.”)
- **Liquefied Natural Gas:** Under the new agreement, the United States welcomed Chinese companies to import LNG from U.S. suppliers, including purchases under long-term

contracts.<sup>124</sup> While U.S. companies are already able to export LNG to China, industry analysts believe this high-level statement of support could encourage investment in U.S. LNG export terminals needed to support higher levels of U.S. exports.<sup>125</sup> China is the fastest-growing market for LNG, as the country transitions from coal generation to a cleaner energy mix.<sup>126</sup> The deal “will let China diversify, somewhat, their sources of supply and will provide a huge export market for American LNG producers,” said Secretary Ross.<sup>127</sup> However, U.S. LNG exporters may see only limited benefits from the deal, at least in the near term. According to data from Bloomberg New Energy Finance, Chinese companies have long-term LNG contracts with non-U.S. suppliers\* through at least 2023 that exceed domestic demand.<sup>128</sup> Moreover, the United States currently lacks the infrastructure to export more LNG, and any increase in exports to China would have to wait until more LNG export terminals are built.<sup>129</sup>

- **Biotechnology:** China promised “to conduct science-based evaluations of all eight pending U.S. biotechnology product applications to assess the safety of the products for their intended use.”<sup>130</sup> Products that pass the safety reviews are to receive certificates “within 20 working days” that will enable them to be sold in China.<sup>131</sup> In June 2017, China approved two genetically modified strains of soybeans and corn developed by Monsanto and Dow Chemical, respectively, for import into its market.<sup>132</sup> Approval for two more genetically modified corn types, from Syngenta and Monsanto, followed in July.<sup>133</sup> However, four more products await approval, leading U.S. companies to complain about the lack of transparency in China’s review process.<sup>†</sup><sup>134</sup> The Chinese government has designated biotechnology as a strategic emerging industry, and in a 2014 speech President Xi said foreign companies should not be allowed to “dominate the [domestic] agricultural biotechnology product market.”<sup>135</sup> Beijing has blocked imports of genetically modified seeds from U.S. companies like Monsanto, and DuPont, citing safety concerns, but U.S. industry analysts believe these policies are aimed at protecting China’s domestic biotechnology industry from foreign competition.<sup>136</sup>

### *The U.S.-China Comprehensive Dialogue*

The second outcome of the Trump-Xi April summit was an agreement to restructure the Strategic and Economic Dialogue (S&ED)‡ creating the United States-China Comprehensive Di-

\*Australia is China’s top LNG supplier, followed by Qatar, and Malaysia. Clyde Russell, “China’s Natural Gas Output, Imports Surge, Beating Target,” Reuters, June 28, 2017.

†For more information about China’s approval process for genetically modified products, see U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, July 6, 2017, 3–4.

‡The U.S.-China Strategic and Economic Dialogue (S&ED) was established by then President Barack Obama and then Chinese President Hu Jintao in April 2009. The S&ED was divided into two tracks. The economic track was headed by the secretary of the treasury and the security track by the secretary of state, but many other high-level officials from a variety of governmental departments also participated. The strategic track focused on bilateral relations, international security issues, global issues, and regional security issues. The economic track focused on promoting recovery and sustainable growth, market-oriented financial systems, trade and investment, and a more robust international financial architecture. House Foreign Affairs Committee, *U.S.-China*

dialogue, which will be divided into four tracks: the Diplomatic and Security Dialogue, Comprehensive Economic Dialogue, Cyber and Law Enforcement Dialogue, and Social and People-to-People Exchange Dialogue.<sup>137</sup> The four dialogues will be scheduled at separate times; the S&ED, by contrast, was held over a two-day period.<sup>138</sup>

The inaugural Comprehensive Economic Dialogue, chaired by the U.S. Departments of Treasury and Commerce, was held on July 19. The meeting concluded with no joint statement, concrete agreements, or future agenda. The two news conferences United States and China were going to hold separately after the meetings were canceled.<sup>139</sup> A statement from U.S. Treasury Secretary Steven Mnuchin and U.S. Commerce Secretary Wilbur Ross said, “China acknowledged our shared objective to reduce the trade deficit which both sides will work cooperatively to achieve.”<sup>140</sup> According to people familiar with the talks, China was unwilling to concede to U.S. demands for concrete plans, including numerical targets, for reducing the U.S. trade deficit and cutting steel capacity.<sup>141</sup>

### ***USTR Launches an Investigation into China’s Industrial Policies***

On August 18, 2017, the Office of the U.S. Trade Representative (USTR) self-initiated an investigation under Section 301 of the U.S. Trade Act of 1974\* to determine “whether acts, policies, and practices of the Government of China related to technology transfer, intellectual property, and innovation are unreasonable or discriminatory and burden or restrict U.S. commerce.”<sup>142</sup> China’s Ministry of Commerce quickly criticized the announcement stating, “China expresses strong dissatisfaction with the United States’ unilateral protectionist action. We urge the U.S. side to respect the facts, ... respect multilateral principles, and act prudently.”<sup>143</sup>

The investigation will concentrate on the Chinese government’s acts, policies, and practices in four main areas: (1) market access barriers such as opaque regulations and joint venture requirements; (2) imposition of non-market terms in licensing and technology-related contracts; (3) state-directed or state-facilitated investment in or acquisition of U.S. companies and assets; and (4) commercial cyberespionage.†<sup>144</sup> The USTR has one year to complete the investigation, consult with the Chinese government regarding problematic practices, and, if necessary, develop an action plan for President Trump.<sup>145</sup>

*Relations: Maximizing the Effectiveness of the Strategic and Economic Dialogue*, prepared statement of David Loevinger, U.S. Department of State, September 10, 2009; Bonnie Glaser, “Strategic & Economic Dialogue Sets Agenda for Cooperation,” *E-Journal on East Asian Bilateral Relations* (October 2009): 2.

\*Section 301 of the Trade Act of 1974 provides the United States with the authority to enforce trade agreements, resolve trade disputes, and open foreign markets to U.S. goods and services. It is a statutory authority under which the United States may impose trade sanctions on foreign countries that either violate trade agreements or engage in other unfair trade practices. When negotiations to remove the offending trade practice fail, the United States may take action to raise import duties on the foreign country’s products as a means to rebalance lost concessions. U.S. Department of Commerce, International Trade Administration, “Section 301.”

†For more information on China’s commercial cyberespionage against U.S. firms, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 4, “Commercial Cyber Espionage and Barriers to Digital Trade in China,” in *2015 Annual Report to Congress*, November 2015.

For many years, the U.S. government has criticized China for its unfair market barriers and trade practices with limited success. The USTR's *2016 Report to Congress on China's WTO Compliance* outlined several major areas of ongoing concern including

*serious problems with intellectual property rights enforcement in China, including in the area of trade secrets; the Chinese government's prolific use of industrial policies favoring state-owned enterprises and domestic national champions, including "secure and controllable" information and communications technology (ICT) policies, export restraints, subsidies, unique national standards and investment restrictions, among other policies; troubling agricultural policies that block U.S. market access; numerous continuing restrictions on services market access; and inadequate transparency.*<sup>146</sup>

If the USTR finds that Chinese government's acts, policies, and practices are "unreasonable or discriminatory," the USTR has the statutory authority to suspend existing trade agreement concessions, impose duties or other import restrictions on foreign goods and services, withdraw or suspend preferential duty treatments, and enter into binding agreements to address the elimination of problematic acts, policies, or practices.<sup>147</sup>

### **United States and China at the WTO**

China's adherence to WTO principles remains mixed, giving rise to continued tensions with the United States over China's lack of compliance with its commitments. The United States continues to criticize China for its ongoing failure to notify its subsidies to the WTO. Over the last year, the United States brought WTO cases against China over its tariff rate quotas on certain agricultural goods, and subsidies to aluminum producers. At the same time, China has initiated a case against its trade partners for continuing to treat China as a nonmarket economy. Key developments in U.S.-China engagement at the WTO are discussed in the following subsections. Ongoing WTO cases between the United States and China are summarized in Addendum I.

### ***China Brings Market Economy Status Dispute to the WTO***

In December 2016, China launched a legal challenge at the WTO after the United States and EU maintained China's status as a non-market economy (NME).<sup>148</sup> Beijing believes its trade partners are obligated to grant it market economy status (MES) following the expiration of section 15(a)(ii) of its WTO Accession Protocol on December 11.<sup>149</sup> In China's 2001 WTO accession agreement, Beijing agreed to provisions allowing its trade partners to automatically treat it as an NME for the purposes of antidumping (AD) enforcement for 15 years.<sup>150</sup> This agreement allowed countries to use values from a third country in a similarly situated economic position—not Chinese prices or costs—for AD calculations, unless China could demonstrate market economy conditions prevailed in the relevant industry (the so-called "surrogate country" approach).<sup>151</sup> Beijing had hoped it would be recognized as a market economy following the provision's expiration, despite repeated instances of Chinese companies selling

exports at prices below the cost of production—a practice known as “dumping.”<sup>152</sup> If China is granted MES, its trading partners will no longer be able to determine the costs of Chinese goods using surrogate values, which many believe more accurately reflect what a market-based price of a Chinese product would be. This would likely result in a significant reduction of dumping margins on Chinese products to the detriment of U.S. companies and workers.\*

On April 3, 2017, the WTO Dispute Settlement Body established a panel to review China’s claim that the EU is violating its WTO commitments by treating China as an NME.<sup>153</sup> Despite requesting consultations with both the United States and the EU, at this stage China chose to pursue a case only against the EU—an indicator China may be using a “divide and conquer” strategy because it believes it has a better case against the EU.<sup>154</sup>

The United States applies a six-step statutory test<sup>†</sup> for determining whether a country or sector qualifies as a market economy. The Secretary of Commerce makes this determination. In contrast, current EU law names specific countries—including China—as NMEs.<sup>155</sup> At the time China lodged its complaint, the EU was considering legislation to remove the NME country list and make NME arguments against foreign countries on a sector-by-sector basis.<sup>‡</sup> The EU has expressed frustration that China would bring its WTO case while the law is being considered, because if the law is adopted it would eliminate the measures China is challenging.<sup>156</sup> In a statement during a WTO meeting on March 21, 2017, the EU said China’s case “is unnecessary and ultimately incapable of being fruitful,” while also calling it an attack on the “ongoing internal legislative process of the European Union.”<sup>157</sup>

The potential economic fallout of the EU granting China MES worries U.S. policymakers, with unnamed U.S. officials from the USTR and the U.S. Department of Commerce warning their EU counterparts in December 2015 that granting China MES would amount to “unilaterally disarming” Europe’s trade defenses against China.<sup>158</sup> Six months later, a bipartisan group of 18 U.S. senators sent a letter to EU Trade Commissioner Cecilia Malmström urging the EU to rule against granting China MES. The letter stated that granting China MES would “thwart global efforts to secure China’s compliance with its international trade obligations,” and “could have a destabilizing impact in certain global sectors, including the steel industry.”<sup>159</sup>

\*For more on China’s MES, see U.S.-China Economic and Security Review Commission, “State-Owned Enterprises, Overcapacity, and China’s Market Economy Status,” in *2016 Annual Report to Congress*, November 2016, 114–119.

†These six factors are: (1) The extent to which the currency of the foreign country is convertible into the currency of other countries; (2) The extent to which wage rates in the foreign country are determined by free bargaining between labor and management; (3) The extent to which joint ventures or other investments by firms of other foreign countries are permitted in the foreign country; (4) The extent of government ownership or control of the means of production; (5) The extent of government control over the allocation of resources and over the price and output decisions of enterprises; and (6) Such other factors the administering authority considers appropriate. Tariff Act of 1930, Pub. L. No. 103–465, 1930, codified at 19 U.S.C. §1677(18).

‡The EU agreed on a new AD methodology on October 3, 2017. The new rules will eliminate explicit differences between market and non-market economies, and instead consider a variety of factors to determine whether there are “significant market distortions, or a pervasive state’s influence on the economy.” Among the factors to be considered are “state policies and influence, the widespread presence of state-owned enterprises, discrimination in favour of domestic companies and the lack of independence of the financial sector.” The European Commission, “Commission Welcomes Agreement on New Anti-Dumping Methodology,” October 3, 2017.

### ***United States Challenges Chinese Tariff Rate Quotas for Rice, Wheat, and Corn***

On December 15, 2016, the United States brought a complaint against China's "opaque and unpredictable" management of tariff rate quotas (TRQs) for rice, wheat, and corn, which "breaches China's WTO commitments and undermines American farm exports."<sup>160</sup> In its WTO accession agreement, China agreed to apply low tariff rates to imports of grain until total imports have reached a specific quota (5.32 million metric tons for rice, 9.64 million metric tons for wheat, and 7.2 million metric tons for corn).<sup>161</sup> After the quota is reached, the imports are assessed a 65 percent tariff.<sup>162</sup> The USTR alleges "China's application criteria and procedures are unclear, and China does not provide meaningful information on how it actually administers the tariff-rate quotas."<sup>163</sup> The USTR also argues that China maintains "impermissible restrictions on importation, and [fails] to provide notice of the total quantities permitted to be imported and changes to the total quantity permitted to be imported," which prevents exporters from gaining fair access to China's market."<sup>164</sup>

China is an important market for U.S. agricultural exports, though these volumes would be much higher if China permitted imports in adherence to its WTO commitments. According to the U.S. Department of Agriculture, China's TRQs for wheat, rice, and corn "were worth over \$7 billion in 2015. If the TRQs had been fully used, China would have imported as much as \$3.5 billion worth of additional crops" in that year.<sup>165</sup>

In September 2016, the USTR brought a separate case against Chinese domestic subsidies for rice, wheat, and corn,\* which the USTR estimates to be \$100 billion in excess of China's WTO commitments.

### ***United States and China Battle over Steel and Aluminum Industry Subsidies***

Though steel and aluminum overcapacity are global issues, China accounts for most of the excess capacity† due to massive subsidies and other forms of support.‡ The United States challenged China's subsidization of its steel and aluminum firms at the WTO (though the challenge is currently suspended) and launched Section 232 investigations§ into the impact of imports on national security and U.S.-based aluminum and steel firms.

\*For more on this case, see U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, October 7, 2016.

†For example, an estimate from Duke University's Center on Globalization, Governance & Competitiveness shows in 2015 China was responsible for 46 percent of steel overcapacity. Lukas Brun, "Overcapacity in Steel: China's Role in a Global Problem," *Duke University*, September 2016.

‡For an in-depth assessment of the impact of Chinese overcapacity on U.S. economy and national security, see U.S.-China Economic and Security Review Commission, "State-Owned Enterprises, Overcapacity, and China's Market Economy Status," in *2016 Annual Report to Congress*, November 2016, 103–114.

§Section 232 of the Trade Expansion Act of 1962 (19 U.S.C. § 1862) authorizes the Secretary of Commerce to conduct comprehensive investigations to determine the effects of imports of any article on the national security of the United States. The Secretary's report to the President, prepared within 270 days of initiation, focuses on whether the importation of the article in question is in such quantities or under such circumstances as to threaten to impair the national security. The President can concur or not with the Secretary's recommendations, and, if necessary, take action to "adjust the imports of an article and its derivatives." In addition, the Secretary can recommend, and the President can take, other lawful non-trade related actions necessary to address

The United States has long censured the Chinese government for not adhering to its WTO obligations by failing to report its subsidies to the WTO. Per the WTO Agreement on Subsidies and Countervailing Measures, member countries must report all of their subsidies each year.<sup>166</sup> In October 2015, China submitted a notification for national subsidies for 2009–2014, but this notification did not outline China’s provincial and local subsidies, where most of China’s government financial support is provided.<sup>167</sup> In January 2016, the USTR claimed this notification was incomplete and provided WTO members a list of China’s subsidies for one of its largest steel firms and reported on the Chinese banking regulator’s instructions to increase direct funding and loosen financing restrictions to the steel sector.<sup>168</sup> In October 2016, the USTR again raised its concerns about China’s incomplete notification by laying out subsidy programs that China’s notification did not mention and requesting additional clarification.<sup>169</sup>

On April 12, 2017, the United States and the EU jointly challenged China’s steel subsidies before the WTO Committee on Subsidies and Countervailing Measures, identifying more than \$1 billion in subsidies to Hebei Iron and Steel Company, Shougang Steel, Chongqing Steel, and Baoshan Iron and Steel in 2011–2014 for the Chinese government to explain.<sup>170</sup> The Chinese government responded to U.S. allegations by claiming yet again that its support for the steel industry is aimed at improving environmental protection, technological innovation, and industrial restructuring, and thus is not prohibited under the WTO.<sup>171</sup> The USTR has not yet challenged this latest response.

China has struck back against U.S. complaints by accusing the United States of failing to notify the WTO about alleged federal and state steel subsidy programs.<sup>172</sup> China claims these programs have *de jure* specificity—where a subsidy is clearly limited to a particular company, industry, group of industries, or geographic region—and thus is a violation of the WTO rules.<sup>173</sup> At the federal level, the Chinese government alleges \$76.9 million in AD and countervailing duties (CVDs) paid out by U.S. Customs and Border Protection in 2008–2015 and \$7.7 billion in pensions provided to retired U.S. workers by the U.S. Department of Labor’s Pension Benefit Guaranty Group since 2003 are in fact subsidies.<sup>174</sup> China accuses U.S. Customs and Border Protection of subsidizing the U.S. steel industry by imposing CVDs to offset subsidized imports from China and other countries.<sup>175</sup> The WTO permits countries to enact ADs and CVDs after an investigation into the impact of subsidies on the importing countries’ industries.<sup>176</sup> In addition, the Pension Benefit Guaranty Group—an independent government agency that guarantees pension benefits for private firms—is funded not by the federal government but by insurance premiums from private sector employers, assets held by pension funds it takes over, investment income, and bankruptcy assets from insolvent pension plans.<sup>177</sup> The USTR has yet to formally respond to these allegations.

In a separate action, in January 2017, the USTR requested consultations with China at the WTO regarding China’s subsidies to

---

the threat. U.S. Department of Commerce, “Fact Sheet: Section 232 Investigations: The Effect of Imports on the National Security,” April 20, 2017.

its primary aluminum producers since 2007.<sup>178</sup> The United States alleges the Chinese government has provided low-cost financing and inputs to its primary aluminum producers, which displaced and impeded U.S. imports of primary aluminum into China and the global market, suppressed global prices, and increased China's global market share.<sup>179</sup> (As of August 2017, the USTR appears to have put this case on hold and has not requested the WTO compose a panel.<sup>180</sup>)

Beyond the WTO, in April 2017 President Trump directed the Department of Commerce to conduct investigations, under Section 232 of the Trade Expansion Act of 1962, into whether steel and aluminum imports are a threat to national security.<sup>181</sup> If the Department of Commerce determines these imports impair national security, the U.S. president would be able to “adjust imports” by imposing trade measures such as tariffs and quotas.<sup>182</sup> None of the nine steel-related cases the Department of Commerce has initiated have found a threat to national security.<sup>183</sup> In 2001, then President George W. Bush initiated this option to address iron ore and semifinished steel imports following the required Department of Commerce investigation; in that case, Section 232 was not applied because “there [was] no probative evidence that imports of iron ore or semifinished steel threaten to impair U.S. national security.”<sup>184</sup>

## Addendum I: WTO Cases

## Ongoing WTO Cases Brought by the United States against China

No.	Title	Request for Consultations	Panel Report	Status
DS508	Export Duties on Certain Raw Materials	July 13, 2016	Panel established but not yet composed November 2016	The United States requested consultations with China over China's export subsidies on nine raw materials.*
DS511	Domestic Support for Agricultural Producers	September 13, 2016	Panel composed June 2017	The United States requested consultations with China over China's domestic support for rice, wheat, and corn in excess of its WTO commitments.
DS517	Tariff Rate Quotas for Certain Agricultural Products	December 15, 2016	Panel established but not yet composed September 2017	The United States argues China's tariff rate quota treatment for rice, wheat, and corn is nontransparent, unpredictable, and violates China's WTO commitments.
DS519	Subsidies to Producers of Primary Aluminum	January 12, 2017	In consultations; in August 2017 the USTR put this case on hold	The United States alleges China provides certain producers of primary aluminum with subsidies, including artificially cheap loans and artificially low-priced inputs for production, such as coal, electricity, and alumina.

Source: WTO; compiled by Commission staff. For a list of all U.S. WTO cases against China, see <https://www.uscc.gov/uto-cases>.

## Ongoing WTO Cases Brought by China against the United States

No.	Title	Request for Consultations	Panel Report	Status
DS515	Measures Related to Price Comparison Methodologies	December 12, 2016	In consultations; panel not yet formed	China's complaint alleges the United States has failed to treat China as a market economy for the purposes of calculating antidumping duties.

Source: WTO; compiled by Commission staff. For a list of all Chinese WTO cases against the United States, see <https://www.uscc.gov/uto-cases>.

\*The materials are antimony, cobalt, copper, graphite, lead, magnesia, talc, tantalum, and tin.

## ENDNOTES FOR SECTION 1

1. U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.
2. U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.
3. U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.
4. U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>; U.S. Census Bureau, *Trade in Goods with World, Not Seasonally Adjusted*. <https://www.census.gov/foreign-trade/balance/c0015.html>.
5. U.S. Census Bureau, *Trade in Goods with China*. <https://www.census.gov/foreign-trade/balance/c5700.html>.
6. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3 U.S. International Transactions, Expanded Detail by Area and Country*, July 18, 2017.
7. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3 U.S. International Transactions, Expanded Detail by Area and Country*, July 18, 2017.
8. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3 U.S. International Transactions, Expanded Detail by Area and Country*, July 18, 2017.
9. Frank Tang, “Beijing Doubles Down on Luring Foreign Investors Back to China, But Will They Come?” *South China Morning Post*, June 30, 2017.
10. American Chamber of Commerce in the People’s Republic of China, “2017 China Business Climate Survey Report,” January 2017.
11. American Chamber of Commerce in the People’s Republic of China, “2017 China Business Climate Survey Report,” January 2017.
12. James McGregor, “How Trump Can Win with China,” *Foreign Policy*, February 3, 2017.
13. Sui-Lee Wee, “As Zeal for China Dims, Global Companies Complain More Boldly,” *New York Times*, April 19, 2017.
14. KPMG, “Overview of China’s Cybersecurity Law,” February 2017; Sherisse Pham, “China’s New Cyber Law Just Kicked in and Nobody’s Sure How It Works,” CNN, June 1, 2017.
15. *China Law Translate*, “2016 Cybersecurity Law.” <http://www.chinalawtranslate.com/cybersecuritylaw/?lang=en>; KPMG, “Overview of China’s Cybersecurity Law,” February 2017; Scott Theil, “China’s New Cyber Security Law Is Only 6 Weeks Away,” *DLA Piper*, April 21, 2017.
16. Yuan Yang, “China’s Cyber Security Law Rattles Multinationals,” *Financial Times*, May 30, 2017.
17. Scott Theil, “China’s New Cyber Security Law Is Only 6 Weeks Away,” *DLA Piper*, April 21, 2017.
18. Konghuo Chua, “China’s New VPN Clampdown Hurts Business, U.S. Group Says,” Bloomberg, July 12, 2017; Yuan Yang, “Multinationals in China Brace for Online Crackdown,” *Financial Times*, July 31, 2017.
19. U.S. Chamber of Commerce, “Business without Borders: The Importance of Cross-Border Data Transfers to Global Prosperity,” May 18, 2014.
20. *China Law Translate*, “2016 Cybersecurity Law.” <http://www.chinalawtranslate.com/cybersecuritylaw/?lang=en>.
21. Yuan Yang, “China’s Cyber Security Law Rattles Multinationals,” *Financial Times*, May 30, 2017.
22. Yuan Yang, “China’s Cyber Security Law Rattles Multinationals,” *Financial Times*, May 30, 2017.
23. Christina Larson, “China Adopts Cybersecurity Law Despite Foreign Opposition,” Bloomberg, November 7, 2016; Konghuo Chua, “China’s New VPN Clampdown Hurts Business, U.S. Group Says,” Bloomberg, July 12, 2017.
24. James Zimmerman, “AmCham China Statement on Cybersecurity Law,” *American Chamber of Commerce in China*, November 7, 2016.
25. Christina Larson, “China Adopts Cybersecurity Law Despite Foreign Opposition,” Bloomberg, November 7, 2016.
26. Yuan Yang, “China’s Cyber Security Law Rattles Multinationals,” *Financial Times*, May 30, 2017.
27. Konghuo Chua, “China’s New VPN Clampdown Hurts Business, U.S. Group Says,” Bloomberg, July 12, 2017.
28. American Chamber of Commerce in the People’s Republic of China, “2017 China Business Climate Survey Report,” January 2017, 47.
29. Alice Miller, “Projecting the Next Politburo Standing Committee,” *China Leadership Monitor*, March 1, 2016, 6.

30. Reuters, "China's Xi Demands 'Strong Hands' to Maintain Stability Ahead of Congress," September 19, 2017.
31. China's National Bureau of Statistics via CEIC database; Li Keqiang, *Report on the Work of the Government* (Fourth Session of the 12th National People's Congress, Beijing, China, March 5, 2016), 15. [http://online.wsj.com/public/resources/documents/NPC2016\\_WorkReport\\_English.pdf](http://online.wsj.com/public/resources/documents/NPC2016_WorkReport_English.pdf).
32. Li Keqiang, *Report on the Work of the Government* (Fifth Session of the 12th National People's Congress, Beijing, China, March 5, 2017), 13. [http://online.wsj.com/public/resources/documents/NPC2017\\_WorkReport\\_English.pdf](http://online.wsj.com/public/resources/documents/NPC2017_WorkReport_English.pdf).
33. China's National Bureau of Statistics via CEIC database.
34. International Monetary Fund, 2017 Article IV Consultation, IMF Country Report No. 17/247, August 2017.
35. International Monetary Fund, 2017 Article IV Consultation, IMF Country Report No. 17/247, August 2017.
36. China's National Bureau of Statistics via CEIC database; Kevin Yao and Elias Glenn, "China's Economy Holds up in May But Slowing Investment Points to Cooling," Reuters, June 14, 2017.
37. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Brian McCarthy, July 12, 2017.
38. China's National Bureau of Statistics via CEIC database.
39. Matthew Kong, "China Property Watch: Soaring Land Prices and Slowing Sales Prospects to Curtail Recovery," *S&P Global*, September 7, 2016; Moody's Investor Service, "Moody's: China's Regulatory Loosening will Ease Residential Property Sales Decline," April 28, 2015.
40. Michael Lelyveld, "China Seeks Solution for High Home Prices," Radio Free Asia, July 17, 2017; Han Yi and Lucille Liu, "Curbs Cool Down Shanghai Mortgage Fever," Caixin, April 17, 2017.
41. China's National Bureau of Statistics via CEIC database.
42. China's National Bureau of Statistics via CEIC database.
43. China's General Administration of Customs via CEIC database; Investing.com, "China Caixin Manufacturing Purchasing Managers Index." <https://www.investing.com/economic-calendar/chinese-caixin-manufacturing-pmi-753>.
44. Caixin and IHS Markit, "Caixin China General Manufacturing PMI," Markit Economics, September 1, 2017.
45. Caixin and IHS Markit, "Caixin China General Services PMI," September 5, 2017.
46. China's National Bureau of Statistics via CEIC database.
47. China's General Administration of Customs via CEIC database; International Monetary Fund, *World Economic Outlook: April 2017: Gaining Momentum*, April 2017.
48. China's National Bureau of Statistics via CEIC database.
49. China's National Bureau of Statistics via CEIC database.
50. Lingling Wei, "China's Growth Masks Unresolved Debt and Real-Estate Problems," *Wall Street Journal*, July 17, 2017; China's National Bureau of Statistics via CEIC database.
51. China's National Bureau of Statistics via CEIC database.
52. U.S. Department of Commerce, Bureau of Economic Analysis, "Personal Income and Its Disposition," July 28, 2017.
53. China's National Bureau of Statistics via CEIC database.
54. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Gene Ma, July 12, 2017; Lingling Wei, "China's Growth Masks Unresolved Debt and Real-Estate Problems," *Wall Street Journal*, July 17, 2017.
55. China's National Bureau of Statistics via CEIC database.
56. China's National Bureau of Statistics via CEIC database.
57. International Monetary Fund, 2017 Article IV Consultation, IMF Country Report No. 17/247, August 2017, 15–16.
58. International Monetary Fund, 2017 Article IV Consultation, IMF Country Report No. 17/247, August 2017, 15.
59. China's National Bureau of Statistics via CEIC database.
60. International Monetary Fund, 2017 Article IV Consultation, IMF Country Report No. 17/247, August 2017, 15.
61. Moody's Investors Service, "Moody's Downgrades China's Rating to A1 from Aa3 and Changes Outlook from Stable to Negative," May 24, 2017.
62. Wojciech Maliszewski et al., "Resolving China's Corporate Debt Program," *International Monetary Fund Working Paper*, October 2016, 2.

63. Bank for International Settlements, "Credit-to-GDP Gaps and Underlying Input," June 6, 2017.
64. Mathias Drehmann and Kostas Tsatsaronis, "The Credit-to-GDP Gap and Countercyclical Capital Buffers: Questions and Answers," *Bank for International Settlements*, March 9, 2014, 66.
65. Bank for International Settlements, "Long Series on Total Credit to the Non-Financial Sectors," June 6, 2017.
66. Bank for International Settlements, "Credit to the Non-Financial Sector," June 6, 2017.
67. Edoardo Campanella, "Beijing's Debt Dilemma," *Foreign Affairs*, June 29, 2017; Keith Bradsher, "China Can't Sustain Its Debt-Fueled Binge," *New York Times*, May 23, 2017; U.S.-China Economic and Security Review Commission, Chapter 1, Section 2, "State-Owned Enterprises, Overcapacity, and China's Market Economy Status," in *2016 Annual Report to Congress*, November 2016, 44.
68. David Lipton, "Rebalancing China: International Lessons in Corporate Debt," *International Monetary Fund*, June 2016.
69. China Banking Regulatory Commission via CEIC database.
70. Engen Tham, "'Ghost Collateral' Haunts Loans across China's Debt-Laden Banking System," Reuters, May 31, 2017.
71. Bloomberg News, "China's \$8.5 Trillion Shadow Bank Industry Is Back in Full Swing," April 18, 2017; Elias Glenn, "China's Shadow Banking Rebounds in March, Household Loans Surge despite Curbs," Reuters, April 16, 2017.
72. Andrew Collier, "China's Shadow Finance Time-Bomb Could Trigger Crisis," *Financial Times*, June 26, 2017; Karen Yeung, "Risks to China's Financial System May Continue to Grow despite Tighter Regulations," *South China Morning Post*, May 10, 2017.
73. Gabriel Wildau, "China Launches Fresh Attack on Shadow Banking Risk," *Financial Times*, February 22, 2017.
74. Gabriel Wildau, "China Launches Fresh Attack on Shadow Banking Risk," *Financial Times*, February 22, 2017; Tom Nunlist, "Faith-Based Banking: Wealth Management Products in China," CKGSB Knowledge, December 19, 2016.
75. Tom Nunlist, "Faith-Based Banking: Wealth Management Products in China," *CKGSB Knowledge*, December 19, 2016.
76. Tom Nunlist, "Faith-Based Banking: Wealth Management Products in China," *CKGSB Knowledge*, December 19, 2016.
77. Bloomberg, "Default Chain Reaction Threatens China Wealth Management Market Worth 35% of GDP," May 30, 2016.
78. People's Bank of China via CEIC database.
79. People's Bank of China via CEIC database.
80. Xinhua, "China Records Higher New Loans, Slower M2 Expansion in H1," July 12, 2017.
81. People's Bank of China via CEIC database; Bloomberg News, "China's \$8.5 Trillion Shadow Bank Industry Is Back in Full Swing," April 18, 2017.
82. Wojciech Maliszewski et al., "Resolving China's Corporate Debt Program," *International Monetary Fund Working Paper*, October 2016, 38.
83. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Gene Ma, July 12, 2017; John Ruwitch and Yawen Chen, "Moody's Downgrades China, Warns of Fading Financial Strength as Debt Mounts," Reuters, May 23, 2017; Kevin Yao and Elias Glenn, "China Vows to Contain Corporate Debt Levels as Inflation Heats Up," Reuters, January 7, 2017.
84. Sofia Horta e Costa, "China's Deleveraging Bill Tops \$500 Billion," Bloomberg, May 7, 2017; *Economist*, "China Tightens Monetary Policy (Discreetly)," February 11, 2017; Bloomberg News, "China Tightens Monetary Policy by Raising Money Market Rates," February 2, 2017.
85. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Gene Ma, July 12, 2017; Kevin Yao, "China's April Loans Growth Highlights Debt Challenges," Reuters, May 12, 2017; Gabriel Wildau, "China Bank Overseer Launches 'Regulatory Windstorm,'" *Financial Times*, April 18, 2017.
86. Michelle Ker, "U.S. Financial Exposure to China," *U.S.-China Economic and Security Review Commission*, May 9, 2017.
87. Michelle Ker, "U.S. Financial Exposure to China," *U.S.-China Economic and Security Review Commission*, May 9, 2017, 3.
88. U.S. Department of the Treasury, *Major Foreign Holders of Treasury Securities*, February 15, 2017; U.S. Department of the Treasury, *Monthly Statement of the Public Debt of the United States*, December 31, 2016.

89. Michelle Ker, "U.S. Financial Exposure to China," *U.S.-China Economic and Security Review Commission*, May 9, 2017, 7–9.
90. U.S. Department of the Treasury, *Major Foreign Holders of Treasury Securities*, September 18, 2017.
91. Bank for International Settlements, "Consolidated Positions on Counterparties Resident in China," April 21, 2017; Bank for International Settlements, "Summary of Consolidated Statistics, by Nationality of Reporting Bank," April 21, 2017.
92. World Federation of Exchanges, "Equity—1.1—Domestic Market Capitalization (USD Millions)," January 2017; U.S. Department of the Treasury, *Table 2D: U.S. Long-Term Securities Held by Foreign Residents*; U.S. Department of the Treasury, *Table 1F: Foreign Long-Term Securities at Current Market Value by U.S. Residents*; U.S. Department of the Treasury, *Table 2.F: Foreign Long-Term Securities Held by U.S. Residents*.
93. Dion Rabouin and Michelle Price, "China Shares Get MSCI Nod in Landmark Moment for Beijing," Reuters, June 21, 2017; Sam Mamudi and Ben Bartenstein, "China Stocks Win MSCI Inclusion; Initial Market Reaction Muted," Bloomberg, June 20, 2017.
94. Michelle Ker, "U.S. Financial Exposure to China," *U.S.-China Economic and Security Review Commission*, May 9, 2017, 10–13.
95. Michelle Ker, "U.S. Financial Exposure to China," *U.S.-China Economic and Security Review Commission*, May 9, 2017, 12–13.
96. People's Bank of China via CEIC database; Gabriel Wildau and Tom Mitchell, "China: Renminbi Stalls on Road to Being a Global Currency," *Financial Times*, December 11, 2016.
97. Saibal Dasgupta, "China Sells off Stock of U.S. Treasury Securities to Protect Yuan," Voice of America, December 30, 2016; Bloomberg News, "China Dilutes Dollar Role in Currency Basket, Adds 11 More," December 29, 2016.
98. People's Bank of China via CEIC database.
99. *Economist*, "What Is the Impossible Trinity?" September 10, 2016.
100. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Brian McCarthy, July 12, 2017.
101. Bloomberg, "China Gets Strict on Forex Transactions to Stop Money Exiting Abroad," January 2, 2017.
102. U.S.-China Economic and Security Review Commission, *Roundtable on the Health of China's Economy*, presentation of Gene Ma, July 12, 2017.
103. SWIFT, "RMB Internationalization: Can the Belt and Road Revitalize the RMB?" July 28, 2017.
104. Toluse Olorunnipa and Jennifer Jacobs, "Trump-Xi Summit Accomplishment: Getting to Know One Another," Bloomberg, April 7, 2017.
105. Alana Abramson, "President Trump and China's Xi Jinping Gave Very Different Reports of Their Phone Call," *Time*, April 12, 2017.
106. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.
107. Associated Press, "Commerce Secretary Ross Calls the New U.S.-China Trade Deal a 'Herculean Accomplishment,'" May 11, 2017; Ayesha Rascoe and Michael Martina, "U.S., China Agree to First Trade Steps under 100-Day Plan," Reuters, May 12, 2017.
108. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.
109. U.S. Department of Agriculture, *U.S., China Finalize Details to Send U.S. Beef to China*, June 12, 2017.
110. U.S. Department of Agriculture, *China Lifts Ban on U.S. Beef Exports*, September 26, 2016.
111. U.S. Department of Agriculture, "China Moves to Reopen Market to U.S. Beef," September 22, 2016; U.S. Department of Agriculture, Agricultural Marketing Service, *Beef Exports to the People's Republic of China*. <https://www.ams.usda.gov/services/imports-exports/beef-ev-china>.
112. Greg Henderson, "DroversTV: What Will It Take for U.S. Beef to Enter China?" *Drovers*, May 18, 2017.
113. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.
114. *Inside U.S. Trade*, "U.S.-China 100-Day Plan Focused on Tackling Beef, Poultry, Biotech, Epay Issues," May 11, 2017.
115. *Inside U.S. Trade*, "U.S.-China 100-Day Plan Focused on Tackling Beef, Poultry, Biotech, Epay Issues," May 11, 2017.
116. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017; U.S.

Department of Agriculture, Food Safety and Inspection Service, “Eligibility of the People’s Republic of China (PRC) to Export to the United States Poultry Products from Birds Slaughtered in the PRC,” *Federal Register* 82:115 (June 16, 2017).

117. U.S. Department of Agriculture, Food Safety and Inspection Service, “Eligibility of the People’s Republic of China (PRC) to Export to the United States Poultry Products from Birds Slaughtered in the PRC,” *Federal Register* 82:115 (June 16, 2017); U.S. Department of Agriculture, Food Safety and Inspection Service, *Processing and Slaughter Inspection Systems*, June 16, 2017.

118. U.S. Senate to the Honorable Sonny Perdue, Secretary, U.S. Department of Agriculture, July 27, 2017. <https://www.warner.senate.gov/public/index.cfm/2017/7/senators-call-for-reopening-of-u-s-poultry-export-to-china>.

119. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.

120. Shu Zhang and Matthew Miller, “China Opens Its Markets to Foreign Bank Companies,” Reuters, June 7, 2016.

121. Doug Palmer, “China Drags Its Feet on Opening Market to Electronic Payments like Visa and MasterCard,” *Politico*, July 12, 2017; Sumeet Chatterjee, “Exclusive: U.S. Bank Card Companies to Seek Licenses to Operate in China in Months,” Reuters, July 20, 2017.

122. World Trade Organization, China—Certain Measures Affecting Electronic Payment Services, Dispute DS413.

123. Shawn Donnan and Tom Mitchell, “Trump Administration Hails U.S.-China Trade Deal,” *Financial Times*, May 12, 2017; Don Weinland, “Bank Card Groups to Lose China Market Share,” *Financial Times*, December 5, 2016.

124. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.

125. Christopher Smith, “U.S. Statement on LNG to China May Signal a Shift to a Less Transparent Approach to Energy Policy,” *Forbes*, May 15, 2017; Christine Buurma, Naureen S. Malik, and Ryan Collins, “Trump’s China Deal Boosts U.S. LNG without Rule Change,” Bloomberg, May 12, 2017.

126. Tom DiChristopher and Leslie Shaffer, “Despite Trump Trade Deal, U.S. Natural Gas Exports to China Face Obstacles,” CNBC, May 12, 2017; Nathaniel Taplin, “China Trade Plan Is Big Deal for Natural Gas,” *Wall Street Journal*, May 12, 2017.

127. Toluse Olorunnipa and Dan Murtaugh, “U.S. Inks China Trade Deal Promoting Finance Services, Beef,” Bloomberg, May 11, 2017.

128. Toluse Olorunnipa and Dan Murtaugh, “U.S. Inks China Trade Deal Promoting Finance Services, Beef,” Bloomberg, May 11, 2017.

129. Tom DiChristopher and Leslie Shaffer, “Despite Trump Trade Deal, U.S. Natural Gas Exports to China Face Obstacles,” CNBC, May 12, 2017.

130. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.

131. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.

132. Brian Spegele, “China Greenlights Imports of Two New GMO Products,” *Wall Street Journal*, June 14, 2017.

133. Dominique Patton, “DuPont, Monsanto Urge Transparent GMO Crop Reviews in China,” Reuters, July 17, 2017.

134. Dominique Patton, “DuPont, Monsanto Urge Transparent GMO Crop Reviews in China,” Reuters, July 17, 2017.

135. Andrew Anderson-Sprecher and Ma Jie, “China Considering Major Revisions to Biotechnology Regulations,” *USDA Foreign Agricultural Service Global Agricultural Information Network Report*, December 21, 2015.

136. Alex Capri, “Why the China-U.S. Trade Deal Is a Win for Some, but Meaningless for Most,” *Forbes*, May 15, 2017; Andrew Anderson-Sprecher and Ma Jie, “China Considering Major Revisions to Biotechnology Regulations,” *USDA Foreign Agricultural Service Global Agricultural Information Network Report*, December 21, 2015.

137. White House, *Briefing by Secretary Tillerson, Secretary Mnuchin, and Secretary Ross on President Trump’s Meetings with President Xi of China*, April 7, 2017; Nike Ching, “U.S.-China to Launch 4 Rounds of Talks, as Trump ‘Looks Forward’ to Beijing Visit,” Voice of America, April 24, 2017.

138. Bonnie Glaser, “Strategic & Economic Dialogue Sets Agenda for Cooperation,” *E-Journal on East Asian Bilateral Relations* (October 2009): 2; Nike Ching, “U.S.-China to Launch 4 Rounds of Talks, as Trump ‘Looks Forward’ to Beijing Visit,” Voice of America, April 24, 2017.

139. Reuters, “U.S., Chinese Delegations Cancel News Conferences on Economic Talks,” July 19, 2017.

140. Reuters, "U.S., China Fail to Agree on Trade, Casting Doubt on Other Issues," July 19, 2017.
141. Jacob M. Schlesinger and Ian Talley, "Lack of Progress at U.S.-China Talks Raises Stakes for Trump," *Wall Street Journal*, July 20, 2017.
142. Office of the U.S. Trade Representative, "USTR Announces Initiation of Section 301 Investigation of China," August 18, 2017.
143. Michael Martina, "China Calls U.S. Intellectual Property Probe 'Irresponsible,'" Reuters, August 21, 2017.
144. Office of the U.S. Trade Representative, "Initiation of Section 301 Investigation; Hearing; and Request for Public Comments: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation," USTR-2017-0016.
145. Office of the U.S. Trade Representative, "Initiation of Section 301 Investigation; Hearing; and Request for Public Comments: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation," USTR-2017-0016.
146. Office of the U.S. Trade Representative, *2016 Report to Congress on China's WTO Compliance*, January 2017, 4.
147. Office of the U.S. Trade Representative, "Section 301," February 6, 2017; Office of the U.S. Trade Representative, "Trade Enforcement Activities," December 21, 2016, 174-175.
148. World Trade Organization, *United States—Measures Related to Price Comparison Methodologies*, Dispute DS515, December 12, 2016; World Trade Organization, *European Union—Measures Related to Price Comparison Methodologies*, Dispute DS516, December 12, 2016.
149. Xinhua, "Refusal to Drop Surrogate Country Approach Puts Trade Ties at Risk," December 12, 2016.
150. World Trade Organization, "Accession of the People's Republic of China," November 23, 2001.
151. Alan Price, Timothy Brightbill, and Scott Nance, "The Treatment of China as a Non-Market Economy Country after 2016," *Wiley Rein LLP*, September 15, 2015, 2.
152. Xinhua, "Refusal to Drop Surrogate Country Approach Puts Trade Ties at Risk," December 12, 2016; Christian Tietje and Karsten Nowrot, "Myth or Reality? China's Market Economy Status under WTO Anti-Dumping Law after 2016," *Policy Papers on Transnational Economic Law No. 34* (Transnational Economic Law Research Center, December 2011).
153. *China Trade Extra*, "WTO Establishes Panel in China-EU Fight over Market Economy Status," April 3, 2017.
154. *China Trade Extra*, "China Will Seek Panel with EU, Not U.S., in Market Economy Dispute," March 14, 2017.
155. *China Trade Extra*, "China to Advance Market Economy Fight with EU at Special DSB Meeting in April," March 24, 2017.
156. *China Trade Extra*, "China to Advance Market Economy Fight with EU at Special DSB Meeting in April," March 24, 2017.
157. *China Trade Extra*, "U.S., EU Blast China for Requesting WTO Panel in Market Economy Fight with Europe," March 21, 2017.
158. Christian Oliver, Shawn Donnan, and Tom Mitchell, "U.S. Warns Europe over Granting Market Economy Status to China," *Financial Times*, December 28, 2015.
159. *China Trade Extra*, "Senators Warn Malmstrom against Giving China Market Economy Status," June 3, 2016.
160. Office of the U.S. Trade Representative, *United States Challenges Chinese Grain Tariff Rate Quotas for Rice, Wheat, and Corn*, December 15, 2016.
161. Office of the U.S. Trade Representative, *United States Challenges Chinese Grain Tariff Rate Quotas for Rice, Wheat, and Corn*, December 15, 2016.
162. U.S. Department of Agriculture, *China's Growing Demand for Agricultural Imports*, February 2015, 10.
163. Office of the U.S. Trade Representative, *United States Challenges Chinese Grain Tariff Rate Quotas for Rice, Wheat, and Corn*, December 15, 2016.
164. Office of the U.S. Trade Representative, *United States Challenges Chinese Grain Tariff Rate Quotas for Rice, Wheat, and Corn*, December 15, 2016.
165. Office of the U.S. Trade Representative, *United States Challenges Chinese Grain Tariff Rate Quotas for Rice, Wheat, and Corn*, December 15, 2016.
166. World Trade Organization, "Notifications under the Agreement on Subsidies and Countervailing Measures." [https://www.wto.org/english/tratop\\_e/scm\\_e/notif\\_e.htm](https://www.wto.org/english/tratop_e/scm_e/notif_e.htm).

167. World Trade Organization, “New and Full Notification Pursuant to Article XVI:1 of the GATT 1994 and Article 25 of the Agreement on Subsidies and Countervailing Measures,” October 25, 2017.

168. Doug Palmer, “U.S.-China Subsidy Slamfest at WTO,” *Politico*, April 28, 2016; World Trade Organization, “Questions from the United States Regarding the New and Full Notification of China,” January 25, 2016.

169. World Trade Organization, “Follow-up Questions from the United States Regarding the New and Full Notification of China,” October 21, 2016.

170. World Trade Organization, “Questions from the United States and the European Union to China Pursuant to Article 25.8 of the Agreement,” April 12, 2017.

171. World Trade Organization, “Replies to Questions Posed by the United States Regarding the New and Full Notification of China,” April 21, 2017.

172. World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement,” April 12, 2017; World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement - Corrigendum,” April 20, 2017.

173. U.S. Department of Commerce, International Trade Administration, *Subsidy Allegation*. <http://enforcement.trade.gov/petitioncounseling/pcp-subsidy-allegation.html>.

174. World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement,” April 12, 2017; World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement - Corrigendum,” April 20, 2017.

175. World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement,” April 12, 2017; World Trade Organization, “Request from China to the United States Pursuant to Article 25.8 of the Agreement - Corrigendum,” April 20, 2017; World Trade Organization, “Anti-Dumping, Subsidies, Safeguards: Contingencies, Etc.” [https://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/agrm8\\_e.htm](https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm).

176. World Trade Organization, “Anti-Dumping, Subsidies, Safeguards: Contingencies, Etc.” [https://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/agrm8\\_e.htm](https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm).

177. Pension Benefit Guaranty Group, “Mission Statement.” <https://www.pbgc.gov/about/who-we-are.html>.

178. Office of the U.S. Trade Representative, *Obama Administration Files WTO Complaint on China’s Subsidies to Aluminum Producers*, January 17, 2017.

179. World Trade Organization, “China—Subsidies to Producers of Primary Aluminum: Request for Consultations by the United States,” January 12, 2017.

180. Megan Cassella, “Administration Hands U.S. Aluminum Industry a Win over China,” *Politico*, August 9, 2017.

181. Jack Caporal, “Trump to Order National Security Investigation of Imported Steel,” *Inside U.S. Trade’s World Trade Online*, April 19, 2017; Toulouse Olorunnipa et al., “Trump Administration Opens Trade Investigation on Aluminum,” Bloomberg, April 26, 2017.

182. U.S. Department of Commerce, *Frequently Asked Questions: Section 232 Investigations: The Effect of Steel Imports on the National Security*, April 21, 2017.

183. Lewis Leibowitz, “Industry’s Available International Trade Remedies Will Not Alter Global Realities,” *Steel Market Update*, April 20, 2016.

184. U.S. Department of Commerce, Bureau of Export Administration, *The Effects of Imports of Iron Ore and Semi-Finished Steel on the National Security*, October 2001.

## **SECTION 2: CHINESE INVESTMENT IN THE UNITED STATES**

### **Key Findings**

- Chinese government policies, coupled with increased investor uncertainty in China, have contributed to increased investment flows to the United States in recent years. In 2017, Chinese investment flows to the United States are expected to decline relative to 2016 as the Chinese government seeks to limit capital outflows and fend off risks from mounting corporate debt.
- Sectors of the U.S. economy deemed strategic by the Chinese government are more likely to be targeted by Chinese firms for investment, while Chinese investments in nonstrategic sectors like entertainment, real estate, and hospitality are declining amid Chinese Communist Party efforts to limit capital outflows and reduce corporate debt.
- Some Chinese firms seek to obscure their dealings in the United States through U.S.-based shell companies or attempt to drive down the value of U.S. assets through sophisticated cyber espionage campaigns. These firms are becoming more sophisticated in their attempts to circumvent Committee on Foreign Investment in the United States (CFIUS) reviews and other U.S. investment regulations.
- Greenfield investments in the United States are not subject to the CFIUS review process, which may raise national security risks. Although the number of Chinese greenfield investments in the United States remains limited compared to acquisitions of U.S. assets, federal laws and screening mechanisms do not sufficiently require federal authorities to evaluate whether a greenfield investment may pose a national security threat.
- The application of the sovereign immunity defense to commercial cases presents a potential risk for U.S. businesses and individuals, allowing Chinese state-owned enterprises (SOEs) to conduct unlawful activity in the United States without legal consequences. Some Chinese SOEs are evading legal action in the United States by invoking their status as a foreign government entity under the Foreign Sovereign Immunities Act.
- The opaque nature of China's financial system makes it impossible to verify the accuracy of Chinese companies' financial disclosures and auditing reports. Chinese businesses continue to list on U.S. stock exchanges to raise capital, despite operating outside the laws and regulations governing U.S. firms.
- U.S. regulators have struggled to deter Chinese fraud schemes on U.S. exchanges, with Chinese issuers stealing billions of dol-

lars from U.S. investors. Efforts to prosecute the issuers of the fraudulent securities have been unsuccessful, with Chinese regulators choosing not to pursue firms or individuals for crimes committed by Chinese companies listed overseas.

- Some Chinese companies operate with little oversight under China’s opaque financial system, leaving U.S. investors exposed to exploitative and fraudulent schemes perpetrated by China-based issuers. Negotiations between the Public Company Accounting Oversight Board and its counterparts in China have resulted in little progress toward securing increased cross-border transparency and accountability.

### **Recommendations**

The Commission recommends:

- Congress consider legislation updating the Committee on Foreign Investment in the United States (CFIUS) statute to address current and evolving security risks. Among the issues Congress should consider are:
  - Prohibiting the acquisition of U.S. assets by Chinese state-owned or state-controlled entities, including sovereign wealth funds.
  - Requiring a mandatory review of any transaction involving the acquisition of a controlling interest in U.S. assets by Chinese entities not falling under the above class of acquiring entities.
  - Requiring reviews of investments in U.S.-based greenfield assets by Chinese-controlled entities to assess any potential harm to U.S. national and economic security.
  - Expanding the definition of “control” to include joint ventures, venture capital funds, licensing agreements, and other arrangements or agreements that enable Chinese entities to access and/or determine the disposition of any asset.
  - Prohibiting any acquisition or investment that would confer “control” with regard to critical technologies or infrastructure. The U.S. Departments of Homeland Security, Commerce, and Defense shall prepare and regularly update a list of critical technologies or infrastructure that would not be eligible for acquisition or investment by any Chinese entities to ensure U.S. economic and national security interests are protected.
  - Including a net economic benefit test to assess the impact of acquisitions by Chinese entities in the United States to ensure they advance U.S. national economic interests.
  - Requiring that any proposed acquisition of a media property by a Chinese entity be assessed in terms of the acquiring entity’s history of adhering to Chinese Communist Party propaganda objectives and its potential to influence public opinion in the United States.
  - Authorizing an independent review panel, appointed by Congress, to review the actions and activities of CFIUS on a continuing basis.

- Allowing any CFIUS member agency to bring a transaction up for review and investigation.
- Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.
- Congress amend the Foreign Sovereign Immunities Act (FSIA) of 1976 to:
  - Allow U.S. courts to hear cases against a foreign state's corporate affiliates under the commercial activity exception.
  - Require Chinese firms to waive any potential claim of sovereign immunity if they do business in the United States.
- Congress consider legislation to ban and delist companies seeking to list on U.S. stock exchanges that are based in countries that have not signed a reciprocity agreement with the Public Company Accounting Oversight Board (PCAOB).

### **Introduction**

China is increasing its investments in the United States, particularly in sectors deemed strategic by the Chinese Communist Party (CCP). These investments support the global competitiveness of Chinese firms by allowing them to access capital and technologies not available in their home market. Chinese mergers and acquisitions in the United States present a new set of challenges, not just for U.S. businesses and economic interests, but also for regulators protecting vital U.S. national security interests.

Chinese companies are also increasing their presence on U.S. stock markets. Today, around 130 Chinese companies are listed on major U.S. stock exchanges, including Chinese Internet giants Alibaba, Tencent, and Baidu. However, the complex legal structures of these U.S. listings, as well as China's state secrecy laws and opaque auditing practices allow some Chinese companies to shield themselves from U.S. legal and regulatory jurisdiction. As a result, these listings could pose significant risks for unsuspecting U.S. investors who buy into U.S.-listed Chinese companies.

This section examines trends and implications of increased Chinese investment in the United States, and the activities of Chinese companies listed on U.S. stock exchanges. In doing so, it draws from the Commission's January 2017 hearing on Chinese investment in the United States, contracted research, consultations with economic and foreign policy experts, and open source research and analysis.

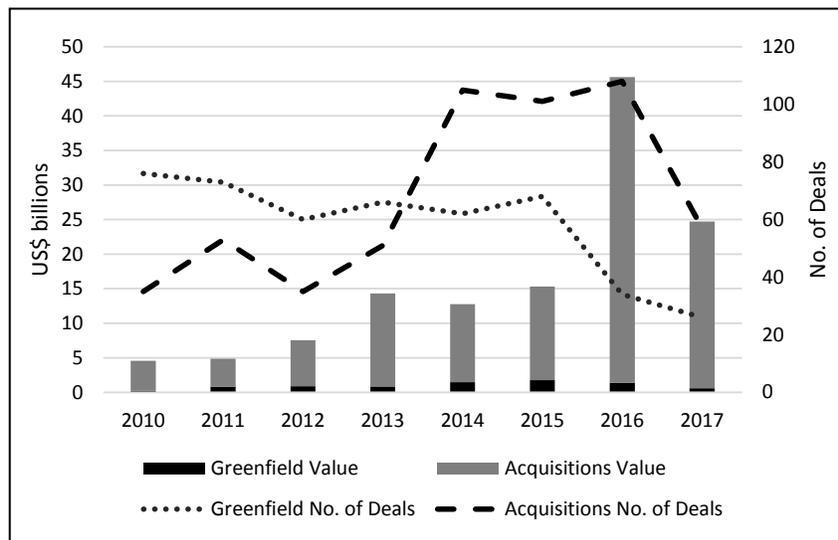
### **Chinese Investment in the United States**

Chinese annual foreign direct investment (FDI) flows to the United States have increased significantly in recent years, fueled by the pursuit of higher returns abroad amid China's economic slowdown and government policies encouraging investment abroad. Official statistics from the U.S. Bureau of Economic Analysis indicate the United States attracted more than \$373 billion of global FDI flows in 2016, of which around \$27.6 billion, or 7.4 percent, came from

China.<sup>1</sup> However, official estimates do not include Chinese entities based outside China, suggesting the actual level of FDI flows from China is much higher.\* From 2010 to 2016, the private U.S. economic consultancy Rhodium Group estimates annual Chinese investment in the United States rose from \$4.6 billion to \$46.2 billion.<sup>2</sup>

Through the first half of 2017, Rhodium Group estimates Chinese FDI flows to the United States totaled \$24.7 billion.<sup>3</sup> Based on January to August 2017 data, Rhodium Group estimates Chinese investment will total between \$25 and \$30 billion by the end of the year.<sup>4</sup> The expected slowdown in China's FDI flows to the United States in 2017 is the result of Beijing's efforts to tighten controls on capital outflows, limiting Chinese firms' ability to invest money abroad (this emerging trend is discussed in greater detail in "Drivers of Chinese Investment," later in this section).<sup>5</sup>

**Figure 1: Chinese Investment in the United States, 2010–H1 2017**



Source: Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.

\*Unless noted otherwise, this section relies on private estimates of Chinese FDI in the United States from Rhodium Group. Both U.S. and Chinese official statistics underestimate the volume of Chinese investment because they do not fully account for flows of FDI, including investment routed through Hong Kong and other offshore financial centers. Official data are also provided after a significant delay, hindering analysis. For example, as the International Trade Administration (ITA), a bureau within the U.S. Department of Commerce, stated in a 2013 report produced at the Commission's recommendation, estimates from Rhodium Group showed \$6.5 billion of FDI flows from China to the United States in 2012, while U.S. government estimates showed only \$219 million for the same year. ITA noted that private sector valuations employ different definitions of FDI, data gathering mechanisms, and accounting methods that lead to differences in reported value of investments. U.S. Department of Commerce, International Trade Administration, *Report: Foreign Direct Investment (FDI) in the United States from the China and Hong Kong SAR*, July 17, 2013.

### **Rhodium Group's 2016 Report Highlights Increasing Chinese Investment**

In the 2016 report *Chinese Investment in the United States: Recent Trends and the Policy Agenda* contracted by the Commission, Rhodium Group assessed recent patterns of Chinese investment in the United States. The report's key findings include:

- Chinese global outbound investment has increased rapidly in recent years, but there remains significant room for additional growth. If China's outbound investment follows the historical trend of other emerging economies, its global outbound FDI stock will increase by hundreds of billions of dollars in the next decade.
- Chinese government policies impact Chinese outbound FDI indirectly (through economic policies) and directly (through financial incentives and other policies encouraging foreign investment in strategic sectors).
- Chinese investment in the United States presents unique economic and national security challenges because China has a non-democratic political system without rule of law and allows the state to intervene heavily in the economy.
- The discrepancy between market access for Chinese investors in the United States and U.S. investors in China remains a key concern, particularly in industries dominated by large Chinese state-owned enterprises (SOEs).\*

There are potential economic benefits of investment: Chinese FDI can help U.S. firms secure the capital necessary to grow their business and hire more workers (or save workers' jobs), leading to an expansion of the U.S. tax base, improving productivity, and raising overall competitiveness.<sup>6</sup> In 2016, Rhodium Group estimates Chinese companies added approximately 50,000 U.S. jobs, bringing the total number of U.S. jobs provided by Chinese companies to 141,000.† However, Chinese investment can also pose risks to the United States, with Chinese FDI targeting sectors of strategic importance to the United States. Given the state's controlling position in the Chinese economy and the opaque nature of its role in business activities, these investments raise concerns about the ability of U.S. regulators to manage the risks of investment from state-influenced entities. Chinese investments, for example, raise concerns about the transfers of valuable U.S. technologies to China.<sup>7</sup> They can also make it more difficult for U.S. firms to compete in international markets due to the anticompetitive practices of many Chinese firms.<sup>8</sup>

\*For the full report, see Thilo Hanemann and Daniel H. Rosen, "Chinese Investment in the United States: Recent Trends and the Policy Agenda," *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 2016.

†These employment figures only account for full-time jobs provided directly by U.S. subsidiaries of Chinese companies. The majority of U.S. jobs provided by Chinese firms were acquired during mergers and acquisitions. Daniel H. Rosen and Thilo Hanemann, "New Neighbors 2017 Update: Chinese FDI in the United States by Congressional District," *Rhodium Group*, April 2017, 4.

### ***Drivers of Chinese Investment***

A combination of Chinese government policies and increased investor uncertainty in China contributed to the rise of investment outflows to the United States from 2010 to 2016. Some factors driving China's increased investment in the United States during this period include:

- *Pursuit of advanced technologies:* China's industrial policy seeks to enhance indigenous innovation and develop the country's high-technology and environmental industries (including biotechnology, high-end manufacturing equipment, and new-generation information technology).<sup>9</sup> To this end, the government laid out policies in its 13th Five-Year Plan\* and other state plans offering a combination of tax incentives and subsidies to encourage investment in research and development (R&D) and advanced technologies while boosting market demand for Chinese products and firms (for more on China's policies relating to the development of advanced technologies, see Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology").<sup>10</sup>
- *Higher returns abroad:* With the renminbi's (RMB) depreciation in recent years and rising concerns over the stability of China's economy, Chinese investors increasingly look for returns abroad, particularly in low-risk environments like the United States.<sup>11</sup> According to data from China's State Administration of Foreign Exchange, capital outflows from China totaled around \$647 billion in 2015 and \$640 billion in 2016, up from \$118 billion in 2014.<sup>12</sup>
- *Reduced bureaucratic red tape:* In 2013 and 2014, China's State Council updated its regulations for outbound FDI, raising outbound investment approval limits and removing regulatory requirements for nonstrategic investments.<sup>13</sup> As a result, the threshold for approving overseas investments by local firms and deals increased from \$300 million to \$1 billion, with most deals under the threshold not requiring approval from the National Development and Reform Commission (NDRC).<sup>14</sup> In 2015, the State Administration of Foreign Exchange also streamlined the review process for foreign exchange approvals, giving local bank branches the authority to verify exchanges for outbound investments.<sup>15</sup> These measures aim to decentralize investment management and deepen the role of markets in resource allocation, leading to reduced investment review periods and increased outbound flows, particularly for private companies investing in nonstrategic sectors.<sup>16</sup>
- *Political uncertainty:* Chinese President and General Secretary of the CCP Xi Jinping's anticorruption campaign began in 2013, and has spurred capital outflows as many Chinese officials and businesspeople move their wealth abroad in hopes of avoiding government scrutiny and having their assets seized.<sup>17</sup> According to China's Central Commission for Discipline Inspection, in the first half of 2017 more than 210,000 Chinese officials were punished for corruption.†

\*For more information on China's 13th Five-Year Plan and related state plans and their targets, see Katherine Koleski, "The 13th Five-Year Plan," *U.S.-China Economic and Security Review Commission*, February 14, 2017.

†Among those convicted of graft and other corruption charges were eight provincial and ministerial officials in June 2017, whose sentences included terms of up to life in prison. Xinhua,

More recently, the Chinese government is attempting to limit capital outflows and fend off risks from mounting corporate debt, making it unlikely Chinese FDI in 2017 will reach 2016 levels.<sup>18</sup> In the final months of 2016, FDI flows became more restricted as Chinese regulators began cracking down on “irrational” FDI outflows (or investments that do not support government objectives) and ramping up measures to stem capital outflows amid fears of capital flight.<sup>19</sup> Government measures to limit investments include:

- *Capital controls:* In November 2016, Reuters reported China’s State Administration of Foreign Exchange had begun reviewing capital transfers abroad worth \$5 million or more and would be increasing scrutiny of all outbound deals as well as re-reviewing deals that already received government approval.<sup>20</sup>
- *Reviews of large overseas deals:* In the first half of 2017, Chinese banking regulators began increasing regulatory scrutiny of deals by large overseas investors like Anbang Insurance Group, HNA Group, and Dalian Wanda Group as part of a government effort to limit capital outflows and fend off risks from mounting corporate debt.<sup>21</sup> New regulations include barring state-owned banks from making loans to large private firms investing overseas, a decision that was approved in June 2017 by President Xi.<sup>22</sup> The China Banking Regulatory Commission is also taking the lead on investigating whether certain companies used high-interest financial products and overseas loans to finance foreign deals.<sup>23</sup>
- *Restrictions on extralegal forms of financing:* Since June 2017, Chinese companies that rely on extralegal forms of funding—including high-interest financial products and overseas loans—to finance overseas deals have been temporarily banned from selling new products and are undergoing reviews of their past financial filings and records of past deals. The ban came after Chinese firms like Wanda, Fosun, HNA Group, and Anbang increased their investments abroad using offshore financing and money raised by issuing financial products that are not controlled by the Chinese government.<sup>24</sup> In response to the new policy, Wanda’s founder Wang Jianlin has pursued what he describes as an “asset-light” strategy, selling off properties that require loans to operate; in June 2017, Wanda sold off 13 of its China theme parks to the real estate firm Sunac China for \$6.5 billion and 77 of its hotels to the Chinese property developer R&F Properties for \$3 billion.<sup>25</sup>
- *Crackdown on “irrational” investments:* In August 2017, China’s State Council announced new policies to discourage what it refers to as “irrational” foreign investments.<sup>26</sup> According to the NDRC, some Chinese firms were pursuing imprudent foreign deals that resulted in significant financial losses and did not advance Chinese government objectives.<sup>27</sup> To crack down on these practices, the Chinese government divided outbound investment into three categories—encouraged, restricted, and banned.<sup>28</sup> Encouraged investments include deals that promote the One

<sup>18</sup>“China Focus: Conviction of 8 ‘Big Tigers’ Heralds Prolonged Anti-Graft Fight,” June 1, 2017; Xinhua, “210,000 Officials Punished for Discipline Violations in H1,” July 20, 2017.

Belt, One Road initiative, export excess domestic production capacity, and build up China's technology and innovation capacity. These deals will receive government support, including accelerated regulatory review processes and financial support from state banks. Restricted investments—such as deals in real estate, hotels, entertainment, and professional sports teams—will be subject to closer government scrutiny, and may be rejected or delayed indefinitely under the new guidelines.<sup>29</sup> Banned investments, meanwhile, are those that may impede China's national interest and national security, including deals seeking to export core technologies.<sup>30</sup> Deals that do not fall into these categories will be subject to normal regulatory review processes.<sup>31</sup>

### ***Trends in Chinese Investment***

In 2016, acquisitions accounted for 96 percent of Chinese investment in the United States by value.<sup>32</sup> Meanwhile, capital-intensive greenfield investments—including manufacturing plants, real estate developments, and R&D-intensive projects—accounted for only 4 percent of all U.S.-bound Chinese investments in 2016.<sup>33</sup> This trend continued in the first half of 2017, with acquisitions comprising 97.6 percent of the total value of Chinese investment in the United States.<sup>34</sup>

As seen in Table 1, Chinese FDI in 2016 primarily targeted U.S. real estate, consumer products and services, and transportation, with combined investments in these sectors accounting for nearly 63 percent of China's total 2016 FDI in the United States.<sup>35</sup> Between 2010 and 2016, Chinese investment in these three sectors combined increased by nearly \$27 billion.<sup>36</sup> In the first half of 2017, the leading targets of Chinese investment included U.S. transportation (\$10.4 billion), real estate (\$10.3 billion), and biotechnology (\$1 billion).<sup>37</sup>

**Table 1: Chinese FDI Flows to the United States by Sector, 2010 and 2016**  
(US\$ billions)

<b>Sector</b>	<b>2010</b>	<b>2016</b>
Real Estate & Hospitality	0.22	17.33
Transportation	0.04	6.04
Consumer Products & Services	0.05	5.65
Entertainment	0	4.78
Electronics	0.01	4.24
Information and Communication Technology	0.22	3.30
Other	3.87	2.94
Finance	0.18	1.93
<b>Total</b>	<b>4.6</b>	<b>46.2</b>

*Source:* Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.

According to the U.S. Bureau of Economic Analysis, China accounted for 7.4 percent of U.S. investment inflows in 2016, making it the fifth largest source of FDI behind Canada (15.6 percent), the United Kingdom (14.6 percent), Ireland (9.5 percent), and Switzerland (9.3 percent).<sup>38</sup> Many Chinese investments in the United States have come in the form of multimillion-dollar deals (see Table 2), some of which warrant close scrutiny by U.S. regulators because of the CCP's central role in Chinese firms' foreign investment decisions and the potential national security risks posed. Several of these large Chinese acquisitions have drawn congressional attention, with lawmakers urging caution over Chinese bids for Lattice Semiconductor, Legendary Entertainment, and Syngenta AG, among others.<sup>39</sup>

**Table 2: Chinese Investments in the United States of \$1 Billion or More, Jan. 2016–Jun. 2017**

Chinese Buyer	U.S. Target	Price (US\$ billions)	Status	Industry
Dalian Wanda	Legendary Entertainment	\$3.5	Deal closed, Mar. 2016	Entertainment
Zhuhai Seine Technology	Lexmark (70% stake)	\$3.4	Deal closed, Apr. 2016	Electronics and IT
Haier Group	General Electric appliance division	\$5.4	Deal closed, Jun. 2016	Home appliances
Didi Chuxing	Uber (2% stake)	\$1.0	Deal closed, Aug. 2016	Transportation
Orient Securities	AppLovin	\$1.4	Deal closed, Sept. 2016	Electronics and IT
Anbang	Blackstone Group Strategic Hotels & Resorts Inc.	\$5.7	Deal closed, Oct. 2016	Real estate
HNA	Hilton Worldwide (25% stake)	\$6.5	Deal closed, Oct. 2016	Real estate
HNA	Carlson Hotels	\$2.0	Deal closed, Dec. 2016	Real estate
HNA	Ingram Micro	\$6.0	Deal closed, Dec. 2016	Electronics and IT
Chian Investment Corp.	Invesco	\$1.0	Deal closed, Dec. 2016	Real estate
Tencent	Tesla (5% stake)	\$1.8	Deal closed, Mar. 2017	Transportation
HNA	245 Park Avenue	\$1.6	Deal closed, Mar. 2017	Real estate
HNA	CIT Group	\$10.4	Deal closed, Apr. 2017	Transportation
Zhongwang USA LLC	Aleris Corp.	\$2.3	Pending, agreed to acquire Aug. 2016	Aluminum

**Table 2: Chinese Investments in the United States of \$1 Billion or More, Jan. 2016–Jun. 2017—Continued**

Chinese Buyer	U.S. Target	Price (US\$ billions)	Status	Industry
Oceanwide Holdings	Genworth Financial	\$2.7	Pending, agreed to acquire in Oct. 2016	Insurance

Source: Various.<sup>40</sup>

### *Chinese Investment by Ownership*

The Chinese government maintains significant influence over private firms' investment decisions—including encouraging, modifying, or banning deals based on the specific industries, geographies, and technologies involved—by utilizing a mix of financial incentives, political arrangements, and agreements among company shareholders.<sup>41</sup> Through these measures, the CCP maintains influence over the activities of public and private firms alike, offering direct and indirect subsidies and other incentives to influence business decisions and achieve state goals.\* As Rhodium Group's director Thilo Hanemann testified to the Commission, “the notion of a private enterprise is a very different concept in China. ... I do believe that we should assume that any company, whether it's nominally state-owned or private, can be influenced and to some extent controlled by the Chinese government and ultimately by the Communist Party.”<sup>42</sup>

SOEs previously accounted for the majority of Chinese FDI flows to the United States, making up 58 percent of annual Chinese investment in the United States as recently as 2011.<sup>43</sup> By 2016, that share was down to 21 percent, with private companies (defined by Rhodium Group as companies with less than 20 percent state ownership) becoming the leading source of Chinese FDI in the United States.<sup>44</sup> This reflected a global trend as private Chinese companies increased their outbound investment due to the growth of the private sector in China, rising uncertainty over the future investment return of Chinese assets, concern for the future political climate in China, and the easing of policies limiting investment outflows.<sup>45</sup> This trend continued in the first half of 2017, with Chinese companies that call themselves privately owned accounting for 98.4 percent of Chinese investment in the United States.<sup>46</sup>

Although the Chinese government's influence extends to all sectors of the economy, Beijing is primarily focused on firms operating in strategic sectors that advance the government's political and economic interests (for more on China's industrial and technology development policies, see Chapter 4, Section 1, “China's Pursuit of Dominance in Computing, Robotics, and Biotechnology”).<sup>47</sup> Along with investment in U.S. real estate, sectors of the U.S. economy that serve a strategic purpose for the CCP are more likely to be targeted by the Chinese government for investment, with Beijing exercising its influence to coordinate investment efforts in both the private and public sectors.<sup>48</sup>

\*For more on the role of SOEs in China's economy, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 2, “State-Owned Enterprises, Overcapacity, and China's Market Economy Status,” in *2016 Annual Report to Congress*, November 2016, 92–103.

### ***U.S. Reviews of Chinese Investment***

With Chinese FDI flows to the United States on the rise, reviews of foreign investment have become an increasingly important tool for safeguarding U.S. national security interests. The Committee on Foreign Investment in the United States (CFIUS) is the primary government body tasked with reviewing any merger, acquisition, or takeover that would result in “foreign control of any person engaged in interstate commerce in the United States.”<sup>49</sup> CFIUS, an executive interagency committee chaired by the U.S. Department of the Treasury, determines whether a covered\* foreign investment transaction (1) poses a threat to the national security of the United States; (2) involves a foreign entity controlled by a foreign government; or (3) would result in control of any critical infrastructure that could harm U.S. national security interests. If a determination has been made that an acquisition jeopardizes national security, the transaction can be exempted from review only by the Secretary of the Treasury, in concert with any other specified officials relevant to the investigation.<sup>50</sup>

CFIUS comprises nine members and two ex officio members,† as well as other secretaries or heads of relevant U.S. agencies appointed by the president for a given investigation. For any covered transaction, CFIUS is allotted 30 days to conduct its review and, if necessary, 45 days to conduct an investigation and make a recommendation. During the review period, the Director of National Intelligence carries out an analysis of the deal’s national security implications in consultation with all affected or relevant intelligence agencies. After the CFIUS review and investigation period is completed, the president of the United States has 15 days to decide whether to suspend, make changes to, or prohibit the investment.<sup>51</sup> There is also an informal review period for an unspecified length of time prior to the start of the formal review process, which allows both the Committee and the firms involved to identify potential issues before the formal review process begins. The review process has evolved to allow companies to refile with CFIUS if no decision is reached within this timeframe.<sup>52</sup> On occasion, CFIUS members also negotiate conditions with firms to mitigate or remove assets that raised national security concerns. A single lead agency modifies, monitors, and enforces mitigation agreements to account for the nature of the threat posed by a given transaction.‡

The CFIUS process is voluntary, so companies may choose not to file a transaction with CFIUS even if the deal involves potential national security concerns.<sup>53</sup> However, CFIUS can also initiate an investigation on its own, and can demand that the deal be unwound

\*Covered transactions are defined as any merger, acquisition, or takeover resulting in “foreign control of any person engaged in interstate commerce in the United States.” Defense Production Act of 1950 § 721 (Amended by the Foreign Investment and National Security Act of 2007), Public Law No. 110–49, 2007.

†The nine permanent members are the Secretaries of State, Treasury, Defense, Homeland Security, Commerce, and Energy; the Attorney General; the United States Trade Representative; and the Director of the Office of Science and Technology Policy. The nonvoting, ex officio members are the Director of National Intelligence and the Secretary of Labor. Defense Production Act of 1950 § 721 (Amended by the Foreign Investment and National Security Act of 2007), Public Law No. 110–49, 2007; James K. Jackson, “The Committee on Foreign Investment in the United States (CFIUS),” *Congressional Research Service*, June 13, 2017, 14.

‡For more on the CFIUS review process, see James K. Jackson, “The Committee on Foreign Investment in the United States (CFIUS),” *Congressional Research Service*, June 13, 2017, 20.

or restructured on security grounds if a deal is considered a security risk, even after the deal has been completed.<sup>54</sup> CFIUS can initiate a review and investigation of a given transaction if there is a consensus among the Committee's constituent agencies.<sup>55</sup> Yet in practice, the frequency of cross-border transactions in the United States\* makes it difficult for CFIUS and its member agencies to identify all transactions with national security implications. In 2015 (the most recent data available), CFIUS reviewed 143 transactions and proceeded to investigate 66 deals.† Between 2009 and 2015, CFIUS reviewed a total of 770 transactions, of which 310 resulted in an investigation.<sup>56</sup>

Because CFIUS does not have the resources to review every cross-border deal, a list of “non-notified transactions”—deals that have not been voluntarily notified to CFIUS but may present national security concerns—is maintained by CFIUS member agencies.<sup>57</sup> According to Giovanna Cinelli, a partner at the global law firm Morgan Lewis, “These non-notified transactions remain within the Committee's purview and may, at times, be used by the Committee to reach out to parties to request a notification. Given that thousands of cross-border investments occur each year, it is not unexpected that the Committee is aware of, and maintains a list of, these types of investments.”<sup>58</sup> Rather than review every transaction with potential national security risks, CFIUS member agencies use the list of non-notified transactions to monitor deals and assess whether a full review and investigation is necessary.<sup>59</sup>

According to Robert Atkinson, founder and president of the Information Technology and Innovation Foundation, CFIUS has been an effective tool for regulating foreign investment, particularly in high-technology industries.<sup>60</sup> For example, in the U.S. semiconductor industry, CFIUS either outright rejected or caused investors to withdraw from at least seven deals involving Chinese companies between 2015 and September 2017.<sup>61</sup> Mr. Hanemann also believes CFIUS has “generally handled the influx of Chinese investment well thus far,” arguing the Committee has largely succeeded in permitting beneficial investments while addressing concerns about acquisitions that may pose risks to U.S. national security interests.<sup>62</sup>

Yet other experts and some members of Congress believe CFIUS can no longer adequately protect the United States's most sensitive industries or economic interests. For example, in a June 2017 speech, Senator John Cornyn (R-TX) discussed CFIUS's weaknesses—including that it does not appropriately examine the motivations of foreign governments investing in key U.S. technology companies—and warned that China is “stealing and copying [U.S.] technology to modernize its arsenal and erode our military superiority [and] strategically investing in key sectors of the U.S. economy.”<sup>63</sup> In August 2017, Senator Charles Schumer (D-NY) unveiled a proposal to create an American Jobs Security Council with the authority to review and block foreign purchases of U.S. companies based on their potential economic impact.<sup>64</sup> Senator Schumer billed the proposal as

\*According to the United Nations Conference on Trade and Development, in 2016 the United States was the top recipient of FDI in the world. UNCTAD, *World Investment Report 2017*, July 2017, 222–229.

†In 2015, China alone initiated 173 investments in the United States. American Enterprise Institute, “China Global Investment Tracker.” <http://www.aei.org/china-global-investment-tracker/>.

a way to limit the detrimental impacts of Chinese investment in the United States, including taking U.S. jobs and intellectual property.<sup>65</sup> Although the number of Chinese greenfield investments in the United States remains limited compared to acquisitions, greenfield deals may also pose a risk to U.S. national security because they are not included in the CFIUS review process.<sup>66</sup>

#### *Chinese Firms Obscure U.S. Investments*

Chinese firms are becoming more sophisticated in their attempts to circumvent CFIUS reviews and other U.S. investment regulations. Some Chinese companies may take advantage of the voluntary nature of the CFIUS process to avoid scrutiny. For example, in November 2015, the Chinese investment firm Fosun International acquired Wright USA, a liability insurance provider to senior U.S. officials at the Central Intelligence Agency and Federal Bureau of Investigation, without notifying CFIUS. It was not until a month after the acquisition was complete that CFIUS expressed concern about the purchase and began reviewing the deal to determine whether it had granted Chinese agencies access to the personal information of tens of thousands of U.S. intelligence and counterterrorism officials. One of the national security issues raised was that Fosun's chairman, Guo Guangchang, was a representative in the Chinese People's Political Consultative Conference and had deep connections to the CCP—connections the firm neglected to mention to its policy holders even after the CFIUS review process was initiated.<sup>67</sup> Fosun ultimately divested from Wright USA in September 2016, leading to speculation the CFIUS review prompted the divestiture.<sup>\*68</sup>

Other Chinese firms attempt to obscure their dealings in the United States via U.S.-based shell companies. One notable example is Canyon Bridge Capital Partners' failed November 2016 bid to acquire U.S. chipmaker Lattice Semiconductor for \$1.3 billion.<sup>69</sup> Canyon Bridge was a newly created private equity firm based in California and funded solely by China Reform Holdings, an investment holding company controlled by China's State Council with indirect links to the Chinese government's space program.<sup>70</sup>

China Reform Holdings entered into initial talks with Lattice in April 2016, a few months before Canyon Bridge was created.<sup>71</sup> However, China's ties to Lattice started as early as 2004, when Lattice paid a \$560,000 civil fine for illegally exporting products to China.<sup>72</sup> In 2012, two Chinese nationals were indicted for violating export controls after trying to smuggle Lattice chips to China.<sup>73</sup> Four years later, Chinese state-owned chipmaker Tsinghua Unigroup purchased a 6 percent stake in Lattice—around the same time China Reform Holdings first contacted Lattice about a potential deal—before selling off its shares a few months later, just weeks before the Canyon Bridge deal was announced in November 2016.<sup>74</sup> The Chinese government's repeated attempts to access Lattice's technologies raise national security concerns, with the acquisition potentially motivated by political factors (such as furthering industrial policies laid out by the CCP) rather than commercial considerations. Although

\*For more on the national security risks presented by the Wright USA acquisition and other Chinese acquisitions of U.S. assets, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 1, "Year in Review: Economics and Trade," in *2016 Annual Report to Congress*, November 2016, 63–64.

Lattice does not sell chips to the U.S. military, it manufactures a type of military-grade microchip that its two biggest rivals, Xilinx Inc. and Intel Corp.'s Altera, sell to the U.S. military, making Lattice's acquisition a potential national security concern (for more on China's pursuit of semiconductor technology, see "Investment in U.S. ICT," later in this section).<sup>75</sup>

Canyon Bridge's ties to the Chinese government attracted congressional attention, with 22 lawmakers writing to then U.S. Treasury Secretary Jack Lew in December 2016 to voice concerns that the deal could disrupt U.S. military supply chains and pose national security risks.<sup>76</sup> Canyon Bridge resubmitted the deal for review in March 2017 and again in June 2017 after the 75-day limit for CFIUS to conduct its assessment expired.<sup>77</sup> After CFIUS recommended the deal be blocked in August 2017, Canyon Bridge appealed directly to President Donald Trump to approve the deal.<sup>78</sup> The next month, President Trump blocked the deal on national security grounds, including concerns over "the potential transfer of intellectual property to the foreign acquirer, the Chinese government's role in supporting this transaction, the importance of semiconductor supply chain integrity to the United States Government, and the use of Lattice products by the United States Government."<sup>79</sup>

#### *Duress Acquisitions of U.S. Companies*

There is some evidence that the rise of Chinese investment in the United States might also be accompanied by alleged attempts to drive down the value of U.S. assets through sophisticated cyber espionage campaigns. According to Jeffrey Johnson, chief executive officer (CEO) of the cybersecurity firm SquirrelWerkz, Chinese actors are using a combination of cyber espionage and human infiltration tactics to penetrate strategic U.S. R&D-intensive and advanced technology industries in order to steal their intellectual property (IP), sabotage operations, and reduce their market value. After these coordinated campaigns lower the target company's value, the company is acquired by a Chinese entity at a dramatically reduced price.<sup>80</sup>

In testimony to the Commission, Mr. Johnson alleges that in the early 2000s the Chinese government waged one such cyber economic campaign against the U.S. mobile phone industry.<sup>81</sup> The campaign, led primarily by actors seeking to benefit Chinese telecommunications firms Huawei and ZTE, allegedly sought to sabotage U.S. mobile provider Motorola, which Mr. Johnson described as "heavily infiltrated" by Chinese actors as early as 2001.<sup>82</sup> These activities were not detected until more than a decade later, in 2013, when a U.S. federal court found a former Motorola employee guilty of stealing trade secrets and attempting to deliver them to China.<sup>83</sup> A little more than one year before the trade secrets case, Motorola had come under financial duress and sold off a segment of its operations, called Motorola Mobility, to Google for \$12.5 billion.<sup>84</sup> In January 2014, Google sold the struggling Motorola business to the Chinese technology firm Lenovo for less than \$3 billion.<sup>85</sup>

Mr. Johnson believes this strategy is not unique to the case of Motorola, but can be seen in similar campaigns waged in at least 20 other key industries, including media and entertain-

ment, banking and financial services, and semiconductors.<sup>86</sup> His research indicates the CCP seeks to sabotage and degrade the value of high-tech U.S. industries through espionage and the introduction of market barriers in China. This strategy puts U.S. companies at risk of losing billions of dollars in critical technologies to Chinese competitors, and threatens to equip foreign actors with access to classified and sensitive engineering documents and dual-use technologies that pose a direct threat to U.S. national security.<sup>87</sup>

### **Chinese Government Conducts Coordinated Cyber Economic Espionage Campaigns against U.S. Companies**

In testimony before the Commission, Mr. Johnson provided several examples of the methods and tactics Chinese companies allegedly use to conduct cyber espionage campaigns against U.S. industries. According to Mr. Johnson, China has engaged in a cyber economic campaign against the United States since the 1990s, allegedly relying on aggressive investments in industry capacity abroad, Chinese government-assisted duress on Western semiconductor competitors operating in China, and threat actors working in Western microchip manufacturers and investment entities.\* The key elements of China's alleged cyber economic espionage campaigns include:

- *A coordinated, cross-government effort to apply duress on U.S. firms operating in strategic industries:* Mr. Johnson alleges the NDRC plays a particularly active role in applying strategic duress on U.S. competitors, including seizing and sharing sensitive IP from foreign companies during investigations into perceived anti-trust violations.<sup>88</sup>
- *Chinese strategic infiltration into U.S. companies and industries:* The forms of infiltration allegedly include traditional investment, joint ventures, and embedded insider threat actors working in U.S. firms. Mr. Johnson said Western microchip manufacturers and investment entities in particular are targeted by actors working in support of the Chinese government.<sup>89</sup>
- *Duress acquisitions of U.S. assets:* As was the case with Motorola, Chinese actors suppress the value of a U.S. firm they want to acquire by first investing in, gaining control of, or otherwise accessing U.S. assets, products, IP, and critical U.S. supply chains, and then executing cyber-economic schemes to suppress the value of U.S. assets. These efforts often occur with coordinated support from the Chinese government, and allow Chinese entities to purchase U.S. assets below their market value price.<sup>90</sup>

\*TE Subcom, one of the firms Mr. Johnson alleges has been penetrated by Chinese interests, wrote a letter to the Commission denying Mr. Johnson's claims.

### *Sovereign Immunity*

In several instances, Chinese SOEs have evaded legal action in the United States by arguing their status as a foreign government entity exempts them from U.S. lawsuits under the Foreign Sovereign Immunities Act (FSIA).<sup>91</sup> FSIA, which was passed by Congress in 1976, affords foreign-controlled companies and their subsidiaries protection from U.S. lawsuits, known as “sovereign immunity.”<sup>92</sup> There are six exceptions to FSIA,\* but the most litigated is the commercial activity exception, which states:

*A foreign state shall not be immune from the jurisdiction of courts of the United States or of the States in any case ... in which the action is based upon a commercial activity carried on in the United States by the foreign state; or upon an act performed in the United States in connection with a commercial activity of the foreign state elsewhere; or upon an act outside the territory of the United States in connection with a commercial activity of the foreign state elsewhere and that act causes a direct effect in the United States.*<sup>93</sup>

Determining how and when these exceptions are applied has proved difficult for U.S. courts, however, with Chinese claims of sovereign immunity testing the limits of legal precedent in the United States.<sup>94</sup> Although Chinese sovereign immunity claims are uncommon, two recent cases were discussed at the Commission’s January 2017 hearing:

- *AVIC v. Tang Energy Group*: In December 2015, an international holding subsidiary of China’s state-owned aerospace and defense company Aviation Industry Corporation of China (AVIC) was ordered to pay \$70 million to U.S. wind firm Tang Energy Group Ltd. for failing to fulfill the terms of a joint venture. Three months later, AVIC asked the court to vacate the judgment, arguing the decision should be overturned because the subsidiary enjoys sovereign immunity as a state-owned company.<sup>95</sup> A final ruling on the case is pending.
- *CNBM Group drywall case*: In March 2016, China’s state-owned building materials and glass manufacturer China National Building Material Company (CNBM) successfully argued for sovereign immunity against U.S. homeowners who alleged the company’s drywall had caused health problems. CNBM was the parent corporation of the firms that produced and sold the drywall, so it was able to argue it was not directly involved in commercial activity in the United States. The judge dismissed the case and ruled CNBM’s status as a foreign government entity granted it sovereign immunity, with the plaintiff failing to prove the company had conducted drywall-related commercial activity in the United States.<sup>96</sup>

Because of the nature of the Chinese government’s control over the state sector, Chinese FSIA claims pose a particular challenge to U.S. laws. Although Chinese firms arguing for protection under FSIA

\*FSIA exceptions include waivers, commercial acts, expropriations, rights in certain kinds of property, non-commercial torts, and enforcement of arbitral agreements and awards. Foreign Sovereign Immunities Act, 28 USC § 1605, Public Law No. 94–583, 1976.

are few in number to date, Tang Energy Group CEO Patrick Jenevein believes the application of sovereign immunity to commercial cases presents a dangerous trend for U.S. businesses. In testimony before the Commission, Mr. Jenevein stated that Chinese SOEs use FSIA “as a tool to skirt their legal responsibilities and delay legal proceedings”—effectively allowing them to conduct unlawful activity without consequences.<sup>97</sup> Senator Charles Grassley (R-IA) agrees, stating foreign SOEs are using FSIA “as a litigation tactic to avoid claims by American consumers and companies that non-state-owned foreign companies would have to answer.”<sup>98</sup>

The crux of FSIA cases often lies in whether the Chinese firm qualifies as state-owned, with courts struggling to identify the company’s ultimate beneficial owner.<sup>99</sup> In these cases, the burden tends to fall on the U.S. plaintiff to prove that one of the exceptions of immunity applies.<sup>100</sup> Many of the U.S. firms involved in FSIA litigation do not have access to the same financial resources available to Chinese SOEs; thus, these cases disproportionately impact the U.S. entity and have what Mr. Jenevein describes as a “chilling effect” on the plaintiff’s case in court.<sup>101</sup>

James Stengel, a partner at the New York office of Orrick law firm, disagrees, testifying before the Commission that FSIA is working as intended.<sup>102</sup> Although the Chinese economic and political system presents SOEs with inherent advantages, FSIA explicitly requires courts to “recognize the sovereign immunity of appropriately structured enterprises.”<sup>103</sup> The law’s commercial activity exception, which Mr. Stengel believes has been broadly interpreted by U.S. courts, prohibits any FSIA claims that arise in a commercial contract.<sup>104</sup> Thus, any cases of Chinese SOEs receiving sovereign immunity have passed this broad test and “reflect an unexceptional application of this decades-old statutory framework for adjudicating claims against foreign sovereigns.”<sup>105</sup>

### ***Chinese Investment in Strategic Sectors of the U.S. Economy***

Although Chinese companies invest in a broad range of U.S. industries, Chinese deals are mainly focused on high-value acquisitions in technology, agriculture, modern services, and commercial real estate.\* This reflects a shift from as recently as 2013, when the majority of Chinese investment targeted natural resource extraction (China invested \$3.2 billion in the U.S. oil and gas industry in 2013).<sup>106</sup> Three sectors that have seen significant Chinese FDI include information and communications technologies (ICT), agriculture, and biotechnology, all of which are tied to U.S. economic and national security interests.

#### ***Investment in U.S. ICT***

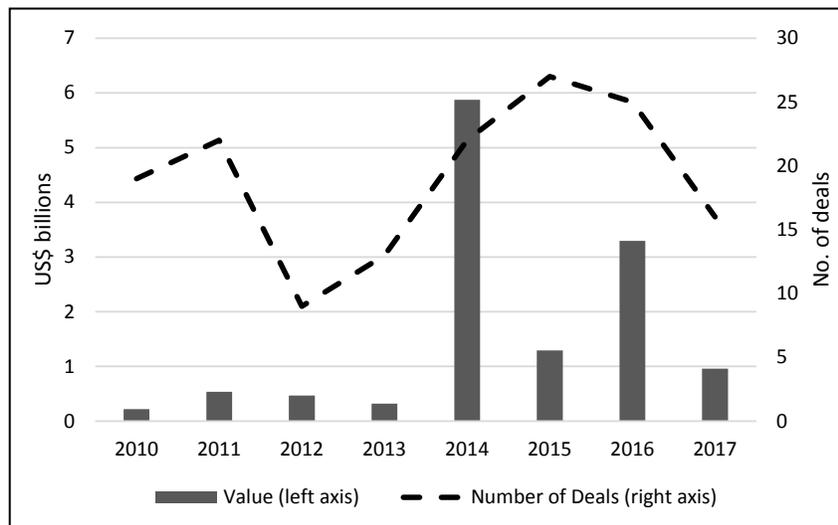
From 2000 to the first half of 2017, China completed 231 investment projects in U.S. ICT worth a combined \$15.1 billion.<sup>107</sup> Chinese ICT investment in the United States (by value) peaked in 2014 with Lenovo’s acquisition of a division of IBM for \$4.7 billion and

---

\* Certain Chinese real estate investments in the United States could pose national security concerns due to the property’s proximity to U.S. military bases, weapons stations, and other military assets. In 2012, President Obama blocked a Chinese acquisition of Oregon wind farms because they were located too close to a naval weapons station. Michael Hiltzik, “Chinese Investments in U.S. Hotel Companies Spur National Security Scrutiny,” *Los Angeles Times*, March 18, 2016.

Motorola Mobility for \$2.9 billion.<sup>108</sup> That year, investment in ICT accounted for about half of all Chinese FDI in the United States, reflecting the importance of Chinese industrial policies prioritizing the acquisition of foreign technologies.<sup>109</sup> In 2016, Chinese investment in that sector reached \$3.3 billion, an increase of 155 percent from 2015 (see Figure 2). Through the first half of 2017, however, Chinese FDI in U.S. ICT was less than \$1 billion, well below 2016 levels over the same period amid increased regulatory scrutiny in the United States and efforts to curb capital outflows in China.<sup>110</sup>

**Figure 2: Chinese Investment in U.S. ICT, 2010–H1 2017**



Source: Rhodium Group, “China Investment Monitor.” <http://rhg.com/interactive/china-investment-monitor>.

China is seeking to develop its semiconductor industry by aggressively investing abroad—particularly in the United States—and restricting global firms’ access to the Chinese semiconductor market.\* The CCP has created government funds to finance foreign acquisitions that accelerate China’s high-tech development, including \$107.5 billion in national and regional semiconductor investment funds established by the Ministry of Industry and Information Technology in 2014.<sup>111</sup> According to data from the Rhodium Group’s 2016 contracted report for the Commission, Chinese firms leveraged this state funding to attempt to acquire or invest in at least 27 U.S. semiconductor firms from 2013 to November 2016.<sup>112</sup>

Then U.S. Commerce Secretary Penny Pritzker warned in November 2016 that the U.S. semiconductor industry is “seeing new attempts by China to acquire companies and technology based on their government’s interests—not commercial objectives.”<sup>113</sup> The next month, U.S. President Barack Obama blocked a Chinese

\*For more information on China’s pursuit of U.S. semiconductor assets and its implications for the United States, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “China’s 13th Five-Year Plan,” in *2016 Annual Report to Congress*, November 2016, 155–161.

deal to acquire the U.S. business of Aixtron, a German semiconductor company. A Treasury Department statement indicated the deal was blocked because the “national security risk posed by the transaction relate[d], among other things, to the military applications” of the firm’s technology, indicating the U.S. government’s concern over China’s attempts to acquire sensitive U.S. technologies.<sup>114</sup>

Chinese investments in the U.S. semiconductor industry not only help China move up the value-added chain and meet market and security demands, but also threaten U.S. economic and national security interests.<sup>115</sup> A January 2017 report from the U.S. President’s Council of Advisors on Science and Technology warned China’s increased semiconductor investment represents “a concerted push by China to reshape the market in its favor ... [and] threatens the competitiveness of U.S. industry and the national and global benefits it brings.”<sup>116</sup> According to John Adams, former brigadier general for the U.S. Army, semiconductors are “central to U.S. military and economic strength.”<sup>117</sup> Losing semiconductor technology to China would endanger the U.S. military’s technological advantages in surveillance, communications, and propulsion, and erode U.S. institutional and technological know-how and the ability to design and commercialize emerging defense technologies.<sup>118</sup>

China’s ICT investments are in line with the country’s emphasis on telecommunications as a strategic interest. According to Dr. Atkinson’s testimony “the main purpose of most Chinese technology companies buying U.S. technology companies is not to make a profit, but to take U.S. technology in order to upgrade their own technology capabilities.”<sup>119</sup> These goals are manifested in several Chinese government policies, including the Chinese government’s so-called “De-IOE” campaign, which pressures Chinese companies to replace products from IBM, Oracle, and Dell EMC (abbreviated as “IOE”) with Chinese-made alternatives.<sup>120</sup>

There are also questions about the lack of reciprocal treatment for U.S. ICT firms in China, with U.S. firms forced to disclose valuable technologies and source code to gain access to the Chinese market. In January 2015, China announced new regulations to ensure foreign ICT in China remain “secure and controllable,” including intrusive security test requirements, compliance with Chinese national standards, and—potentially—forced disclosure of valuable source code.<sup>121</sup> China’s broad cybersecurity law also seeks to further tighten state control over information flows and technology equipment, including naming telecommunications a “critical information infrastructure” subject to mandatory security checks (for more on China’s cybersecurity law, see Chapter 1, Section 1, “Year in Review: Economics and Trade”).<sup>122</sup> According to Dr. Atkinson, these policies, coupled with increased investment activity in the United States, represent “an aggressive by-hook-or-by-crook strategy that involves serially manipulating the marketplace and wantonly stealing and coercing transfer of American knowhow.”<sup>123</sup> The January 2017 report from the U.S. President’s Council of Advisors on Science and Technology echoes Dr. Atkinson’s concerns, finding that “Chinese policies are distorting markets in ways that undermine innovation, subtract from U.S. market share, and put U.S. national security at risk.”<sup>124</sup>

*Investment in U.S. Agriculture and Biotechnology*

Since 2000, cumulative investment in U.S. agriculture has accounted for around 6 percent of total Chinese FDI in the United States, a significant though relatively small share compared to sectors like real estate (30 percent) and ICT (11 percent).<sup>125</sup> Although China has made 35 agriculture deals in the United States since 2000, the deal for Smithfield Foods Inc., the largest U.S. pork producer, accounts for nearly 95 percent of the value of China's investments in U.S. agriculture.<sup>126</sup> In July 2013, Shuanghui International Holdings Limited, a subsidiary of Shuanghui Group (now WH Group), proposed to acquire Smithfield in a \$4.7 billion deal (worth more than \$7 billion including Smithfield's debt).<sup>127</sup> The acquisition gave China control of nearly 26 percent of the U.S. pork market, helping to ensure the stability of Chinese food imports.<sup>128</sup>

In April 2017, the state-owned China National Chemical Corporation (ChemChina) gained approval from U.S. and European regulators for a \$43 billion bid to buy the Swiss company Syngenta, one of the world's largest producers of crop protection products, including pesticides, fungicides, and genetically modified seeds.<sup>129</sup> Although Syngenta is a Swiss company and is thus excluded from Rhodium Group's calculations of Chinese FDI in the United States, the firm does have significant operations in the United States, with a plant in North Carolina that employs more than 1,100 people.<sup>130</sup> Syngenta also has chemical plants in Louisiana and Texas that the U.S. Department of Homeland Security categorizes as "high-risk" facilities under the Chemical Facility Anti-Terrorism Standards program,\* leading to concerns that foreign ownership could pose national security risks.<sup>131</sup>

Patrick Woodall, research director and senior policy advocate at Food & Water Watch, argues China's foreign investment strategy in agriculture and biotechnology raises concerns over technology transfer to China.<sup>132</sup> Biotechnology firms like Syngenta, for example, utilize valuable technologies and processes that could give Chinese agribusinesses a competitive advantage over other global firms.<sup>133</sup> In a July 2016 letter to members of President Obama's cabinet, Food & Water Watch and the National Farmers Union warned against what they describe as China's efforts to "secure and control worldwide food production resources," stating that the acquisitions of Syngenta and Smithfield could lead to the transfer of valuable assets, IP, and technology from the United States (for more on China's biotechnology development policies, see Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology").<sup>134</sup>

China's agriculture and biotechnology acquisitions continue a system of restricted market access that exists for foreign firms operating across several strategic Chinese industries. Acquiring foreign agribusinesses is one way Chinese importers circumvent State Council restrictions on imports of genetically modified prod-

\*The Chemical Facility Anti-Terrorism Standards program, authorized by Congress in 2007 and updated in 2014, is responsible for protecting hazardous chemical facilities from terrorist infiltration. U.S. Department of Homeland Security, *Chemical Facility Anti-Terrorism Standards (CFATS)*.

ucts in China. Although these restrictions are ostensibly meant to protect the public from consuming harmful chemicals, they limit the import of foreign agriculture products and expand Chinese firms' share of the domestic agriculture market.<sup>135</sup> For example, after ChemChina acquired Syngenta, China is in a position to begin approving imports of biotechnology crops, potentially favoring the use of products produced by Syngenta over U.S. biotechnology and agriculture firms.<sup>136</sup>

Chinese agriculture acquisitions also limit foreign firms' market access in China. The Smithfield acquisition, for instance, has fulfilled China's growing demand for pork imports. After it was acquired by Shuanghui in 2013, Smithfield (which is one of a few U.S. pork producers that does not use the feed additive ractopamine\*) saw its exports to China increase 50 percent by 2015. Today, Smithfield accounts for 97 percent of all U.S. pork exports to China.<sup>137</sup>

Other experts contend Chinese investments in agriculture benefit the U.S. economy overall. U.S. Ambassador to China Terry Branstad is one supporter of increased Chinese agriculture investment in the United States, saying the United States has "seen just the tip of the iceberg of the potential investments here" and calling agriculture investment "beneficial to both [China and the United States]."<sup>138</sup> Some experts also remain convinced the benefits of the Smithfield and Syngenta deals outweigh their risks. Both deals received CFIUS approval, which indicates to some experts like Stephen McHale, a partner at Squire Patton Boggs, that the U.S. government has "not yet reached the point where [it has] found an acquisition in the food and agriculture sectors to threaten national security."<sup>139</sup>

### **Chinese Companies on U.S. Stock Exchanges**

Although the number of Chinese firms listed on U.S. stock exchanges has declined in recent years, the total market capitalization of Chinese issuers in the United States has continued to grow (see Table 3), which may lead to increased risks to U.S. investors. For the last decade, U.S. negotiators have sought to protect investors by ensuring all public accounting firms, both domestic and foreign, disclose their clients' financial information as required under U.S. law. However, some Chinese firms have refused to divulge their accounting and financial practices to U.S. investors, exposing the limits of U.S. regulators' ability to protect investors.

---

\*China has banned the use of ractopamine due to alleged health and food safety concerns. Shirley A. Kan and Wayne Morrison, "U.S.-Taiwan Relationship: Overview of Policy Issues" *Congressional Research Service*, April 22, 2014, 34-36. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Patrick Woodall, January 26, 2017.

**Table 3: Chinese Firms Listed in the United States, 2012 and 2017**

	2012	2017
<b>Number of Listings</b>	188	130
<b>Total Market Capitalization (US\$ billions)</b>	\$119	\$536

*Note:* These figures represent only Chinese firms listed as American depository receipts on the New York Stock Exchange, NASDAQ, and American Stock Exchange. 2017 figures are from February 1, 2017.

*Source:* Heng Ren Partners, e-mail with Commission staff, February 7, 2017.

### ***Foreign Private Issuers in the United States***

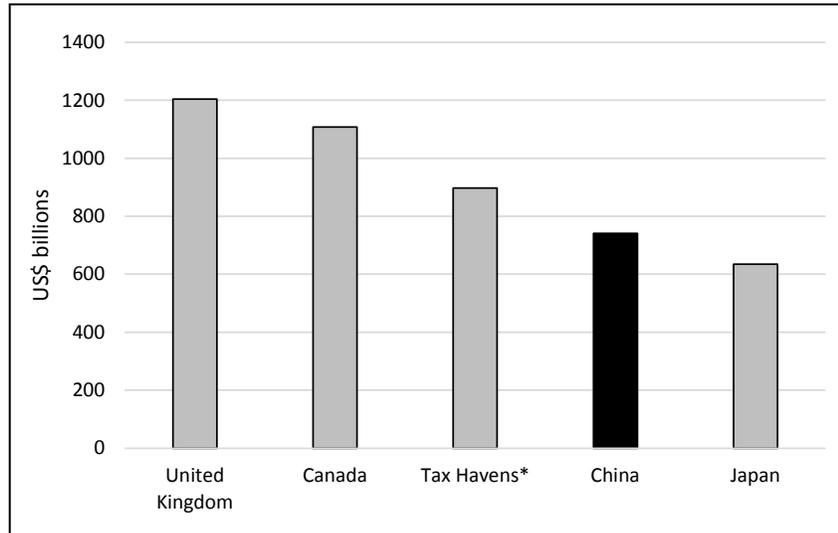
A foreign private issuer (FPI) is a company incorporated or organized under the laws of a jurisdiction outside of the United States and listed on U.S. stock exchanges with less than half of its securities directly or indirectly held by U.S. residents. If more than 50 percent of its securities are held by U.S. residents, a company can only qualify as an FPI if the majority of the firm's executive officers and directors are not U.S. citizens or residents, less than 50 percent of the firm's assets are located in the United States, and the firm's business is not primarily conducted in the United States.<sup>140</sup>

Foreign companies around the world rely on U.S. financial markets to raise capital and establish a trading presence for their securities.<sup>141</sup> Many of these companies list as FPIs, allowing them to eschew U.S. financial regulations in favor of the laws of their home country.<sup>142</sup> FPIs are entitled to several advantages over domestic firms, including exemptions from publishing quarterly financial reports, exceptions from disclosure requirements for details on executive compensation, and longer deadlines for releasing annual financial reports.\* Additionally, some FPIs registering for the first time with the U.S. Securities and Exchange Commission (SEC) may submit their draft registration statements confidentially, unlike domestic issuers, which must file their registration statements publicly.<sup>143</sup>

Since 2000, many FPIs listing in the United States have been incorporated in offshore locations, where underdeveloped financial standards and disclosure requirements allow issuers to operate with relative anonymity and circumvent U.S. regulations.<sup>144</sup> As of May 2017, tax havens like Switzerland, the Cayman Islands, and Luxembourg were home to 94 FPIs listed on the New York Stock Exchange (NYSE)—21 percent of all FPIs listed on the NYSE—and boasted a combined market capitalization of nearly \$900 billion (see Figure 3).<sup>145</sup> Tax havens are the third-largest source of FPIs listed on the NYSE by total market capitalization, trailing the United Kingdom (\$1.2 trillion) and Canada (\$1.1 trillion).<sup>146</sup> China, meanwhile, is the fourth-largest source of FPIs, with a total market capitalization of \$742 billion.<sup>147</sup>

\* FPIs must file annual financial reports within four months of the start of the fiscal year, compared to just 60 or 90 days for domestic firms (depending on the firms' capitalization and other factors). Morrison & Foerster, "Frequently Asked Questions about Foreign Private Issuers," 4–5.

**Figure 3: Combined Market Capitalization of FPIs on the NYSE by Country of Origin, May 2017**



*Note:* Tax havens include Bermuda, the British Virgin Islands, the Cayman Islands, Ireland, Luxembourg, Puerto Rico, and Switzerland.  
*Source:* NASDAQ, "Companies on NYSE."

### *Chinese Companies Listing in the United States*

Although the risks posed by Chinese FPIs are generally no different from those of other foreign issuers based in offshore jurisdictions, Chinese laws present some particular challenges for U.S. regulators. Chinese firms utilize three approaches to access U.S. markets:

- *American depository receipts (ADRs):* ADRs are certificates issued by U.S. banks that trade in the United States but represent shares of a foreign stock.<sup>148</sup> ADRs are the most common choice for Chinese firms (and other foreign companies) looking to list in the United States: out of the 126 U.S.-listed Chinese companies in March 2017, 90 companies were listed as ADRs.<sup>149</sup> Most Chinese issuers (and foreign issuers generally) prefer ADRs because they are easier to transfer and manage than foreign shares directly listed on U.S. exchanges.<sup>150</sup>
- *Ordinary shares:* Some foreign companies list their stock directly in the United States through an initial public offering (IPO). The most notable Chinese IPO occurred in September 2014 when China's e-commerce giant Alibaba raised \$25 billion in its public offering on the NYSE.<sup>151</sup> Following the Alibaba IPO, however, many Chinese companies abandoned IPOs on U.S. exchanges in favor of IPOs in China, where their securities, particularly for Internet companies, commanded higher sales.<sup>152</sup> Chinese IPO activity rebounded in the second half of 2016, led by the Shanghai-based logistics company ZTO Express Inc.'s \$1.4 billion IPO on the NYSE.<sup>153</sup>

- *Reverse mergers:* Reverse mergers occur when a U.S. public shell company already registered in the United States—often bankrupt or near bankruptcy—merges with a foreign firm. The foreign company’s shareholders then gain a controlling interest in the public shell company, thereby becoming an SEC-registered company rather than an FPI. Firms involved in a reverse merger are not reviewed prior to the transaction, making it an inexpensive way to quickly list a company in the United States. An influx of Chinese reverse mergers in 2010 led to a series of scandals involving Chinese companies defrauding U.S. investors.<sup>154</sup> Between 2011 and 2012, an SEC crackdown on reverse mergers led to more than 100 U.S.-listed Chinese companies being delisted or having their trading frozen as a result of fraud allegations and other violations of U.S. securities laws. However, few U.S. investors were compensated for their losses because the SEC lacks the jurisdiction necessary to punish foreign companies beyond their activities in the United States.<sup>155</sup>

Like other foreign private issuers (FPIs), Chinese businesses list on U.S. stock exchanges to raise capital while operating largely outside the laws and regulations governing U.S. firms.<sup>156</sup> Chinese firms first started listing in the United States in the 1990s, when Chinese regulators encouraged larger firms to list in the United States to secure greater capital and higher governance standards.<sup>157</sup> By 1998, nine Chinese FPIs had listed in the United States, all on the NYSE.\* Fifteen years later, around 100 Chinese companies were listed in the United States, including many firms from China’s growing technology sector like Baidu, JD.com, and Weibo.†

As of July 2017, a total of 126 Chinese companies were listed on the NASDAQ, NYSE, and American Stock Exchange (AMEX), with a total market capitalization of \$960 billion.‡ As shown in Table 4, the sectors with the highest combined market capitalization include services (\$433.6 billion), energy and power (\$239 billion), and technology (\$148.6 billion).<sup>158</sup> Estimates from the asset management firm Heng Ren Investments also indicate that, as of February 2017, U.S. mutual funds, pension funds, government retirement fund, and exchange-traded funds invested at least \$123 billion in U.S.-listed Chinese firms.§ This creates risks for U.S. citizens with money in these investment funds.

\*The nine Chinese companies listed are Beijing Yanhua Petrochemical, China Eastern Airlines, China Southern Airlines, Guangshen Railway, Huaneng Power International, Jilin Chemical Industrial, Shandong Huaneng Power Development, Shanghai Petrochemical, and Yanzhou Coal Mining. U.S. Securities and Exchange Commission, *Foreign Companies Registered and Reporting with the U.S. Securities and Exchange Commission*, December 31, 1998.

†For more on Chinese Internet firms listing on U.S. stock exchanges, see Kevin Rosier, “The Risks of China’s Internet Companies on U.S. Stock Exchanges,” *U.S.-China Economic and Security Review Commission*, September 12, 2014.

‡The list of Chinese companies listed on the NYSE, NASDAQ, and AMEX includes only U.S.-listed companies based in China, not offshore Chinese companies in Hong Kong or elsewhere. The actual number of Chinese companies listed on these exchanges is higher. NASDAQ, “Companies in China.”

§This estimate includes only the 13 largest U.S.-listed Chinese ADRs by market capitalization. Peter Halesworth, Founder, Heng Ren investments, interview with Commission staff, February 7, 2017.

**Table 4: Chinese Companies on U.S. Stock Exchanges, 2017**

<b>Sector</b>	<b>No. of Firms Listed</b>	<b>Market Cap (US\$ billion)</b>
Services	24	433.6
Energy and Power	5	239.0
Technology	36	148.6
Finance	14	89.5
Transportation	4	28.5
Industrial	12	14.3
Health Care	7	4.7
Capital Goods	10	0.8
Consumer Goods	13	0.5
Other	1	0.4
<b>Total</b>	<b>126</b>	<b>960</b>

Source: NASDAQ, “Companies in China.”

### ***Challenges Posed by Chinese Companies Listed in the United States***

The opaque nature of China’s financial system presents unique challenges for U.S. regulators and investors.<sup>159</sup> Foremost among these are China’s foreign ownership restrictions and state secrecy laws.

#### *Foreign Ownership Restrictions*

The Chinese government enforces limits on foreign ownership of Chinese companies, which restricts the ability of those companies to list on foreign exchanges. These limits are particularly stringent for Chinese companies operating in strategic sectors, such as Internet and technology firms. To get around these limitations, Chinese companies in restricted industries facilitate foreign investment through a complex mechanism known as a variable interest entity (VIE).<sup>160</sup>

The VIE structure consists of several entities—essentially holding companies, usually based in tax havens—linking foreign investors and Chinese firms together through a mix of legal contracts and equity ownership.<sup>161</sup> These structures create effective foreign ownership of Chinese companies while still complying with Chinese foreign ownership laws.<sup>162</sup> Paul Gillis, professor of practice at the Guanghua School of Management at Peking University, calculates that 56 percent of all Chinese companies listed on the NYSE and NASDAQ use the VIE structure (up from 42 percent in 2011), including Alibaba, Baidu, and Weibo.<sup>163</sup>

In addition to circumventing Chinese regulations, the VIE structure operates largely outside the jurisdiction of U.S. courts and regulatory agencies.<sup>164</sup> Because the legal structure of a VIE is only enforceable in the haven where it is based, U.S.-listed securities

issued from offshore locations are not subject to U.S. laws.<sup>165</sup> As a result, VIE issuers that defraud their U.S. investors cannot be held to account, with attempts to enforce contractual arrangements with VIEs typically failing.<sup>166</sup>

Chinese regulators acknowledge the use of VIE structures by Chinese firms. In March 2017, a decision by China's Supreme Court ruled that transactions facilitated through VIE structures are legal regardless of whether the VIE in question violates Chinese foreign investment restrictions.<sup>167</sup> The Chinese government has not made any serious efforts to adjust the relevant laws and ensure Chinese companies listed abroad through the VIE structure have a legal responsibility to their foreign investors.<sup>168</sup> Chinese regulators proposed legislation in January 2015 to outlaw VIEs, but the law would have excluded firms controlled by Chinese nationals.<sup>169</sup> This provision has not appeared in subsequent regulations issued by the Chinese government, allowing VIEs to continue operating in a legal gray zone in the United States.<sup>170</sup>

#### *State Secrecy Laws*

China's state security laws also limit the U.S. government's ability to properly regulate and oversee Chinese companies operating in the United States. Chinese laws governing the protection of state secrets and national security limit foreign access to Chinese companies' audit reports.<sup>171</sup> As a result, when Chinese-based firms list on U.S. stock exchanges, the audit work papers of these companies often cannot be accessed by U.S. regulators as required under U.S. law.<sup>172</sup> When audit work papers are provided, the veracity of their financial statements and disclosures cannot be verified by U.S. regulators.<sup>173</sup>

In 2012, the SEC charged five China-based subsidiaries of U.S. auditors—BDO China Dahua CPA Co. Ltd., Ernst & Young Hua Ming, KPMG Huazhen, Deloitte Touche Tohmatsu Certified Public Accountants, and PricewaterhouseCoopers ZhongTian—with breaking U.S. securities laws for refusing to turn over requested audit work papers.<sup>174</sup> These accounting firms could have been blocked from auditing U.S.-listed companies, but because they are the largest auditors of Chinese firms listed in the United States, deregistering them would greatly limit the ability of Chinese companies to list on U.S. stock exchanges.<sup>175</sup> Instead, the SEC imposed \$500,000 sanctions on four of the five firms,\* along with an admission from each firm that it had failed to turn over proper documentation.<sup>176</sup> The weak ruling prompted China's state-owned media outlet Xinhua to declare China-based auditors "too big to ban."<sup>177</sup>

Because the Chinese government restricts some Chinese companies from providing financial information to foreign auditing firms, inspections of U.S.-listed Chinese companies are conducted entirely by Chinese auditors. There are around 100 accounting firms in both China and Hong Kong that conduct audits of U.S.-listed Chinese companies.<sup>178</sup> China's Ministry of Finance, the Chinese Securities Regulatory Commission, and the China Institute of Certified Public Accountants are granted responsibility for oversight of these ac-

\*The case against Dahua remains ongoing.

counting firms, and are responsible for conducting quality control procedures and inspecting audit papers.<sup>179</sup>

U.S. regulators are attempting to increase their access to China's auditing reports.<sup>180</sup> However, Beijing has shown little inclination to improve disclosures for foreign-listed firms. In July 2017, the Public Company Accounting Oversight Board (PCAOB) blocked Crowe Horwath HK, a Hong Kong-based auditor, from auditing U.S.-listed firms because the auditor was unable to secure the audit papers of its China-based clients. This is the second Hong Kong accounting firm to have its registration revoked by the PCAOB,\* highlighting the difficulties auditing firms face when tasked with securing audit work reports from Chinese companies prohibited from sharing sensitive financial information with foreign regulators.<sup>181</sup> Instead of increasing its cooperation with foreign auditors, the Chinese government has insisted the United States offer regulatory equivalency to China, accepting the work of Chinese regulators and auditors as though it was done by a U.S. company.<sup>182</sup> The EU already accepted regulatory equivalency with respect to audits of Chinese companies, but U.S. regulators have instead pushed for joint inspections of Chinese accounting firms together with local regulators.<sup>183</sup>

### ***Chinese Firms Disadvantage Investors on U.S. Exchanges***

Since cracking down on Chinese reverse mergers, U.S. regulators have struggled to deter sophisticated efforts by some Chinese companies to defraud U.S. investors. According to Peter Halesworth, founder of Heng Ren Investments, most Chinese companies listed in the United States are "ethical and law abiding."<sup>184</sup> However, legal barriers hindering audits and reviews of U.S.-listed Chinese firms have left bad actors shielded from prosecution for crimes committed against U.S. investors.<sup>185</sup> In a report released by Heng Ren in April 2016, Mr. Halesworth detailed instances of U.S.-listed Chinese issuers forcing sales below their U.S. market value, effectively lowballing U.S. investors.<sup>186</sup> The report found that from the start of 2015 to April 2016, 38 U.S.-listed Chinese companies announced buyout offers. Of those 38 buyouts, the premiums paid to U.S. shareholders averaged just 20.6 percent, compared to the 28.4 percent average premium typically paid to shareholders in buyouts of U.S.-listed companies. Ten of these buyouts offered shareholders premiums of 10 percent or less.<sup>187</sup> Because FPIs are not under U.S. jurisdiction, U.S. investors are left without legal recourse to challenge the unjustifiably low buyout price.<sup>188</sup> The average total assets of these 38 companies rose from \$122 million pre-IPO to \$994 million at the buyout announcement, with these firms leaving the United States financially strengthened after low-balling investors.<sup>189</sup> Several prominent Chinese companies have utilized this practice to disadvantage U.S. investors, including China Mobile Games & Entertainment Group and Focus Media Holdings Ltd.<sup>190</sup>

Another report by GeoInvesting, a financial information website focused on small-cap stocks, found China-based companies have perpetrated dozens of frauds on U.S. exchanges totaling at least

\*In January 2016 the PCAOB deregistered the Hong Kong affiliate of the auditing firm PKF International for not cooperating with a probe into its work for a Chinese company. Jennifer Hughes and Alice Woodhouse, "Hong Kong Auditors Trapped by U.S.-China Dispute," *Financial Times*, July 26, 2017.

\$5 billion in losses.<sup>191</sup> In many of these schemes, the executives of U.S.-listed Chinese companies sold their firm's assets and then raised money from U.S. investors.<sup>192</sup> One notable case was Puda Coal, a Chinese mining company that was listed on the NYSE until 2012, when it was revealed that the company's management had sold its assets to a Chinese competitor before raising money from U.S. investors. After the scheme was revealed, Puda's market capitalization on the NYSE dropped by nearly \$342 million.<sup>193</sup> The firm's shares were delisted (the company is no longer in business) and a \$250 million fine was issued to Puda's chairman and former chief executive.<sup>194</sup> The SEC never collected on the fine, however, and Puda's U.S. investors lost hundreds of millions of dollars.<sup>195</sup>

### ***Role of U.S. Regulators***

The job of protecting U.S. investors and mitigating the risks of stock market fraud falls primarily to two U.S. regulatory agencies, the SEC and the PCAOB, along with the stock exchanges themselves. The regulators' authority is based on the assumption that a firm's financial disclosures will accurately reflect its market value. However, China's strict limits on the activities of foreign auditors undermine the authority of these U.S. institutions, putting U.S. investors at risk.

### ***SEC Regulations***

The SEC is tasked with protecting U.S. investors, ensuring fairness in cross-border securities transactions, and maintaining efficient and transparent markets. This includes detection and prosecution of fraudulent activities perpetrated on U.S. stock exchanges by overseas issuers.<sup>196</sup> To this end, the SEC has worked to address concerns over foreign disclosure requirements and cross-border regulatory cooperation. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, for example, requires reciprocal inspections for audit regulators outside the United States, and mandates confidential exchanges of information with regulators in foreign countries.<sup>197</sup>

The SEC has sought multilateral and bilateral cross-border regulatory cooperation agreements with foreign governments to enhance oversight protocol.<sup>198</sup> The SEC is party to more than 75 formal cooperative arrangements with over 50 foreign regulators and law enforcement agencies, including a formal information sharing agreement with China signed in April 1994.<sup>199</sup> The SEC and the China Securities Regulatory Commission are also signatories to the International Organization of Securities Commissions (IOSCO) Multilateral Memorandum of Understanding (MOU) on enforcement cooperation, an agreement with 109 signatories seeking to enhance cross-border cooperation on issues such as enforcement cooperation, supervisory oversight, and exchanges for information regarding issuers.<sup>200</sup>

Even with these cooperation agreements in place, the SEC's ability to secure Chinese companies' audit work reports and prosecute fraudulent companies remains limited.<sup>201</sup> That responsibility has fallen largely to the SEC Cross-Border Working Group, which targets U.S.-listed foreign companies suspected of fraudulent activity.

The working group was established in 2011 in part due to the rise of Chinese reverse mergers in the United States and filed cases against more than 65 foreign issuers or executives and deregistered the securities of more than 50 companies by June 2013.<sup>202</sup> However, SEC criminal prosecutions have only been successful in cases involving individuals located in the United States, with Chinese securities regulators choosing not to prosecute firms or individuals for crimes committed by Chinese companies listed overseas.<sup>203</sup> Lewis Ferguson, a member of the PCAOB, estimates fraud by Chinese companies listed on U.S. stock exchanges has resulted in the loss of billions of dollars for U.S. investors.<sup>204</sup>

#### *PCAOB Negotiations*

For the past decade, the PCAOB,\* an independent regulator that audits U.S.-listed firms, has been negotiating with the China Securities Regulatory Commission and Ministry of Finance to permit joint inspections of accounting firms located in China.<sup>205</sup> Under the Sarbanes-Oxley Act of 2002, the PCAOB is required to conduct regular inspections of all registered U.S. and non-U.S. public accounting firms that audit firms listed on U.S. stock exchanges.<sup>206</sup> These inspections seek to protect investors in U.S. capital markets by ensuring that all public accounting firms are adhering to U.S. auditing standards and making such firms subject to the jurisdiction of U.S. courts.<sup>207</sup>

However, the Chinese government views inspections by foreign regulators in China as a violation of national sovereignty under its state security laws.<sup>208</sup> Despite SEC regulations mandating that every accounting firm registered with the PCAOB be inspected every three years, Chinese regulators have blocked the PCAOB from inspecting certified public accounting firms in China and Hong Kong.<sup>209</sup>

On May 24, 2013, the PCAOB and Chinese regulators announced an MOU providing for information sharing on matters relating to investigations of audits of U.S.-listed Chinese companies. Under the MOU, the PCAOB is permitted to access audit documents from Chinese accounting firms for use in investigations.<sup>210</sup> Shaswat Das, a senior attorney at Hunton & Williams, was the lead negotiator in the PCAOB's discussions with China until 2015, and saw the negotiations break down, in part over China's insistence that PCAOB inspection programs not include any SOEs or certain Internet-based firms.<sup>211</sup> Instead, Mr. Das noted in his testimony before the Commission, U.S.-listed Chinese companies continue to operate with little oversight under China's opaque accounting and auditing system, leaving U.S. investors exposed to exploitative and fraudulent activities.<sup>212</sup>

#### *U.S. Stock Exchange Regulations*

When FPIs list in the United States, they are subject to rules set by the exchanges themselves. Rather than enforcing vigorous listing requirements, however, many U.S. exchanges compete to attract list-

\*The Sarbanes-Oxley Act of 2002 created the PCAOB to oversee all accounting firms that audit public companies listed on U.S. stock exchanges. The PCAOB is a private-sector, nonprofit corporation, but the SEC is charged with approving PCAOB budgets and rules, appointing board members, and approving rules. Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, 116 STAT. 745 (July 30, 2002), codified at 15 U.S.C. § 7201 (2002).

ings from Chinese companies.<sup>213</sup> Compared to other international exchanges like the Hong Kong Exchange (HKEX) and London Stock Exchange (LSE), U.S. exchanges have lower barriers to entry for foreign firms. For instance, the NYSE and NASDAQ require emerging growth companies\* to provide only two years of audited financial statements that can be up to nine months old. Meanwhile, the LSE and HKEX both require all firms to submit three years of audited accounts that are no more than six months old.<sup>214</sup>

The NYSE and NASDAQ also have more lenient ownership requirements than the LSE and HKEX.<sup>215</sup> This was the primary sticking point in Alibaba's 2014 IPO, when Alibaba decided to list on the NYSE after it was rejected by the HKEX for failing to meet the exchange's listing requirements.<sup>216</sup> Alibaba's pre-IPO structure allowed 28 partners (mainly founders and senior executives) to maintain control of the board despite owning around 10 percent of the company.<sup>217</sup> While the HKEX refused to permit this structure on its market, both the NYSE and NASDAQ have no rules preventing this kind of corporate arrangement and competed for Alibaba's listing.<sup>218</sup>

### **Chinese Bid for the Chicago Stock Exchange**

In February 2016, the Chicago Stock Exchange (CHX), which makes up 0.5 percent of all U.S. stock transactions, announced it would be acquired by Chongqing Casin Enterprise Group for \$27 million—the first sale of a U.S. exchange to China.<sup>219</sup> Casin is a private Chinese investment holding company, but the deal attracted the attention of U.S. lawmakers over Casin's alleged connections to the Chinese government. Casin's ownership is difficult to confirm, but John Kerin, CEO of CHX, admitted the Chinese government may be a minority stakeholder in the firm.<sup>220</sup> Additionally, Casin's chairman, Shengju Lu, maintains ties to the Chinese government through a seat on a local industry committee overseen by the mayor of the Chongqing municipality.<sup>221</sup>

In February 2016, 46 Members of Congress wrote to CFIUS requesting the sale be closely investigated for any connections between Casin and the Chinese government.<sup>222</sup> Five lawmakers also wrote to the SEC in December 2016 to ask for an extended public comment period for review of Casin's bid.<sup>223</sup> According to Congressman Robert Pittenger (R-PA), the deal could provide the Chinese government with influence over U.S. financial markets, making them vulnerable to manipulation that could benefit Chinese firms or the Chinese economy.<sup>224</sup> The deal was approved by CFIUS in December 2016, with the panel finding “no unresolved national security concerns” in the deal.<sup>225</sup> Subsequently, the deal was submitted to the SEC and is still awaiting approval.<sup>226</sup> In July 2017, 11 Members of Congress wrote to the SEC asking it to stop the sale of CHX to Casin.<sup>227</sup> In August 2017, SEC commissioners ruled to delay a decision, overriding a staff recommendation that the deal be approved. SEC commissioners are set to review and vote on the deal on an unknown date.<sup>228</sup>

\*An emerging growth company is an issuer with the most recent year's total revenues below \$1 billion. U.S. Securities and Exchange Commission, *Jumpstart Our Business Startups Act Frequently Asked Questions*, December 21, 2015.

### **Implications for the United States**

The United States has long benefited from an open investment environment, encouraging FDI in all but a few sectors, mostly those with direct ties to U.S. national security. As Chinese FDI to the United States has increased, however, it has become clear that Beijing is not always motivated by the same commercial considerations that guide economic policy in Washington. Instead, the CCP has at times sought to utilize the U.S. investment environment to advantage Chinese firms and industries at the expense of their U.S. competitors. This reality necessitates a careful review of U.S. investment policies to preserve vital economic and national security interests.

As Chinese investment flows to the United States reach record levels, three important trends have emerged. First, most Chinese FDI in the United States (outside of real estate investments) is targeting industries deemed strategic by the Chinese government. Investments in U.S. ICT, for instance, may further the CCP's goals of advancing and controlling China's technology infrastructure, disseminating and controlling information, and protecting national security. Moreover, investments in U.S. agriculture and biotechnology ensure the stability of Chinese food imports, increase the efficiency of China's agricultural production, and give Chinese agribusinesses a competitive advantage over other global firms. Taken as a whole, these investments in strategic industries lead to the transfer of valuable U.S. assets, IP, and technology to China—particularly in sectors where the Chinese government does not offer reciprocal access to U.S. investments—presenting potential risks to critical U.S. economic and national security interests.

Second, some private Chinese companies operating in strategic sectors are private only in name. Instead, the state extends its influence through an array of measures, including financial support and other incentives, to influence business decisions and achieve state goals. This puts U.S. companies in these sectors at a distinct disadvantage, with their Chinese counterparts making business decisions based not on commercial considerations, but on political interests and with the financial backing of the state.

Third, some Chinese firms are utilizing increasingly sophisticated methods to acquire strategic U.S. entities. Chinese companies employ a myriad of methods to circumvent U.S. investment laws and regulations, including obscuring government-influenced investments through shell companies, conducting cyber espionage campaigns to financially weaken and then acquire U.S. firms, and claiming immunity from U.S. lawsuits under FSIA. These methods not only injure U.S. businesses, but also hinder the work of U.S. regulators; CFIUS reviews, for instance, are becoming more numerous and complex as investigators must navigate China's opaque and complex corporate structures.

Chinese activities on U.S. capital markets also present challenges for U.S. financial regulators, though many of these challenges are not unique to China but are true of all FPIs—particularly those based in tax havens. Specifically, offshore issuers are obligated to abide by the laws of their home country, allowing them to operate with relative anonymity and circumvent U.S. regulations. As a result, U.S. investors in offshore securities are not only vulnerable to

fraud schemes, but also lack the legal means to seek restitution for their losses.

China-based issuers often pose additional challenges because China's state secrecy laws limit foreign access to Chinese firms' audit reports, preventing the PCAOB from inspecting certified public accounting firms in China and Hong Kong. This leaves U.S. investors exposed to potentially exploitative and fraudulent activities by Chinese firms listed in the United States. Meanwhile, the complex listing structures of Chinese issuers, coupled with Chinese authorities' general unwillingness to actively regulate and protect U.S. investors, leave U.S. shareholders with no legal recourse to dispute fraud cases. The SEC and PCAOB—the regulatory bodies tasked with managing U.S. capital markets—have also been unable to reach an agreement with Chinese regulators to address the inadequacies of China's disclosure practices. After a decade of negotiations with Chinese regulators, it is apparent that, absent a dramatic policy shift, Beijing is unlikely to cooperate with efforts to make Chinese firms more accountable to their U.S. investors.

## ENDNOTES FOR SECTION 2

1. U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the U.S.: Balance of Payments and Direct Investment Position Data*, July 12, 2017, 8.
2. Rhodium Group, “China Investment Monitor.” <http://rhg.com/interactive/china-investment-monitor>.
3. Rhodium Group, “China Investment Monitor.” <http://rhg.com/interactive/china-investment-monitor>.
4. Rhodium Group analysts, interview with Commission staff, October 2, 2017.
5. Thilo Hanemann, Daniel H. Rosen, and Cassie Gao, “Two-Way Street: 2017 Update U.S.-China Direct Investment Trends,” *Rhodium Group*, May 2017, 24.
6. U.S.-China Economic and Security Review Commission, Chapter 1, Section 2, “Trends in Chinese Investment in the United States,” in *2013 Annual Report to Congress*, November 2013, 98.
7. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Robert Atkinson, January 26, 2017.
8. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Robert Atkinson, January 26, 2017; House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, *Hearing on China’s Technological Rise: Challenges to U.S. Innovation and Security*, written testimony of Robert Atkinson, April 26, 2017.
9. State Council of the People’s Republic of China, *Made in China 2025*, May 8, 2015. Translation; Tristan Kenderdine, “China’s Industrial Policy, Strategic Emerging Industries and Space Law,” *Asia and the Pacific Policy Studies* 4:2 (May 2017): 325–342.
10. People’s Republic of China, *13th Five-Year Plan on National Economic and Social Development*, March 17, 2016. Translation; Xiaolan Fu, *China’s Path to Innovation*, Cambridge University Press, 2015, 141–169.
11. Saumya Vaishampayan and Lingling Wei, “Yuan Weakness Spurs Fresh Surge in China Outflows,” *Wall Street Journal*, November 7, 2016.
12. State Administration of Foreign Exchange via CEIC database.
13. State Council of the People’s Republic of China, *Catalogue of Investment Projects Requiring Government Approval for 2013*, December 13, 2013. Translation; State Council of the People’s Republic of China, *Catalogue of Investment Projects Requiring Government Approval for 2014*, November 18, 2014. Translation.
14. State Council of the People’s Republic of China, *China Loosens Outbound Investment Control*, November 18, 2014; Karl P. Sauvant and Victor Zitian Chen, “China’s Regulatory Framework for Outward Foreign Direct Investment,” *China Economic Journal* 7:1 (February 2014): 11; Lu Jianxin and Fayen Wong, “China to Ease Restrictions on Overseas Investments,” Reuters, April 10, 2014.
15. China’s State Administration of Foreign Exchange, *Notice of the State Administration of Foreign Exchange about Further Simplifying and Improving Direct Investment Foreign Exchange Administrative Measures*, February 28, 2015. Translation.
16. State Council of the People’s Republic of China, *Catalogue of Investment Projects Requiring Government Approval for 2014*, October 31, 2014. Translation; Thilo Hanemann and Daniel H. Rosen, “Chinese Investment in the United States: Recent Trends and the Policy Agenda,” *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 2016, 69.
17. Stratfor, “How China Is Cracking Down, Closing Up and Lashing Out,” March 2, 2017.
18. Leslie Shaffer, “China’s Massive Corporate Crackdown Aimed at Curbing Outflows: IMF’s Former China Chief Prasad,” CNBC, June 28, 2017.
19. Thilo Hanemann, Adam Lysenko, and Cassie Gao, “Tectonic Shifts: Chinese Outbound M&A in 1H 2017,” *Rhodium Group*, June 27, 2017.
20. Samuel Shen et al., “China Forex Regulator Tightens Controls to Stem Capital Outflows—Sources,” Reuters, November 29, 2016.
21. Cheang Ming and Eunice Yoon, “China Isn’t Discouraging Overseas Investment, Only Regulating It, Beijing-Backed Think Tanker Says,” CNBC, July 30, 2017; Lingling Wei and Chao Deng, “Xi’s Sign-off Deals Blow to China Inc.’s Global Spending Spree,” *Wall Street Journal*, July 23, 2017.
22. Lingling Wei and Chao Deng, “Xi’s Sign-off Deals Blow to China Inc.’s Global Spending Spree,” *Wall Street Journal*, July 23, 2017.
23. Lucy Hornby, Yuan Ying, and Gabriel Wildau, “Big China Companies Targeted over ‘Systemic Risk’,” *Financial Times*, June 23, 2017.
24. Arash Massoudi and Lucy Hornby, “China Probe Shines Light on Top Dealmakers,” *Financial Times*, June 22, 2017.

25. Keith Bradsher, "Debt-Ridden Chinese Giant Now a Shadow of Its Former Size," *New York Times*, August 1, 2017.
26. Xinhua, "National Development and Reform Commission Representative Answers Journalists' Questions Pertaining to 'Guiding Opinions on Further Guiding and Regulating Overseas Investment,'" *State Council of the People's Republic of China*, August 18, 2017. Translation; State Council of the People's Republic of China, *Guiding Opinions on Further Guiding and Regulating Overseas Investment*, August 18, 2017. Translation.
27. Xinhua, "National Development and Reform Commission Representative Answers Journalists' Questions Pertaining to 'Guiding Opinions on Further Guiding and Regulating Overseas Investment,'" *State Council of the People's Republic of China*, August 18, 2017.
28. Bloomberg, "China Codifies Crackdown on 'Irrational' Outbound Investment," August 18, 2017.
29. Lester Ross and Kenneth Zhou, "New Policies on China's Overseas Investments," *WilmerHale*, September 1, 2017.
30. Bloomberg, "China Codifies Crackdown on 'Irrational' Outbound Investment," August 18, 2017.
31. Lester Ross and Kenneth Zhou, "New Policies on China's Overseas Investments," *WilmerHale*, September 1, 2017.
32. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
33. Thilo Hanemann and Cassie Gao, "Record Deal Making in 2016 Pushes Cumulative Chinese FDI in the U.S. above \$100 Billion," *Rhodium Group*, December 30, 2016.
34. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
35. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
36. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
37. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
38. U.S. Department of Commerce, Bureau of Economic Analysis, *New Foreign Direct Investment in the United States*, 2016.
39. Edward Wong, "Chinese Purchases of U.S. Companies Have Some in Congress Raising Eyebrows," *New York Times*, September 30, 2016; Greg Roumeliotis, "Lawmakers Ask U.S. to Block Chinese Takeover of Lattice Semiconductor," Reuters, December 5, 2016.
40. American Enterprise Institute, "China Global Investment Tracker." <http://www.aei.org/china-global-investment-tracker/>; U.S.-China Economic and Security Review Commission, Chapter 1, Section 1, "Year in Review: Economics and Trade," in *2016 Annual Report to Congress*, November 2016, 61–62; Daniel H. Rosen and Thilo Hanemann, "New Neighbors 2017 Update: Chinese FDI in the United States by Congressional District," *Rhodium Group*, April 24, 2017.
41. Thilo Hanemann and Daniel H. Rosen, "Chinese Investment in the United States: Recent Trends and the Policy Agenda," *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 2016, 7, 66–77.
42. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Thilo Hanemann, January 26, 2017.
43. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
44. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
45. Thilo Hanemann and Daniel H. Rosen, "Chinese Investment in the United States: Recent Trends and the Policy Agenda," *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 2016, 45.
46. Thilo Hanemann, Adam Lysenko, and Cassi Geo, "Tectonic Shifts: Chinese Outbound M&A in 1H 2017," *Rhodium Group*, June 27, 2017; Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
47. Roselyn Hsueh, "State Capitalism, Chinese-Style: Strategic Value of Sectors, Sectoral Characteristics, and Globalization," *Governance* 29:1 (January 2016): 88.
48. Roselyn Hsueh, "State Capitalism, Chinese-Style: Strategic Value of Sectors, Sectoral Characteristics, and Globalization," *Governance* 29:1 (January 2016): 89.
49. Defense Production Act of 1950 §721 (Amended by the Foreign Investment and National Security Act of 2007), Public Law No. 110–49, 2007.

50. Defense Production Act of 1950 §721 (Amended by the Foreign Investment and National Security Act of 2007), Public Law No. 110–49, 2007.
51. Defense Production Act of 1950 §721 (Amended by the Foreign Investment and National Security Act of 2007), Public Law No. 110–49, 2007.
52. James K. Jackson, “The Committee on Foreign Investment in the United States (CFIUS),” *Congressional Research Service*, June 13, 2017, 11.
53. Greg Roumeliotis, “U.S. Watchdog Expands Scrutiny to More Chinese Deals,” Reuters, October 11, 2016.
54. James K. Jackson, “The Committee on Foreign Investment in the United States (CFIUS),” *Congressional Research Service*, June 13, 2017, 12, 20.
55. Giovanna M. Cinelli, Partner, Morgan, Lewis, & Bockius, interview with Commission staff, October 5, 2017.
56. Committee on Foreign Investment in the United States, *2015 Annual Report to Congress*, September 2017, 2–3.
57. Committee on Foreign Investment in the United States, *2009 Annual Report to Congress*, November 2010, 27.
58. Giovanna M. Cinelli, Partner, Morgan, Lewis, & Bockius, interview with Commission staff, September 11, 2017.
59. Committee on Foreign Investment in the United States, *2010 Annual Report to Congress*, December 2011, 18.
60. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Robert Atkinson, January 26, 2017.
61. U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “13th Five-Year Plan,” in *2016 Annual Report to Congress*, November 2016, 156–160; David McLaughlin, “Obama Blocks Chinese Takeover of Aixtron as U.S. Security Risk,” *Bloomberg Markets*, December 2, 2016; Kate O’Keefe, “Trump Blocks China-Backed Fund from Buying Lattice Semiconductor,” *Wall Street Journal*, September 13, 2017.
62. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Thilo Hanemann, January 26, 2017.
63. John Cornyn, “Foreign Investments and National Security,” *Council on Foreign Relations*, June 22, 2017.
64. U.S. Senate Democrats, “A Better Deal on Trade and Jobs.” <https://democrats.senate.gov/wp-content/uploads/2017/07/A-Better-Deal-on-Trade-and-Jobs-FINAL.pdf>.
65. China Trade Extra, “Schumer Says Democrats’ New Trade Platform Is ‘Tougher Than Section 301,’” August 2, 2017.
66. Derek Scissors, “A Better Committee on Foreign Investment in the United States,” *Heritage Foundation*, January 28, 2013.
67. Jeff Stein, “U.S. Probes Chinese Ownership of CIA-Linked Insurance Company,” *Newsweek*, June 29, 2016.
68. Jon A. Hlafter, Patrick J. Lewis, and Rajvi Patel, “Navigating the Challenges of Chinese Acquisitions of U.S. Insurers,” *Skadden*, January 30, 2017.
69. Liana B. Baker, “Lattice Semiconductor to Be Bought by China-Backed Canyon Bridge,” Reuters, November 4, 2016; White House Office of the Press Secretary, *Statement from the Press Secretary on President Donald J. Trump’s Decision Regarding Lattice Semiconductor Corporation*, September 13, 2017.
70. Liana B. Baker, Koh Gui Qing, and Julie Zhu, “Exclusive: Chinese Government Money Backs Buyout Firm’s Deal for U.S. Chip Maker,” Reuters, November 28, 2016; White House Office of the Press Secretary, *Statement from the Press Secretary on President Donald J. Trump’s Decision Regarding Lattice Semiconductor Corporation*, September 13, 2017.
71. Liana B. Baker and AteeqUr Shariff, “Timeline-How Canyon Bridge’s Deal with Lattice Was Put Together,” Reuters, March 24, 2017.
72. *Wall Street Journal* Editorial Board, “China’s Global Semiconductor Raid,” January 12, 2017.
73. *Wall Street Journal* Editorial Board, “China’s Global Semiconductor Raid,” January 12, 2017.
74. Liana B. Baker and Diane Bartz, “Lattice Shares Soar after China’s Tsinghua Reports Buying Stake,” Reuters, April 13, 2016; Ed Lin, “China Inc. Retreats from Lattice Semiconductor,” *Barron’s*, October 7, 2016; Liana B. Baker, “Lattice Semiconductor to Be Bought by China-Backed Canyon Bridge,” Reuters, November 4, 2016.
75. Greg Roumeliotis, “Lawmakers Ask U.S. to Block Chinese Takeover of Lattice Semiconductor,” Reuters, December 5, 2016.
76. Robert Pittenger et al., “CFIUS on the Lattice Semiconductor Acquisition,” December 6, 2016.

77. Liana B. Baker and Greg Roumeliotis, “Exclusive: China-Backed Fund in Third Bid for U.S. to Approve Chip Deal—Sources,” Reuters, June 11, 2017.
78. Kate O’Keefe, “Trump Blocks China-Backed Fund from Buying Lattice Semiconductor,” *Wall Street Journal*, September 13, 2017.
79. White House Office of the Press Secretary, *Statement from the Press Secretary on President Donald J. Trump’s Decision Regarding Lattice Semiconductor Corporation*, September 13, 2017.
80. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
81. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Jeffrey Johnson, January 26, 2017.
82. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
83. United States v. Hanjuan Jin, September 26, 2013. <http://tsi.brooklaw.edu/cases/united-states-v-hanjuan-jin/>; Brooklyn Law School, Trade Secrets Institute, *United States v. Hanjuan Jin*, September 26, 2013.
84. David Goldman, “Google Seals \$13 Billion Motorola Buy,” CNN Money, May 22, 2012.
85. Cecilia Kang, “Google Sells Motorola Mobility to Lenovo for \$2.91 Billion,” *Washington Post*, January 29, 2014.
86. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
87. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
88. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
89. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Jeffrey Johnson, January 26, 2017.
90. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Jeffrey Johnson, January 26, 2017.
91. Matthew Miller and Michael Martina, “Chinese State Entities Argue They Have ‘Sovereign Immunity’ in U.S. Courts,” Reuters, May 11, 2016.
92. Foreign Sovereign Immunities Act, 28 USC §1605, Public Law No. 94–583, 1976.
93. Foreign Sovereign Immunities Act, 28 USC §1605, Public Law No. 94–583, 1976.
94. Noah Feldman, “Gap in U.S. Law Helps Chinese Companies, for Now,” *Bloomberg View*, May 15, 2016.
95. Vidya Kauri, “Panel Lacked Authority in \$70M Wind Energy Row, Court Told,” *Law 360*, March 21, 2016.
96. Sindu Sundar, “Chinese Co. Ducks MDL Claims over Defective Drywall,” *Law 360*, March 15, 2016.
97. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Patrick Jenevein, January 26, 2017.
98. Charles Grassley, “Grassley Looks to Keep State-Owned Enterprises from Skirting U.S. Courts,” September 15, 2016.
99. Noah Feldman, “Gap in U.S. Law Helps Chinese Companies, for Now,” *Bloomberg View*, May 15, 2016.
100. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Patrick Jenevein, January 26, 2017.
101. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Patrick Jenevein, January 26, 2017.
102. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of James Stengel, January 26, 2017.

103. Matthew Miller and Michael Martina, "Chinese State Entities Argue They Have 'Sovereign Immunity' in U.S. Courts," Reuters, May 11, 2016.
104. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of James Stengel, January 26, 2017.
105. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of James Stengel, January 26, 2017.
106. Thilo Hanemann and Cassie Gao, "Record Deal Making in 2016 Pushes Cumulative Chinese FDI in the U.S. above \$100 Billion," *Rhodium Group*, December 30, 2016; Thilo Hanemann and Cassie Gao, "Chinese FDI in the U.S.: 2013 Recap and 2014 Outlook," *Rhodium Group*, January 7, 2014.
107. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
108. Thilo Hanemann and Daniel H. Rosen, "Chinese Investment in the United States: Recent Trends and the Policy Agenda," *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 2016, 33; Cecilia Kang, "Google Sells Motorola Mobility to Lenovo for \$2.91 Billion," *Washington Post*, January 29, 2014.
109. Stratfor, "China's Outward Push in High-Tech Investment and Innovation," June 12, 2015; Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
110. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>; Thilo Hanemann, Adam Lysenko, and Cassie Gao, "Tectonic Shifts: Chinese Outbound M&A in 1H 2017," *Rhodium Group*, June 27, 2017.
111. U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, "China's 13th Five-Year Plan," in *2016 Annual Report to Congress*, November 2016, 155–161.
112. Thilo Hanemann and Daniel H. Rosen, "Chinese Investment in the United States: Recent Trends and the Policy Agenda," *Rhodium Group* (prepared for the U.S.-China Economic and Security Review Commission), December 8, 2016, 79–81.
113. Penny Pritzker, *U.S. Secretary of Commerce Penny Pritzker Delivers Major Policy Address on Semiconductors at Center for Strategic and International Studies*, November 2, 2016.
114. U.S. Treasury Department, *Statement on the President's Decision Regarding the U.S. Business of Aixtron SE*, December 2, 2016.
115. U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, "China's 13th Five-Year Plan," in *2016 Annual Report to Congress*, November 2016, 155–161.
116. U.S. Executive Office of the President, "Ensuring Long-Term U.S. Leadership in Semiconductors," *President's Council of Advisors on Science and Technology*, January 2017, 2.
117. John Adams, "Remaking American Security: Supply Chain Vulnerabilities and National Security Risks across the U.S. Defense Industrial Base," *Alliance for American Manufacturing*, May 2013, 151.
118. John Adams, "Remaking American Security: Supply Chain Vulnerabilities and National Security Risks across the U.S. Defense Industrial Base," *Alliance for American Manufacturing*, May 2013, 153–161, 169–174.
119. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Robert Atkinson, January 26, 2017.
120. Robert Atkinson, "Stop China's Plan to Weaken American Innovation," *Christian Science Monitor*, April 1, 2015.
121. U.S. Information Technology Office, "CIRC Moves Forward with 'Secure and Controllable' ICT Rules," April 19, 2016; Robert Atkinson, "Stop China's Plan to Weaken American Innovation," *Christian Science Monitor*, April 1, 2015.
122. Josh Chin and Eva Dou, "China's New Cybersecurity Law Rattles Foreign Tech Firms," *Wall Street Journal*, November 7, 2016; Sherisse Pham, "China's New Cyber Law Just Kicked in and Nobody's Sure How It Works," CNN, June 1, 2017.
123. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Robert Atkinson, January 26, 2017.
124. U.S. Executive Office of the President, "Ensuring Long-Term U.S. Leadership in Semiconductors," *President's Council of Advisors on Science and Technology*, January 2017, 2.
125. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.

126. Rhodium Group, "China Investment Monitor." <http://rhg.com/interactive/china-investment-monitor>.
127. Nathalie Tadena, "Smithfield Shareholders Approve Shuanghui Deal," *Wall Street Journal*, September 24, 2013.
128. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Patrick Woodall, January 26, 2017.
129. Alanna Petroff, "China Gets Green Light for Biggest-Ever Foreign Acquisition," *CNN Money*, April 5, 2017.
130. North Carolina Biotechnology Center, "Syngenta Adds \$94M to RTP Labs, Offices, 150 Jobs," July 30, 2013.
131. Shayndi Raice, "Syngenta-ChemChina Deal Could Raise U.S. Security Issues," *Wall Street Journal*, February 3, 2016.
132. Alan Bjerga, Sara Forden, and Shruti Date Singh, "Smithfield CEO Faces Lawmakers as Deal Raises Concerns," *Bloomberg*, July 10, 2013; Food & Water Watch and National Farmers Union, "China National Chemical Corporation Proposed Purchase of Syngenta AG," July 21, 2016.
133. Food & Water Watch and National Farmers Union, "China National Chemical Corporation Proposed Purchase of Syngenta AG," July 21, 2016.
134. Food & Water Watch and National Farmers Union, "China National Chemical Corporation Proposed Purchase of Syngenta AG," July 21, 2016; Food & Water Watch and National Farmers Union, "Shuanghui's International Holdings, Ltd. Proposed Purchase of Smithfield Foods," July 9, 2013.
135. Food & Water Watch and National Farmers Union, "China National Chemical Corporation Proposed Purchase of Syngenta AG," July 21, 2016.
136. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Patrick Woodall, January 26, 2017.
137. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Patrick Woodall, January 26, 2017.
138. Xinhua, "U.S. Ambassador to China Nominee Says to Work to Enhance China-U.S. Ties," February 2, 2017.
139. Jacob Bunge, Brian Spegele, and William Maudlin, "Powerful U.S. Panel Clears Chinese Takeover of Syngenta," *Wall Street Journal*, August 23, 2016.
140. Securities Exchange Act of 1934 §240.3b-4, Public Law No. 73-291, 1967.
141. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Peter Halesworth, January 26, 2017; U.S. Securities and Exchange Commission, *Accessing the U.S. Capital Markets—A Brief Overview for Foreign Private Issuers*.
142. U.S. Securities and Exchange Commission, *Accessing the U.S. Capital Markets—A Brief Overview for Foreign Private Issuers*.
143. U.S. Securities and Exchange Commission, *Accessing the U.S. Capital Markets—A Brief Overview for Foreign Private Issuers*; Latham and Watkins LLP, "The Latham FPI Guide: Accessing the U.S. Capital Markets from Outside the United States," 2015, 16.
144. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Peter Halesworth, January 26, 2017.
145. NASDAQ, "Companies on NYSE."
146. NASDAQ, "Companies on NYSE."
147. NASDAQ, "Companies on NYSE."
148. U.S. Securities and Exchange Commission, *International Investing*, December 7, 2016; TopForeignStocks.com, "The Full List of Chinese ADRs," March 2017.
149. TopForeignStocks.com, "The Full List of Chinese ADRs," March 2017.
150. U.S. Securities and Exchange Commission, *International Investing*, December 7, 2016.
151. Liyan Chen, Ryan Mac, and Brian Solomon, "Alibaba Claims Title for Largest Global IPO Ever with Extra Share Sales," *Forbes*, September 22, 2014.
152. Taylor Hall, "China Returns to U.S. IPO Market in Big Way with ZTO Express," *Bloomberg Markets*, October 26, 2016.
153. Alec Macfarlane and Corrie Driebusch, "ZTO Express, the Biggest U.S. IPO of the Year, Drops in Trading Debut," *Wall Street Journal*, October 27, 2016.
154. U.S. Securities and Exchange Commission, *Investor Bulletin: Reverse Mergers*, June 9, 2011.

155. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Shaswat Das, January 26, 2017.
156. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Peter Halesworth, January 26, 2017.
157. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Shaswat Das, January 26, 2017.
158. NASDAQ, “Companies in China.”
159. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Peter Halesworth, January 26, 2017.
160. U.S. Department of State, *Investment Climate Statements for 2016—China*, July 5, 2016.
161. Samuel Farrell Ziegler, “China’s Variable Interest Entity Problem: How Americans Have Illegally Invested Billions in China and How to Fix It,” *George Washington Law Review* 84:2 (March 2016): 541.
162. Samuel Farrell Ziegler, “China’s Variable Interest Entity Problem: How Americans Have Illegally Invested Billions in China and How to Fix It,” *George Washington Law Review* 84:2 (March 2016): 541; Kevin Rosier, “The Risks of China’s Internet Companies on U.S. Stock Exchanges,” *U.S.-China Economic and Security Review Commission*, September 12, 2014, 5.
163. Paul Gillis, “Updated Statistics on VIE Use,” *China Accounting Blog*, February 20, 2017.
164. Kevin Rosier, “The Risks of China’s Internet Companies on U.S. Stock Exchanges,” *U.S.-China Economic and Security Review Commission*, September 12, 2014, 5.
165. Samuel Farrell Ziegler, “China’s Variable Interest Entity Problem: How Americans Have Illegally Invested Billions in China and How to Fix It,” *George Washington Law Review*, 84:2 (March 2016): 542; Paul Gillis, “Son of Enron? Alibaba’s Risky Corporate Structure,” *Foreign Affairs*, October 28, 2014.
166. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017.
167. Paul Gillis, “Supreme Court Decision Little Help to Investors,” *China Accounting Blog*, March 11, 2017.
168. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017; Paul Gillis, “ZTO’s Unusual VIE,” *China Accounting Blog*, October 26, 2016.
169. China’s Ministry of Commerce, *Foreign Investment Law (Draft)*, January 19, 2015.
170. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017; Paul Gillis, “Supreme Court Decision Little Help to Investors,” *China Accounting Blog*, March 10, 2017.
171. People’s Republic of China Standing Committee of the National People’s Congress, *Law on Guarding State Secrets*, August 21, 2005. Translation.
172. Kareena Teh and Fabian Roday, “China’s State Secret Laws: Avoiding Liability in Cross Border Litigation and Investigations,” *Dechert LLP*, June 2014; U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Shaswat Das, January 26, 2017.
173. Kareena Teh and Fabian Roday, “China’s State Secret Laws: Avoiding Liability in Cross Border Litigation and Investigations,” *Dechert LLP*, June 2014; U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Shaswat Das, January 26, 2017.
174. U.S. Securities and Exchange Commission, *SEC Imposes Sanctions against China-Based Members of Big Four Accounting Networks for Refusing to Produce Documents*, February 6, 2015.
175. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Paul Gillis, January 26, 2017.
176. U.S. Securities and Exchange Commission, *SEC Imposes Sanctions against China-Based Members of Big Four Accounting Networks for Refusing to Produce Doc-*

- uments, February 6, 2015; U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “Governance and Accountability in China’s Financial System,” in *2013 Annual Report to Congress*, November 2013, 138.
177. *Wall Street Journal*, “The SEC Caves on China,” February 26, 2015.
178. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Paul Gillis, January 26, 2017.
179. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Shaswat Das, January 26, 2017.
180. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Paul Gillis, January 26, 2017.
181. Jennifer Hughes and Alice Woodhouse, “Hong Kong Auditors Trapped by U.S.-China Dispute,” *Financial Times*, July 26, 2017.
182. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Paul Gillis, January 26, 2017.
183. Paul Gillis, “Regulatory Equivalency—Bad for Investors,” *China Accounting Blog*, August 2, 2016.
184. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Peter Halesworth, January 26, 2017.
185. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Peter Halesworth, January 26, 2017.
186. Peter Halesworth, “Chinese ‘Squeeze Outs’ in American Stock Markets and the Need to Protect U.S. Investors,” *Heng Ren Partners*, April 12, 2016, 6.
187. Peter Halesworth, “Chinese ‘Squeeze Outs’ in American Stock Markets and the Need to Protect U.S. Investors,” *Heng Ren Partners*, April 12, 2016, 6.
188. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Peter Halesworth, January 26, 2017.
189. Peter Halesworth, “Chinese ‘Squeeze Outs’ in American Stock Markets and the Need to Protect U.S. Investors,” *Heng Ren Partners*, April 12, 2016, 6.
190. Peter Halesworth, “Chinese ‘Squeeze Outs’ in American Stock Markets and the Need to Protect U.S. Investors,” *Heng Ren Partners*, April 12, 2016, 8.
191. Dan David, “EB-5: The SEC Has Done an Amazing Job Protecting Chinese Investors—Will China Return the Favor?” *GeoInvesting*, March 10, 2016; Dan David, “The China Hustle,” *GeoInvesting*, 1.
192. Dan David, “The China Hustle,” *GeoInvesting*, 9.
193. Dan David, “The China Hustle,” *GeoInvesting*, 9; Dena Aubin, “Macquarie to Pay \$7.4 Mln in Puda Coal Settlement,” Reuters, October 19, 2015.
194. Dan David, “The China Hustle,” *GeoInvesting*; *Taipei Times*, “U.S. SEC Fines Puda Coal Executives US\$250 Million,” July 26, 2015.
195. Dan David, “The China Hustle,” *GeoInvesting*.
196. U.S. Securities and Exchange Commission, *Office of International Affairs*. <https://www.sec.gov/oia/Article/about.html>.
197. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 §929, Pub. L. 111–203, 124 STAT. 1376 (2010) 12 USC 5301 (2010).
198. Mary Jo White, “Securities Regulation in the Interconnected, Global Marketplace,” *U.S. Securities and Exchange Commission*, September 21, 2016.
199. U.S. Securities and Exchange Commission, *Cooperative Arrangements with Foreign Regulators*, March 14, 2017; U.S. Securities and Exchange Commission, *SEC Bilateral Information Sharing Arrangements*, February 6, 2006.
200. International Organization of Securities Commissions, *Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMoU)*, 2017; International Organization of Securities Commissions, *IOSCO MMoU: Appendix A*, 2017.
201. Cynthia Fornelli, “Financial Reporting and Confidence in Trading Markets” (Center for Professional Education, Inc., SEC Conference, Shanghai, China, June 21, 2011); *Wall Street Journal*, “The SEC Caves on China,” February 26, 2015.
202. Ropes & Gray, “SEC’s Cross-Border Working Group Continues to Target China-Based Issuers,” June 26, 2013.
203. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017.

204. Lewis H. Ferguson, “Investor Protection through Audit Oversight,” *Public Company Accounting Oversight Board*, June 19, 2012.
205. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017; Paul Gillis, “Will China Let the PCAOB In?” *China Accounting Blog*, September 6, 2015.
206. Sarbanes-Oxley Act of 2002, Pub. L. No. 107–204, 116 STAT. 745 (July 30, 2002), codified at 15 U.S.C. § 7201 (2002).
207. Paul Gillis, “Destroyers and the PCAOB,” *China Accounting Blog*, November 6, 2015; Public Company Accounting Oversight Board, “Inspected Firms.”
208. People’s Republic of China Standing Committee of the National People’s Congress, *Law on Guarding State Secrets*, August 21, 2005. Translation.
209. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Paul Gillis, January 26, 2017.
210. Public Company Accounting Oversight Board, “PCAOB Enters into Enforcement Cooperation Agreement with Chinese Regulators,” May 24, 2013.
211. Paul Gillis, “Regulatory Equivalency—Bad for Investors,” *China Accounting Blog*, August 2, 2016.
212. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, written testimony of Shaswat Das, January 26, 2017.
213. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Investment in the United States: Impacts and Issues for Policymakers*, oral testimony of Paul Gillis, January 26, 2017.
214. PricewaterhouseCoopers, “Which Market? An Overview of London, New York and Hong Kong Stock Exchanges,” March 4, 2015, 4–5.
215. PricewaterhouseCoopers, “Which Market? An Overview of London, New York and Hong Kong Stock Exchanges,” March 4, 2015, 4–5.
216. Matt Egan, “Jack Ma Wishes Alibaba Never Went Public,” *CNN Money*, June 9, 2015.
217. Denny Thomas and Elzio Barreto, “Rattled by Alibaba Loss, Hong Kong Bankers Seek Market Reforms,” *Reuters*, September 26, 2013.
218. Gregor Stuart Hunter, “Hong Kong Exchange Considers Rule Change after Losing Alibaba IPO,” *Wall Street Journal*, August 29, 2014.
219. John McCrank, “Chinese Investor Group to Buy Chicago Stock Exchange,” *Reuters*, February 5, 2017; Annie Massa, Dune Lawrence, and Nick Baker, “Chicago Wants to Be a Hub for China Stock Trading,” *Bloomberg Businessweek*, March 9, 2017.
220. Josh Rogin, “Congress Is Wary of Chinese Deal for Chicago Stock Exchange,” *Bloomberg View*, February 17, 2016.
221. Robert Pittenger et al., “CFIUS and the Chicago Stock Exchange,” February 16, 2016.
222. Robert Pittenger et al., “CFIUS and the Chicago Stock Exchange,” February 16, 2016.
223. Robert Pittenger et al., “Letter to the SEC: Chicago Stock Exchange,” December 22, 2016.
224. Josh Rogin, “Congress Is Wary of Chinese Deal for Chicago Stock Exchange,” *Bloomberg View*, February 17, 2016.
225. Matt Egan, “China Clears Key Hurdle to Buy Chicago Stock Exchange,” *CNN Money*, December 15, 2016.
226. Matt Egan, “China Clears Key Hurdle to Buy Chicago Stock Exchange,” *CNN Money*, December 15, 2016.
227. John McCrank, “Lawmakers Urge SEC to Stop Chicago Stock Exchange’s China Deal,” *Reuters*, July 10, 2017.
228. Benjamin Bain and Charlotte Chilton, “SEC Delays Decision on Chinese Buy-out of Chicago Exchange,” *Bloomberg Markets*, August 9, 2017.

## **SECTION 3: U.S. ACCESS TO CHINA'S CONSUMER MARKET**

### **Key Findings**

- China's rebalancing to a more consumption-driven growth model should present opportunities for U.S. companies in the e-commerce, logistics, and financial services sectors. However, U.S. companies operating in China do not have a level playing field and continue to face significant market access challenges, including informal bans on entry, caps on foreign equity, licensing delays, and data localization policies.
- China is the largest e-commerce market in the world, with e-commerce sales reaching \$787 billion in 2016. According to the U.S. Department of Commerce, by 2019 an estimated one out of every three retail dollars in China will be spent online, the highest percentage in the world. Although China has traditionally provided the world with its manufactured goods, its e-commerce boom should offer increased opportunities for U.S. retailers and brands, with more and more Chinese consumers purchasing foreign goods. Demand is strong in areas where the United States excels, such as high-quality foods and supplements, beauty products, and healthcare-related goods.
- Although China's e-commerce market offers opportunities for U.S. retailers and brands, it is not without its challenges and risks. While the Chinese government has made some improvements in enforcing intellectual property rights, intellectual property issues remain a key challenge for U.S. companies operating in China. In particular, the prevalence of counterfeit goods on Chinese e-commerce platforms continues to hurt U.S. retailers and brands.
- E-commerce has been a key driver of improvements to China's \$2.2-trillion-dollar logistics sector. Yet, China's domestic logistics industry remains underdeveloped, due to the country's historical focus on improving export logistics at the expense of domestic logistics infrastructure. This has caused logistics to become a major bottleneck for China's e-commerce sector. China's efforts to develop and modernize its express delivery industry could offer U.S. logistics firms like FedEx and UPS opportunities to expand their China operations.
- Financial services have been a major driver of growth within China's services sector, increasing 11 percent annually from 2012 to 2016. However, Chinese consumers' access to financial services remains inadequate, and most Chinese consumers lack

formal credit histories. Improving their access to financial services will be critical for raising domestic consumption levels. In addition, China has made limited progress in implementing reforms to improve the market orientation and efficiency of its financial sector.

- Financial services are a mainstay of the U.S. economy and a major services export to China. While China has taken some steps to expand foreign firms' access to its financial markets since joining the World Trade Organization, U.S. financial services companies continue to face significant market access barriers in China. These include informal and formal bans on entry, equity caps, licensing restrictions, and data localization requirements. China's new cybersecurity law poses additional challenges for U.S. financial institutions operating in China. As a result, U.S. firms' market share in China's financial sector has been stagnant or declining in recent years.
- China has become a global leader in financial technology. China's Internet giants have emerged as significant players not only in e-commerce and logistics, but also in China's financial services sector, particularly in payments and lending.

### Recommendations

The Commission recommends:

- Congress direct the Office of the U.S. Trade Representative to develop criteria for the Notorious Markets List to ensure listed companies can be held accountable for engaging in or facilitating copyright piracy and trademark counterfeiting.
- Congress require the Office of the U.S. Trade Representative to expand the National Trade Estimate's coverage of China's digital trade barriers to include an assessment of their impact on U.S. industries and whether they comply with China's World Trade Organization commitments.

### Introduction

Rising incomes in China are expanding a massive new class of consumers. According to management consulting firm McKinsey & Company, in 2016 there were 116 million middle-class and affluent households in China, compared with just 2 million such households in 2000.\* Chinese consumption is projected to increase by about half—to \$6.5 trillion—by 2020, and a growing amount of domestic consumption is being driven by purchases

---

\*McKinsey defines China's middle-class and affluent households as having annual disposable income of at least \$21,000. The income threshold for this broad category is significantly higher than China's per capita disposable income, which reached \$3,520 (RMB 23,821) in 2016. In comparison, U.S. national per capita disposable income was \$43,914 in 2016. The number of high net worth individuals in China has also risen dramatically in recent years. According to the 2017 China Private Wealth Report by Bain & Company and China Merchants Bank, Chinese individuals with at least \$1.47 million (RMB 10 million) in investable assets reached 1.6 million in 2016, up from 180,000 in 2006. U.S. Department of Commerce, Bureau of Economic Analysis, "Personal Income and Its Disposition," July 28, 2017; *Newsweek*, "China Has Nine Times More Millionaires than a Decade Ago: Survey," June 20, 2017; Jonathan Woetzel et al., "Capturing China's \$5 Trillion Productivity Opportunity," *McKinsey Global Institute*, June 2016; *China Daily*, "China's Personal Income Rises 6.3 Percent in 2016," January 20, 2017.

made online.\* China's stated plans to rebalance to a more consumption-driven economy should present opportunities for U.S. companies operating in the e-commerce, logistics, and financial services sectors.

However, U.S. service industries operating in and exporting to China face an uneven playing field and continue to contend with significant market access challenges, including informal bans on entry, caps on foreign equity, licensing delays, and data localization policies (see Addendum I).<sup>1</sup> U.S. services companies have also struggled to acquire market share in China's consumer market due to tough competition from local firms, which had an advantage by entering the market first and continue to benefit from state support. As a result, it may be increasingly difficult for U.S. companies to be significant players.

This section analyzes recent developments in China's e-commerce, logistics, and financial services sectors and identifies opportunities and challenges for U.S. companies. It examines how China's major technology companies are driving innovation in the country's consumer market, particularly in the e-commerce and financial services sectors. The section draws from the Commission's June 2017 hearing on U.S. access to China's consumer market, consultations with industry experts, and open source research.

## E-Commerce

### *Overview of China's E-Commerce Sector*

One of the most dramatic changes in China's consumer economy has been the remarkable growth of e-commerce—the buying and selling of goods and services over the Internet. China is the largest e-commerce market in the world, with e-commerce sales reaching \$787 billion (renminbi [RMB] 5.3 trillion)<sup>†</sup> in 2016, a 39 percent increase from 2015 (see Figure 1).<sup>‡</sup> By 2019, an estimated one out of every three retail dollars in China will be spent online, the highest share in the world.<sup>§</sup><sup>2</sup>

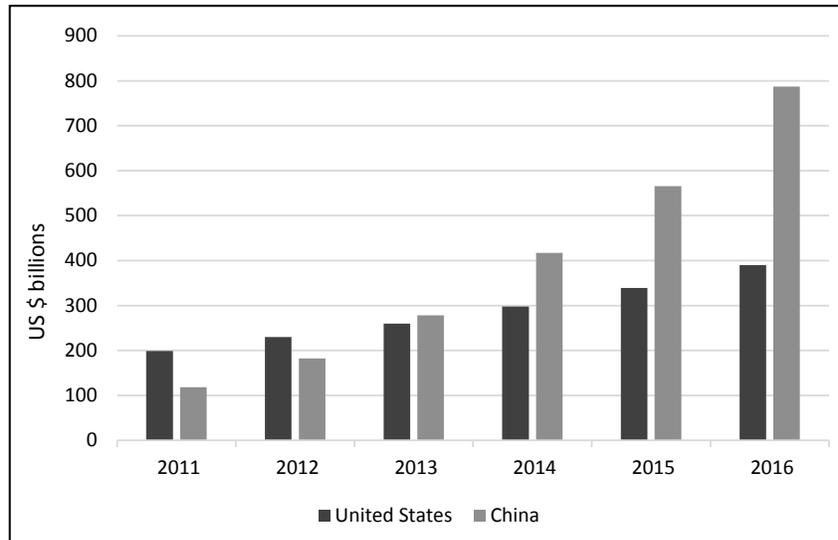
---

\*Online transactions made up a mere 3 percent of total private consumption in 2010; by 2015, e-commerce accounted for 15.9 percent of all retail sales. Private online consumption in China is projected to grow by 20 percent annually through 2020 (compared with 6 percent annual growth in offline retail sales), reaching \$1.6 trillion annually, or 24 percent of private consumption. U.S. Department of Commerce, International Trade Administration, *China eCommerce Overview*, 2016; Yuchi Kuo, "3 Great Forces Changing China's Consumer Market," *World Economic Forum*, January 4, 2016.

<sup>†</sup>Unless noted otherwise, this section uses the following exchange rate throughout: \$1 = RMB 6.77.

<sup>‡</sup>In comparison, online retail sales in the United States reached \$390 billion in 2016. China overtook the United States to become the world's largest e-commerce market in 2013, with \$278 billion in online retail sales, compared to \$260 billion in the United States. China E-Business Research Center via CEIC database; U.S. Census Bureau, *Quarterly Retail E-Commerce Sales*, May 16, 2017.

<sup>§</sup>In 2016, e-commerce sales in China accounted for 16 percent of total retail sales, compared to 8 percent of all retail sales in the United States. China E-Business Research Center via CEIC database; *China Daily*, "China Retail Sales Grow 9.6 Percent in 2016," January 20, 2017; U.S. Census Bureau, *Quarterly Retail E-Commerce Sales, 4th Quarter 2016*, February 17, 2017.

**Figure 1: Online Retail Sales, China vs. United States, 2011–2016**

Source: China E-Business Research Center via CEIC database; U.S. Census Bureau, *Quarterly Retail E-Commerce Sales*, May 16, 2017.

### What Is E-Commerce?

The Organization for Economic Cooperation and Development (OECD) defines e-commerce as “the sale or purchase of goods and services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and the ultimate delivery of the goods or services do not have to be conducted online.”<sup>3</sup> E-commerce can involve physical goods, services purchased online but delivered in person, and digital goods and services. The three main types of e-commerce transactions are:<sup>4</sup>

- **Business-to-business (B2B):** B2B e-commerce involves electronic transactions of goods and services conducted between companies. B2B transactions account for the dominant share of e-commerce sales globally.
- **Business-to-consumer (B2C):** B2C e-commerce involves sales by e-commerce companies, or traditional brick-and-mortar retail and manufacturing firms with online sales channels, to consumers. Businesses reach consumers through social networks, dedicated e-commerce websites, crowdfunding platforms, and mobile applications (e.g., Amazon or Alibaba’s Tmall).
- **Consumer-to-consumer (C2C):** C2C e-commerce involves electronic transactions of goods and services conducted between consumers. These transactions are generally conducted through a third-party platform (e.g., eBay or Alibaba’s Taobao).

### What Is E-Commerce?—Continued

E-commerce can be difficult to measure due to varying definitions, the speed of its growth, and the fact that many companies conduct both e-commerce and traditional commerce concurrently.<sup>5</sup> A 2016 UN Conference on Trade and Development (UNCTAD) report notes, “In general, there is scant information on cross-border e-commerce. Most estimates of e-commerce do not make a clear distinction between whether it is domestic or international. What official statistics that exist are typically derived from either enterprise surveys or consumer surveys. The former can capture B2C and B2B e-commerce, while consumer surveys capture B2C and C2C transactions.”<sup>6</sup>

E-commerce’s impressive growth in China is largely due to an underdeveloped and fragmented traditional retail market, rapid Internet penetration, a large and expanding middle class, and government support for the sector.<sup>7</sup> E-commerce provides consumers, particularly those in lower-tier cities and rural areas, with an abundance of choice and accessibility.<sup>8</sup> China’s rapidly growing Internet penetration, driven primarily by increasing smartphone adoption, is also contributing to e-commerce growth. At the end of 2016, China had 731 million Internet users, or 53.2 percent of the population; 95 percent of China’s Internet users had mobile access to the Internet.<sup>9</sup> Mobile e-commerce sales made up half of all online sales in China in 2015—compared with a global average of 35 percent—and are projected to account for 74 percent of all online sales in 2020.<sup>10</sup> China’s middle class—largely urban, well-educated, and tech savvy—is fueling demand for foreign-made goods and high-quality products.\*<sup>11</sup> Finally, the Chinese government has prioritized e-commerce development as an important element of China’s “Internet Plus” strategy, which seeks to upgrade China’s economy by integrating the Internet with traditional industries.<sup>†</sup><sup>12</sup>

China’s e-commerce ecosystem consists of online marketplaces and third-party service providers that support companies with payment fulfillment, logistics, information technology support, and other areas.<sup>13</sup> This ecosystem has a number of key features:

- *China’s e-commerce landscape is dominated by the marketplace model.* Around 90 percent of Chinese e-commerce takes place on online marketplaces—platforms where products are listed by manufacturers, retailers, and individuals, and the transactions are facilitated and processed by the marketplace operator.<sup>14</sup> Alibaba’s Tmall and Taobao are well-known Chinese online marketplaces; their counterparts in the United States include Amazon and eBay.<sup>15</sup> In contrast, most online shoppers in North America and Europe buy from the online stores of brick-and-mortar re-

\*Key e-commerce product categories in China include apparel, consumer electronics, cosmetics, food and beverage, and infant care. Mark Ray, “An Introduction to E-Commerce in China,” *Sovereign Group*, 2016, 9.

†For more on China’s “Internet Plus” strategy, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “13th Five-Year Plan,” in *2016 Annual Report to Congress*, November 2016, 150.

tailers (e.g., Best Buy, Walmart, and Nike) or online merchants that manage their own websites, payments, and logistics (e.g., Amazon).<sup>16</sup> JD.com, China's second-largest e-commerce company after Alibaba, employs an Amazon-style direct sales model, where the company sources products from brands and suppliers and sells them directly to customers through its website.\* By selling direct to customers, JD.com is responsible for delivering items to customers.†

- *E-commerce is tightly integrated with social media.* Unlike in the United States, where consumers use separate websites for specific purposes (e.g., Amazon for shopping, Facebook for social functions), Chinese e-commerce companies have integrated social media functions into their platforms (see Figure 2).<sup>17</sup> In testimony to the Commission, Michael Zakkour, vice president at global consulting firm Tompkins International, described China as having “many of the most robust social media platforms in the world.”<sup>18</sup> For example, Alibaba's Taobao platform functions as a hybrid of Facebook and Amazon, offering users the ability to interact with their peers and other shoppers. JD.com teamed up with Chinese Internet giant Tencent to launch a shopping channel on Tencent's WeChat, China's top social media app.<sup>19</sup> According to a 2016 survey from McKinsey & Company, half of Chinese digital consumers use social media for researching products and making purchases.‡<sup>20</sup>
- *Cross-border e-commerce is a fast-growing part of China's e-commerce market.* Cross-border e-commerce purchases reached \$40 billion in 2015—6 percent of China's total e-commerce market—and are expected to triple to 15 percent of the total market by 2020.<sup>21</sup> The United States, followed by Japan and South Korea, are the most popular countries of origin for Chinese cross-border e-commerce purchases.<sup>22</sup> Rapid growth in China's cross-border e-commerce market has been spurred by middle- and upper-middle-class consumers looking to buy higher-quality goods, generally in niche offerings like infant milk formula, health supplements, and cosmetics.<sup>23</sup> Favorable government policies, such as lower tariff rates on products purchased through cross-border e-commerce, have also contributed to its growth.<sup>24</sup>

---

\*JD.com also offers an online marketplace for third-party sellers to sell their products to customers, but it accounts for just 6 percent of its revenue; most of JD.com's revenue comes from direct sales. *Business Insider*, “JD.com Is Gaining Ground on Alibaba,” *Business Insider*, March 6, 2017; JD.com, “How to Partner with JD.com.” <http://corporate.jd.com/forPartners>.

†In contrast, Alibaba and other e-commerce companies that operate under the marketplace model are not responsible for delivering items to customers. Alibaba, for example, allows customers to select third-party delivery services that are part of its logistics network, Cainiao.

‡A 2015 Deloitte report found that 47 percent of U.S. millennial consumers (defined as consumers between 18 and 34 years old) use social media to inform their shopping purchases, compared to 19 percent of non-millennial consumers. Kasey Lobaugh, Jeff Simpson, and Lokesh Ohri, “Navigating the New Digital Divide: Capitalizing on Digital Influence in Retail,” *Deloitte*, 2015, 7.

Figure 2: A Day in the Life of a Chinese Consumer



Source: Adapted from Hannu Verkasalo, "Why the Mobile Industry Needs to Watch China's Unique Ecosystem," *Verto Analytics*, May 24, 2016.

## U.S. Access to China's E-Commerce Market

### Market Access for U.S. E-Commerce Companies

China's digital ecosystem is extremely integrated—social media, search, e-commerce, and payments are all linked together through major online platforms (see Table 1).<sup>\*</sup> Success in one segment facilitates success in the other. Although foreign companies can operate e-commerce platforms, they face restrictions in other segments of China's digital ecosystem, putting them at a decided disadvantage.

Nonetheless, China's regulatory framework for foreign investment in the e-commerce sector has undergone significant liberalization over the last two years. In China, e-commerce falls under the value-added telecommunications services subcategory of "online data processing and transaction processing business."<sup>26</sup> In June 2015, the Ministry of Industry and Information Technology (MIIT) lifted foreign ownership restrictions in e-commerce businesses, allowing foreign investors to establish wholly foreign-owned e-commerce entities in China.<sup>27</sup> Previously, foreign investors were limited to joint ventures with equity ownership capped at 50 percent.<sup>†</sup> The change means the process for setting up an e-commerce entity in China is the same for domestic and foreign companies: a company has to first obtain a business license from China's Ministry of Commerce and then obtain a value-added telecommu-

<sup>\*</sup>The Boston Consulting Group explains, "As consumers move seamlessly through its various sites, Alibaba collects information on their shopping habits, digital media consumption, logistics needs, payment and credit history, search preferences, social networks, and Internet interests to better understand their behaviors and needs—using a 'unified ID' to link consumer data across different sites." Chris Biggs et al., "What China Reveals about the Future of Shopping," *Boston Consulting Group*, May 4, 2017.

<sup>†</sup>In China, e-commerce business is divided into two categories: (1) retailing e-commerce, where a company sells its own merchandise on a website, and (2) platform e-commerce, where the company operates an online platform for merchandise distributors and retailers. Since 2010, foreign investors have been allowed to operate wholly-owned online trading websites; this entails filing for an Internet content provider (ICP) registration with MIIT. Platform e-commerce, however, required a value-added telecommunications services permit for online data and transaction processing; prior to June 2015, foreign investors were restricted to joint ventures with shareholding capped at 50 percent. Jack Cai, "China Removes VATS Cap for Foreign-Owned Businesses," *Everheds Sutherland*, August 23, 2016; Ian Lewis and Frank Wang, "Wal-Mart Acquisition Shows China E-Commerce Is Opening Up," *Law 360*, September 17, 2015.

Table 1: China's Digital Ecosystem Is Highly Integrated

	E-Commerce	Payments	Social Media	Search
<b>Alibaba or Alibaba-invested service</b>	<p><b>Taobao</b> China's largest mobile commerce platform, with integrated entertainment and social features</p> <p><b>Tmall</b> China's largest third-party platform for brands and retailers</p> <p><b>80% market share</b> Gross merchandise value (GMV), 2016: \$556 billion (RMB 3,767 billion)</p>	<p><b>Alipay</b> China's largest online third-party payment system, with more than 450 million active users, compared with about 12 million for Apple Pay</p> <p><b>55% market share</b> Total payment volume, 2016: \$1.7 trillion (RMB 11.5 trillion)</p>	<p><b>Sina Weibo</b> China's biggest social media platform (Twitter-like microblog)</p> <p><b>310 million monthly users</b></p>	<p><b>Shenma</b> Mobile search engine</p> <p><b>6% market share</b></p>
<b>Tencent or Tencent-invested service</b>	<p><b>JD.com</b> Direct sales e-commerce platform (similar to Amazon)</p> <p><b>15% market share</b> GMV, 2016: \$97.2 billion (RMB 658.2 billion)</p>	<p><b>TenPay</b> Payments integrated into popular messaging app</p> <p><b>37% market share</b> Total payment volume, 2016: \$1.2 trillion (RMB 8.5 trillion)</p>	<p><b>WeChat</b> Messaging app with integrated shopping features</p> <p><b>890 million monthly users</b></p> <p><b>QQ</b> Popular messaging app with a focus on integrated games and blogging</p> <p><b>870 million monthly users</b></p>	<p><b>Sogou</b> Search engine</p> <p><b>3% market share</b></p>
<b>Baidu</b>		<p><b>Baidu Wallet</b> Payment system from largest search engine</p> <p><b>&lt;1% market share</b></p>		<p><b>Baidu</b> China's largest search engine</p> <p><b>80% market share</b></p>
<b>Services independent of Alibaba, Tencent, and Baidu</b>	<p><b>Suning, Vipshop, Gome</b></p> <p><b>~5% market share</b></p>	<p><b>Iqianbao, Union Mobile Financial, LianLian Pay, UnionPay, Yeepay, 99Bill</b></p> <p><b>7% market share</b></p>		

Source: Various.<sup>25</sup>

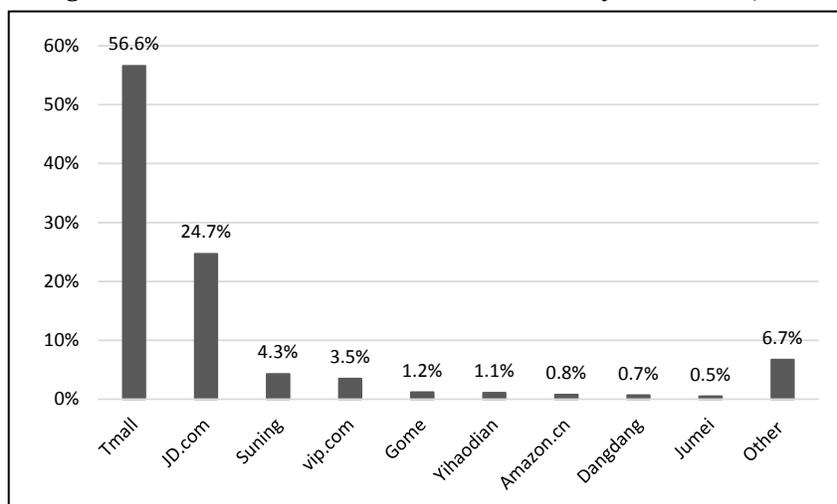
nications services permit for online data processing and transaction processing business from MIIT.<sup>28</sup>

Walmart was among the first to take advantage of this liberalization, acquiring full ownership of its Chinese e-commerce venture Yihaodian in July 2015.<sup>29</sup> Walmart first invested in Yihaodian in 2012; the website developed a niche in grocery sales but has struggled to gain market share.<sup>30</sup> Yihaodian accounted for just 1.1 percent of China's retail e-commerce market sales in 2016, or \$8.7 billion.<sup>31</sup> In June 2016, Walmart shifted gears with its China strategy, selling Yihaodian to JD.com for a 5 percent stake in JD.com.<sup>32</sup> Under the deal, Walmart continues to operate the platform and stands to gain a significant amount of traffic from JD.com's massive customer base as well as access to its delivery network services.<sup>33</sup>

However, foreign companies continue to face numerous legal and regulatory challenges. Value-added telecommunications services other than e-commerce, such as social network sites, search engines, and cloud computing, are still subject to the foreign shareholding cap of 50 percent.<sup>34</sup> In addition, many goods and services open to foreign investment still require other permits. For example, the online sale of pharmaceutical products requires a separate permit from China's Food and Drug Administration.<sup>35</sup>

Ultimately, the recent liberalization of China's e-commerce sector may have come too late for foreign e-commerce companies. China's e-commerce market has become saturated, leaving little room for foreign or smaller local players to compete.<sup>36</sup> Alibaba dominates China's e-commerce market, accounting for 57 percent of the online B2C market with Tmall in 2016 (see Figure 3).<sup>37</sup> JD.com, Alibaba's main competitor, holds 25 percent market share, while other players—including Suning, VIPShop, Gome, Walmart-invested Yihaodian, and Amazon's China operation—have a combined 18 percent market share.<sup>38</sup>

**Figure 3: Market Share of Retail E-Commerce Players in China, 2016**



*Note:* Total e-commerce sales in China reached \$787 billion in 2016.

*Source:* iResearch Consulting Group, "Retail E-Commerce Sales Share in China, by Site, 2016," February 21, 2017.

Meanwhile, Chinese Internet companies—in particular, Alibaba—are beginning to establish a presence in the United States. Since the failed debut of 11 Main in 2014—Alibaba’s online retail site catering to U.S. consumers—Alibaba’s e-commerce strategy has focused on encouraging U.S. companies to sell to Chinese consumers through its e-commerce platforms while making strategic investments in U.S. e-commerce companies to gain familiarity with the U.S. market.<sup>39</sup> Alibaba founder and executive chairman Jack Ma is seeking to cultivate ties with senior U.S. government officials. In a January 2017 meeting with then President-elect Donald Trump, Mr. Ma discussed Alibaba’s plans to bring one million U.S. small and medium-sized businesses to its platform over the next five years.<sup>40</sup> Alibaba followed this outreach by holding a conference in Detroit in June 2017 to educate U.S. small businesses and agricultural producers about the company and opportunities in China’s e-commerce market.<sup>41</sup> In July 2017, Mr. Ma co-chaired a gathering of 20 leading business executives from the United States and China, attended by U.S. Secretary of Commerce Wilbur Ross, a day prior to the U.S.-China Comprehensive Economic Dialogue.<sup>42</sup> In addition to e-commerce, Alibaba is pursuing ventures in cloud computing services and financial services in the U.S. market.<sup>43</sup>

#### *Sales Channels for U.S. Retailers and Brands*

While China has traditionally provided the world with its manufactured goods, its e-commerce boom should offer increased opportunities for U.S. retailers and brands, with more and more Chinese consumers purchasing foreign goods.<sup>44</sup> According to estimates from research firm eMarketer, 15 percent of Chinese consumers bought foreign goods online in 2016; that share is expected to rise to 25 percent by 2020.<sup>45</sup> These consumers are typically younger and middle class.\* Rising incomes and persistent quality and safety problems with domestic products are contributing to a growing demand for foreign products, particularly in areas where the United States excels, such as high-quality foods and supplements, beauty products, and healthcare-related goods.<sup>46</sup>

U.S. retailers and brands can sell to Chinese consumers through several channels:

- *Direct sales from a website hosted outside of China.* In his testimony to the Commission, Richard Cant, Asia counsel at ADX Net Inc., noted this was the easiest way for foreign companies to sell products to Chinese consumers. This approach does not require the company to set up a legal entity in China.<sup>47</sup> The main drawback, however, is that Chinese consumers rarely purchase products on foreign websites, deterred by the language barrier, different payment methods, high shipping costs, and long delivery times.<sup>48</sup> Foreign websites also run the risk of being blocked by Chinese authorities, who maintain an extensive Internet censorship regime. (For more on China’s censorship regime, see

\*For example, Alibaba reported 70 percent of customers on Tmall Global, its cross-border e-commerce platform, are between the ages of 24 and 32, live in first- and second-tier cities, and have an annual income of at least \$14,770. He Wei, “Survey Says More E-Shoppers to Buy Foreign Stuff by 2020,” *China Daily*, February 16, 2017; Adam Najberg, “Cross-Border Shopping Surged on Alibaba’s Tmall Global in 2016,” *Alizila*, December 22, 2016.

Chapter 3, Section 5, “China’s Domestic Information Controls, Global Media Influence, and Cyber Diplomacy.”)

- *Direct sales from a self-owned website hosted in China.* Companies can sell directly to Chinese consumers by setting up a local Chinese website with order processing capabilities.<sup>49</sup> To set up a website hosted in China, foreign companies are required to establish a legal entity in China; the legal presence could be a joint venture or a wholly foreign-owned enterprise.<sup>50</sup> The company then needs to apply for an Internet content provider (ICP) license.\*
- *Sell through a Chinese third-party platform.* The most common approach for foreign brands is to establish a presence on a domestic third-party platform like Tmall and JD.com. This approach allows sellers to take advantage of a domestic platform’s customer base and traffic flow.<sup>51</sup> However, Mr. Cant explained, these platforms encourage the presence of major international foreign brands and retailers, but not smaller foreign companies.<sup>52</sup> Although Chinese law places no explicit restrictions on foreign companies selling through a domestic e-commerce platform, each platform has developed its own requirements for foreign businesses that represent “very high barriers to entry.”<sup>53</sup> Chinese platforms generally require sellers to have a local Chinese business license, locally registered trademarks, and tax registration documents before they are able to set up a store.<sup>54</sup> Foreign sellers also need to maintain local inventory, fulfilment, and customer support, which means they either need to establish a local Chinese entity or find a local partner to provide those services on the seller’s behalf.<sup>55</sup>
- *Sell through cross-border pilot platforms.* China has established pilot cross-border e-commerce zones in 15 Chinese cities, which offer preferential tax policies and streamlined customs clearance procedures.† Chinese e-commerce companies have set up cross-border e-commerce platforms to meet growing demand for foreign products, with Alibaba launching Tmall Global in 2014 and JD.com launching JD Worldwide in 2015.<sup>56</sup> Foreign companies selling through these platforms can ship products directly from their own warehouse or through a bonded warehouse in China; this allows foreign companies to bypass the need to establish a legal entity in China or work through a local distributor.<sup>57</sup>

\*There are two types of ICP licenses: commercial and noncommercial. A commercial ICP license allows the company to engage in online sales and payment transaction, while a noncommercial ICP license allows the company to do just brand promotion and business development (i.e., information functions). In June 2015, MIIT announced that wholly foreign-owned enterprises can apply for a commercial ICP license; previously, wholly foreign-owned enterprises could only apply for noncommercial ICP licenses. Richard Hoffmann, “WFOE Can Apply for a Commercial ICP License for E-Commerce Business,” *Ecovis*, February 16, 2016.

†The 15 cities are Hangzhou (population: 9.2 million), Tianjin (15.6 million), Shanghai (24.2 million), Chongqing (30.5 million), Hefei (7.9 million), Zhengzhou (9.7 million), Guangzhou (14 million), Chengdu (16 million), Dalian (7 million), Ningbo (7.9 million), Qingdao (9.2 million), Shenzhen (12 million), Suzhou (10.6 million), Fuzhou (7.6 million), and Pingtan (431,000). China’s National Bureau of Statistics via CEIC database; China’s Ministry of Commerce, *MOFCOM Spokesman Comments on the General Supervision Arrangement after Transitional Period of Cross-border E-Commerce Retail Import*, March 19, 2017; Tom Brennan, “How Foreign Brands Can Find Fortune in China Right Now,” *Alizila*, April 5, 2016.

### *Challenges for Foreign Retailers and Brands*

While the size of China's e-commerce market offers opportunities for foreign retailers and brands, it is not without its challenges and risks. Key challenges include uncertainty over the evolving regulatory framework for cross-border e-commerce, intellectual property rights enforcement, and data localization policies.

- *Changing regulatory environment for cross-border e-commerce.* Cross-border e-commerce's rapid growth in recent years has drawn the attention of Chinese regulators. Facing pressures from traditional retailers at home and the loss of tax revenue, in April 2016 the Chinese government announced several new tax policies targeting cross-border e-commerce.\* The new policies would subject goods purchased through cross-border e-commerce platforms to tariffs, value-added tax, and consumption taxes, instead of the postal parcel tax previously applied.<sup>58</sup> In addition, China's Ministry of Finance announced it would create a "positive list" of foreign products allowed for purchase through cross-border e-commerce and some products on the list would have to obtain import licenses.<sup>59</sup> In response to concerns from cross-border e-commerce stakeholders, Chinese regulators suspended the policy for a one-year grace period, which has subsequently been extended to the end of 2018.<sup>60</sup>
- *Intellectual property rights enforcement.* The sale of counterfeit and pirated goods on Chinese e-commerce platforms remains a challenge for U.S. retailers and brands.<sup>61</sup> Mr. Zakkour noted in his testimony to the Commission, "While the Chinese government has ample laws regarding intellectual property on the books, enforcement efforts have at times been uneven."<sup>62</sup> In 2016, the Office of the U.S. Trade Representative (USTR) added Alibaba's Taobao back to its list of "notorious markets" known for selling counterfeits, citing brand owners' complaints about the proliferation of fakes on the company's platform and hurdles to removing counterfeit items from the site.<sup>63</sup> According to the USTR report, Taobao "is an important concern due to the large volume of allegedly counterfeit and pirated goods available and the challenges right holders experience in removing and preventing illicit sales and offers of such goods."<sup>64</sup> Alibaba argues counterfeit goods are an industrywide problem in China and it has increased measures to remove fake goods from its e-commerce platforms.<sup>†</sup> While legal remedies for intellectual property infringement are improving and the Chinese government has increased enforcement efforts to crack down on online sellers of fraudulent goods, fake goods remain widespread.<sup>65</sup> According to Fortune Magazine, U.S. sneaker maker New Balance estimates as much as 90 percent of the company's listings on

\* Previously, goods imported through cross-border e-commerce were exempt from certain import duties, consumption tax, and value-added tax, and were liable only for personal postal articles tax. Generally, personal postal article taxes were lower than taxes for the same item sold through conventional trade. Bloomberg News, "A \$60 Billion E-Commerce Loophole in China May Be Narrowing," May 18, 2017; Mark Ray, "An Introduction to E-Commerce in China," *Sovereign Group*, 2016, 25.

† These measures include introducing a program to expedite the notice-takedown process for brands and taking legal action against sellers of counterfeit goods. Alibaba Group, "Alibaba Group

Taobao are counterfeit.<sup>66</sup> Alibaba said it removed 380 million infringing listings on Taobao in the first eight months of 2016.<sup>67</sup>

- *Data localization.* China's draft e-commerce law, released in December 2016, mandates the local storage of Chinese consumer data.<sup>68</sup> Under the draft law, both foreign platforms that allow Chinese companies to sell on them (e.g., Amazon China) and companies operating outside of China but targeting Chinese consumers would be subject to the requirement.<sup>69</sup> China's new cybersecurity law may also mandate data localization for companies in the e-commerce sector, depending on whether e-commerce is deemed "critical information infrastructure."\* (For more on China's cybersecurity law, see Chapter 1, Section 1, "Year in Review: Economics and Trade.") Data localization can increase costs for foreign companies, which would have to set up their own server or contract out to domestic suppliers to store data within China.<sup>70</sup> Foreign companies have reported de facto requirements to store data locally, but the cybersecurity law and pending e-commerce law are expected to formally codify these requirements.<sup>71</sup>

## Logistics

Rising domestic consumption is fueling consumer demand for more efficient and reliable logistics services. The country's massive logistics sector is worth \$2.2 trillion, compared to the \$9 trillion global logistics market, according to logistics consultancy Armstrong & Associates.<sup>72</sup> China's domestic logistics industry remains underdeveloped; historically, most of China's investments focused on improving export logistics infrastructure at the expense of domestic logistics infrastructure.<sup>73</sup> The World Bank's 2016 Logistics Performance Index puts China in 27th place out of 160 countries.<sup>74</sup> China's logistics costs are relatively high, at 15 percent of gross domestic product (GDP) in 2016, compared to the global average of 13 percent.<sup>75</sup> The industry is also extremely fragmented, with state-owned enterprises dominating logistics segments formerly or currently closed to private participation (e.g., Sinotrans in offshore shipping and China Post in domestic mail delivery), making it difficult for integrated service providers to emerge.<sup>76</sup>

The Chinese government has prioritized logistics improvements as key for expanding domestic consumption.<sup>77</sup> China's 13th Five-Year Plan directed that support be provided to the domestic logistics

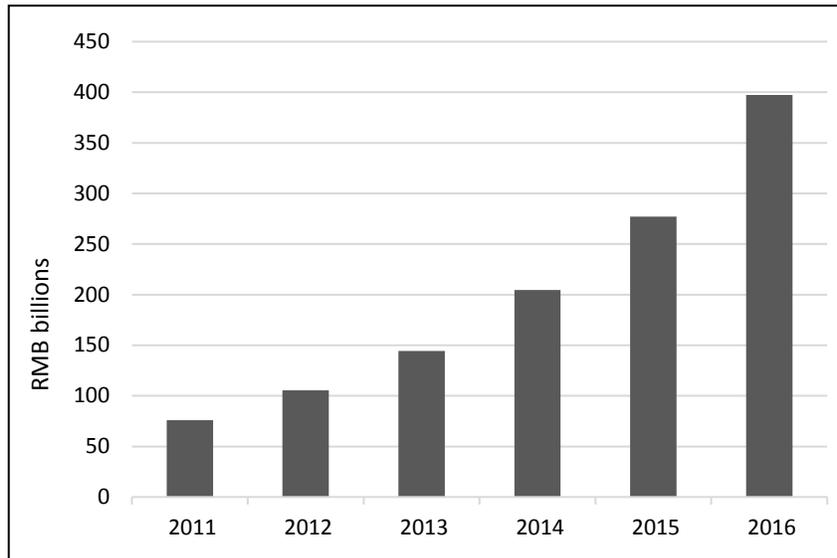
Platform Governance Annual Report 2016," May 2017, 5; Michael Zakkour, "Amazon and Alibaba Fight Fakes with a New Weapon: Lawyers," *Forbes*, January 12, 2017; Cao Li, "Alibaba Faces Growing Pressure over Counterfeit Goods," *New York Times*, December 22, 2016.

\*The law identifies some sectors, including energy, finance, transportation, public information, and other sectors deemed important to national security as critical information infrastructure, but does not define the term, leaving that decision to the State Council. Draft regulations issued by the State Council in July 2017 suggest an expansive scope for what constitutes critical information infrastructure; it names a number of sectors—including cloud computing, big data, and other such large-scale public information network services—in addition to the sectors identified in the cybersecurity law. In addition, the draft regulation proposes a discretionary process for identifying critical information infrastructure, to be jointly managed by the MIIT, Ministry of Public Security, and Cyberspace Administration of China. Analysts believe e-commerce companies are likely to be deemed critical information infrastructure as they could fall under a number of sectors already identified; for example, as big data and cloud services providers. Paul Triolo, Roger Creemers, and Graham Webster, "China's Ambitious Rules to Secure 'Critical Information Infrastructure,'" *New America*, July 14, 2017; Hogan Lovells, "China Passes Controversial Cyber Security Law," November 2016, 1.

industry and outlined policies to lower taxes and reduce costs in the logistics sector.<sup>78</sup> Recent government policies have also emphasized greater industry consolidation and the international expansion of domestic firms.<sup>79</sup>

The domestic express delivery\* sector—the segment closest to Chinese consumers—owes much of its recent rapid growth to China’s e-commerce boom.<sup>80</sup> China is the world’s largest express delivery market, with total parcel volume reaching 31 billion parcels in 2016, about 1.5 times that of the United States.<sup>81</sup> Online shopping accounted for 60 percent of China’s parcel volume.<sup>82</sup> The express delivery sector generated \$59 billion (RMB 397 billion) in revenue in 2016 and grew at a compound annual rate of about 40 percent over the past five years (see Figure 4).<sup>83</sup>

**Figure 4: China Express Delivery Market, Annual Revenue, 2011–2016**



Source: State Postal Bureau via CEIC database.

Despite its recent growth, China’s express delivery industry remains inefficient and highly fragmented, with an estimated 8,000 domestic competitors, mostly small and medium-sized firms.<sup>84</sup> In 2015, China’s top five express delivery companies—ZTO Express, YTO Express, STO Express, Yunda Express, and SF Express—held a combined 60 percent of total market share, with no single firm holding more than 15 percent market share.† State-owned China Post is another key player, although the company has been losing market share to private delivery companies.<sup>85</sup>

\*Express delivery logistics involves companies moving mail or package shipments on a time-definite basis.

†In contrast, in mature logistics markets such as the United States, Europe, and Japan, the express delivery industry is generally consolidated among a few market leaders. In the United States, for example, the top two players held 80 percent of market share by volume in 2015. U.S. Securities and Exchange Commission, *Form F-1 Registration Statement, ZTO Express*, September 30, 2016, 104.

The industry's fragmentation is due in part to local protectionism, whereby local governments require delivery firms to maintain local licenses and offices where they operate; the multiple levels of licensing and a lack of standardization in licensing requirements in different jurisdictions make it harder for firms to build up national networks.<sup>86</sup> Fierce competition in the sector has led to margin erosion: over the past decade, the average cost of delivering a package fell by almost 60 percent to \$1.90 (RMB 12.8) in 2016.<sup>87</sup> In the United States, the average cost per package is \$10.<sup>88</sup> Given these competitive dynamics, a growing number of express delivery companies are diversifying their businesses to cover other parts of the supply chain, such as warehousing services and logistics finance.<sup>89</sup> Over the last year, major private express delivery companies have gone public to raise capital for expanding and diversifying their businesses.\*

In response to the country's lagging domestic logistics infrastructure, Chinese e-commerce companies are developing logistics capabilities.<sup>90</sup> Some companies, such as JD.com, Suning, and Vipshop, opted to develop self-owned and self-managed logistics networks.<sup>91</sup> Alibaba took a different approach, launching Cainiao Network Technology, an alliance of express delivery firms and e-commerce companies, in 2013.<sup>92</sup> Cainiao acts as a facilitator: its real-time information platform coordinates the shipping activities, warehouses, transport fleets, and distribution centers owned by its member companies.<sup>93</sup> Cainiao's network also includes major international logistics providers, such as DHL, the United States Postal Service, and Singapore Post.<sup>94</sup> Cainiao's partnerships with domestic and international logistics companies enable it to integrate massive logistics data flows for improved delivery tracking and user feedback.<sup>95</sup>

### ***U.S. Access to China's Logistics Market***

As a country that is the world's largest exporter and is also rebalancing toward value-added services like express delivery, China presents an attractive market for foreign logistics companies. Foreign logistics firms have been operating in China since the 1980s through joint ventures or other local operations.<sup>96</sup> However, while established international express delivery operators like UPS, FedEx, and DHL dominate China's international express delivery market, they represent only a small fraction of the domestic express delivery market.<sup>97</sup>

#### *Domestic Express Delivery*

Based on China's World Trade Organization (WTO) commitments, foreign express delivery companies have been able to establish foreign-owned subsidiaries in China since 2005.<sup>98</sup> Nevertheless, foreign companies are blocked from the document segment of China's domestic express delivery market, where China Post maintains a le-

\*For example, ZTO Express listed on the New York Stock Exchange in October 2016. Over the past year, SF Express, STO Express, YTO Express, and Yunda Express went public in China through reverse merger takeovers (i.e., the acquisition of a public company by a private company so the private company can circumvent the long and complex process of going public. Winnie Lo, "Last Mile Delivery: A Pain Point of Online Shopping," *Fung Business Intelligence*, March 2017; Ryan McMorrow, "ZTO Express of China Has Largest U.S. I.P.O. This Year," *New York Times*, October 27, 2016.

gal monopoly.<sup>99</sup> In addition, the USTR's *2016 Report to Congress on China's WTO Compliance* notes, "Over the years, China has issued a variety of measures that have appeared to undermine market access for foreign companies and have raised questions in light of China's obligations."<sup>100</sup>

Notably, China's 2009 Postal Law introduced a new permitting system that required private express delivery firms—both foreign and domestic—to reapply for licenses from the State Postal Bureau.<sup>101</sup> However, according to the USTR, the State Post Bureau "severely delayed" the application approval process for foreign firms, "significantly hampering their ability to compete."<sup>102</sup> Before the law went into effect, FedEx and UPS held 58 and 33 licenses, respectively, but they had to reapply for these licenses once the law went into effect.<sup>103</sup> It was not until 2012 that the two received new licenses, and it was only in 2014 that the companies returned to their 2009 license levels.<sup>104</sup> According to the USTR, during the same period the State Postal Bureau "continued to quickly approve permit requests from Chinese domestic delivery companies."<sup>105</sup> Foreign firms continue to face discriminatory treatment in receiving approval for domestic licenses.<sup>106</sup>

China's domestic express market is of limited interest to foreign firms, due in part to regulatory complexity.<sup>107</sup> A more significant challenge, however, is how intense competition between domestic companies has driven prices down, making it difficult for foreign firms to turn profits.<sup>108</sup> As a result, foreign express delivery firms have not made significant inroads: in 2015, foreign companies held less than 1 percent of market share in the domestic express sector.<sup>109</sup> DHL withdrew from China's domestic delivery market in 2011, citing a lack of cost advantage.<sup>110</sup>

#### *International Express Delivery*

China's international express delivery market was opened to foreign companies beginning in the early 1980s; at the time, China's state-owned players had limited capacity for international delivery.<sup>111</sup> Foreign logistics firms continue to focus their China strategy on international delivery, mainly for multinational clients, but increasingly for Chinese companies in industries driving consumption growth in China.<sup>112</sup> The big four global carriers (FedEx, UPS, DHL, and TNT) account for about 80 percent of China's international express market, due to their advanced freight solutions and global reach.<sup>113</sup>

Unlike the shipment of goods to Chinese consumers (discussed in the previous section, "Domestic Express Delivery"), foreign firms see growing opportunities in China's international express delivery market, particularly with the rise of cross-border e-commerce.<sup>114</sup> Over the past two years, Amazon has expanded its cross-border logistics offerings in China. Amazon obtained an ocean freight forwarding license in 2016, allowing it to handle the shipment of goods from Chinese sellers on its site to its warehouses in the United States, and the company is currently developing an air cargo service for Chinese customers.<sup>115</sup> In May 2017, UPS announced a joint venture with SF Holding, the parent company of China's largest domestic express company SF

Express, to provide international delivery services from China to the United States.<sup>116</sup> The partnership will enable SF Express to leverage UPS's extensive global network and UPS to tap into SF Express's vast network within China.<sup>117</sup>

### *Warehousing*

China suffers from a dearth of modern warehouses. According to industry experts, less than 20 percent of China's warehouses are categorized as modern, with fully computerized tracking systems and advanced retail technology.<sup>118</sup> To put this in perspective, China's stock of modern warehouses is about that of Southern California.<sup>119</sup> Industry analysts estimate as much as \$2.5 trillion may be needed over the next decade for land and warehouse construction to cope with growing warehousing needs driven by China's e-commerce boom.<sup>120</sup> As a result, China's warehouse sector has drawn investments from major international warehouse companies like Prologis and Global Logistics Properties as well as global private equity firms like Blackstone and Carlyle Group.<sup>121</sup>

### **Financial Services**

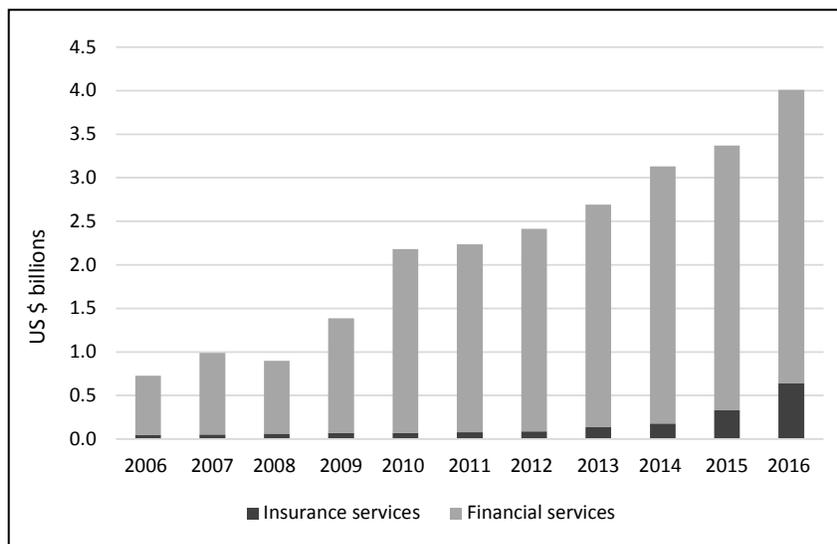
Financial services have been a major driver of growth for China's services sector, increasing about 11 percent annually from 2012 to 2016.<sup>122</sup> However, China has made limited progress in implementing reforms to improve the market orientation and efficiency of its financial system. Moreover, Chinese consumers' access to financial services remains limited, and improved access will be critical for raising domestic consumption levels. While China's traditional financial services sector lags behind that of developed markets, China's mix of a large and underserved small- and medium-sized enterprise (SME) market, rapid online and mobile penetration, e-commerce development, and regulatory facilitation has driven innovation in financial services.<sup>123</sup> China's Internet giants have emerged as significant players in China's financial system, particularly in payments and lending.

Financial services are a mainstay of the U.S. economy and a leading services export to China. U.S. financial services exports to China have steadily grown over the last decade, from \$726 million in 2006 to \$4 billion in 2016 (see Figure 5).<sup>\* 124</sup> Despite the size of China's financial sector, however, U.S. financial services exports to China were just 3.5 percent of total U.S. financial services exports, which reached \$113 billion in 2016.<sup>† 125</sup> Although China has taken some steps to expand foreign firms' access to its financial markets since joining the WTO in 2001, foreign firms remain marginal players due to formal and informal market access barriers imposed by the Chinese government.<sup>‡ 126</sup>

<sup>\*</sup>The U.S. Bureau of Economic Analysis maintains separate categories for financial services and insurance services in its international transactions data. In this report, U.S. financial services exports refers to both financial services and insurance services exports. U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. International Economic Accounts: Concepts and Methods*, June 2014, 20–22.

<sup>†</sup>For comparison, in 2016, U.S. financial services exports to India, Japan, and the European Union were \$1 billion, \$5.5 billion, and \$34.2 billion, respectively. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3. U.S. International Transactions, Expanded Detail by Area and Country*, June 20, 2017.

<sup>‡</sup>A 2016 U.S. International Trade Commission working paper on the economy-wide effects of reduced policy barriers to foreign investment in China's financial services sector found that a 50

**Figure 5: U.S. Financial Services Exports to China, 2006–2016**

Source: U.S. Department of Commerce, Bureau of Economic Analysis

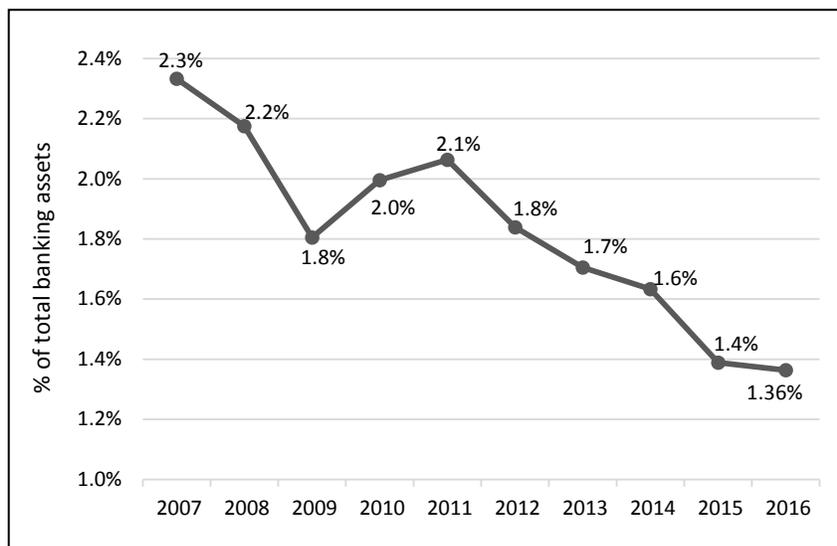
### **Banking**

Foreign banks have helped China's banking sector develop by bringing in capital and expertise in corporate governance and risk management, but have struggled to build a presence in China.<sup>127</sup> While China has taken steps to gradually expand foreign firms' access to the banking sector since 2001, foreign banks continue to face ownership restrictions, licensing barriers, and restrictive technology policies.<sup>128</sup> As a result, foreign banks remain minor players in China's banking sector. According to data from the China Banking Regulatory Commission (CBRC), foreign banks' market share in China was just 1.36 percent at the end of 2016, compared to 2.3 percent in 2007 (see Figure 6).<sup>129</sup> This is far below the 20 percent market share foreign banks hold on average in OECD countries and the nearly 50 percent market share foreign banks hold in emerging markets and developing countries.<sup>130</sup>

Profits at Chinese units of foreign banks have been declining: in 2015, the after-tax profit of foreign banks in China was \$2.3 billion (RMB 15.3 billion), a 22 percent decline year-on-year.<sup>131</sup> Some foreign banks have even started to scale back their presence in China. In 2016, Citigroup sold its stake in China Guangfa Bank and Deutsche Bank sold its 20 percent stake in Hua Xia Bank.\* Still, many foreign banks

percent reduction of investment barriers would increase foreign affiliate sales in China's financial services sector by 58 percent. Wen Jin Yuan, "The Effect of Reducing Investment Barriers in China's Construction and Financial Services Sectors on the Chinese Economy," *U.S. International Trade Commission Working Paper*, December 2016.

\*Analysts argue that foreign banks have been scaling back in China in part because of their inability to gain traction with Chinese clients. Larger macroeconomic factors not specific to China may also have factored into their decision; for example, foreign banks' global revenue and profits have been suffering from a strong U.S. dollar and narrowing interest margins. Leng Cheng, "Still Minor Players, Foreign Banks Shift Focus," *Shanghai Daily*, April 26, 2017; Chu Daye, "Despite Lack of Success in China, Foreign Banks' Investments Still Pay Off," *Global Times*, January 9, 2017.

**Figure 6: Foreign Banking Assets in China, 2011–2016**

Source: China Banking Regulatory Commission via CEIC database.

are taking a long-term view in China and see their local offices as a platform to serve foreign clients in the country, while working to gain business with Chinese companies and wealthy individuals with overseas fundraising and wealth management needs.<sup>132</sup> A 2015 report from Ernst & Young noted the firm “[does not] expect many new foreign banking entities ... to seek to enter the mainland China market over the next five years. The greater opportunity lies with Chinese banking customers expanding cross-border, where they can be served by foreign banks with global networks.”<sup>133</sup>

#### *Market Access for Foreign Banks*

In China, foreign banks can operate either as subsidiaries (which can be wholly foreign-owned or joint venture banks) or branches.<sup>134</sup> China continues to limit foreign investment in its banking sector. Foreign equity holdings in domestic commercial banks are capped at 20 percent for a single foreign investor and 25 percent for total foreign ownership.\*<sup>135</sup> Foreign equity stakes in domestic securities and asset management companies are restricted to 49 percent.†<sup>136</sup>

\*Under its WTO General Agreement on Trade in Services commitments, China agreed to allow foreign financial institutions to provide foreign currency services in China without client or geographic restrictions immediately upon accession. Within five years after accession, “any existing non-prudential measures restricting ownership, operation, and juridical form of foreign financial institutions, including on internal branching and licenses [would] be eliminated.” China maintains its restrictions on foreign equity in existing domestic banks are consistent with its WTO commitments, arguing “what China had committed in its services schedule was to allow qualified foreign financial institutions to establish Chinese-foreign joint-venture banks without any limitation on the equity share. ... However, the issue of foreign equity participation in China’s domestic banks [is] an issue of cross-border merger and acquisitions, which [is] beyond the scope of China’s WTO accession commitments.” World Trade Organization, *Report of the Meeting Held on 27 November 2006, November 30, 2006*; World Trade Organization, *Report of the Working Party on the Accession of China, Part II – Schedule of Specific Commitments on Services*, November 10, 2001.

†China’s Ministry of Finance announced in November 2016 it will gradually increase the 49 percent ownership cap for foreign investors, but did not specify a timetable. *Bloomberg News*,

Foreign banks have struggled to expand their branch networks due to restrictions on foreign bank branch openings.<sup>137</sup> According to CBRC data, at the end of 2016 there were 39 locally incorporated foreign banks and 1,031 branches of foreign banks operating in China, or about 0.4 percent of China's network of 228,000 branches.<sup>138</sup> In her testimony to the Commission, Anne Stevenson-Yang, research director at J Capital Research, explained, "Without branches, [foreign banks] cannot collect deposits, and without deposits, they cannot extend loans, because loans are strictly limited to a proportion of deposits."<sup>139</sup>

In late 2014, China's State Council released amendments to the Foreign Bank Administrative Regulations relaxing restrictions on foreign bank branch openings and foreign banks engaging in RMB-denominated business.<sup>140</sup> Previously, the CBRC required foreign banks to operate a representative office in China for at least two years before setting up a branch in China, and foreign banks could apply for only one new branch at a time.<sup>141</sup> The amendments lifted these requirements and shortened the required waiting period for foreign banks to apply for an RMB license from three years after establishing operations in China to one year.<sup>142</sup>

China's technology policies pose additional challenges for foreign banks and other financial institutions operating in China. Under China's new cybersecurity law, critical information infrastructure providers—which includes the financial services sector—are required to store data collected during the course of their business operations within China, although China appears to have granted firms a grace period until 2018 to comply with some requirements.<sup>143</sup> The law also subjects critical information infrastructure operators to security reviews by Chinese authorities to ensure they use products that meet China's standards of "secure and controllable" technology, the exact parameters for which are unclear.<sup>144</sup> In his testimony to the Commission, Michael Hirson, Asia director at Eurasia Group, noted that depending on how China implements the law in practice, "this could result in anything from an irritation to a major business impediment."<sup>145</sup> According to Mr. Hirson, "The danger is that [foreign financial] firms will be unable to use significant parts of their global IT infrastructure in China, and be forced to use domestic substitutes," putting them at a significant disadvantage relative to domestic competitors.<sup>146</sup> (For more on China's cybersecurity law, see Chapter 1, Section 1, "Year in Review: Economics and Trade.")

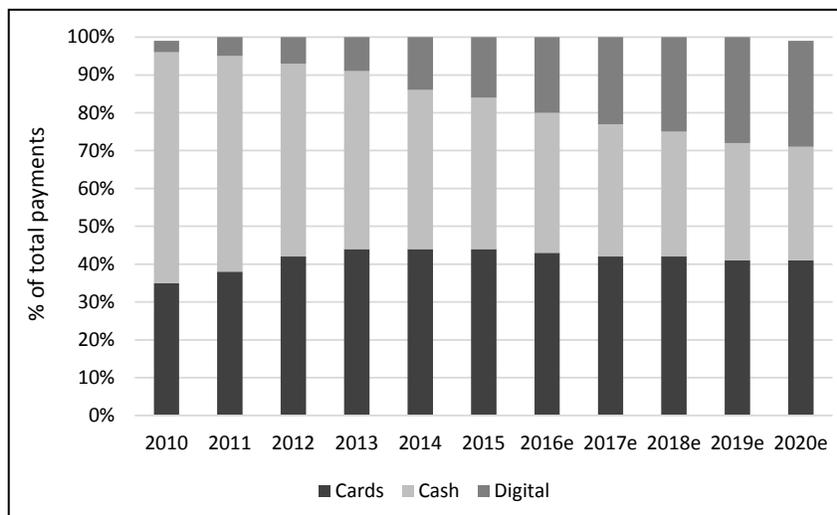
### ***Payments***

Over the last six years, Chinese consumers have quickly shifted from making payments with cash to cards and digital alternatives.<sup>147</sup> In 2010, 61 percent of China's retail consumption was transacted in cash; that share fell to an estimated 37 percent in 2016, according to data from financial research firm Kapronasia (see Figure 7).<sup>148</sup> In 2016, 43 percent of consumer retail spending in China was card based, up from 35 percent in 2010.<sup>149</sup> Most dramatically, digital (Internet and mobile) payments accounted for 20 percent

<sup>137</sup>"China Pledges to Allow More Ownership of Brokerages," November 11, 2016.

of retail transaction volumes in 2016, up from 3 percent in 2010.<sup>150</sup> The rapid uptake and use of bank cards and digital payments is due in large part to China's e-commerce boom and government policies promoting noncash payments.<sup>151</sup>

**Figure 7: China Retail Consumption by Payment Type, 2010–2020**



*Note:* Data from 2016 to 2020 are estimates.

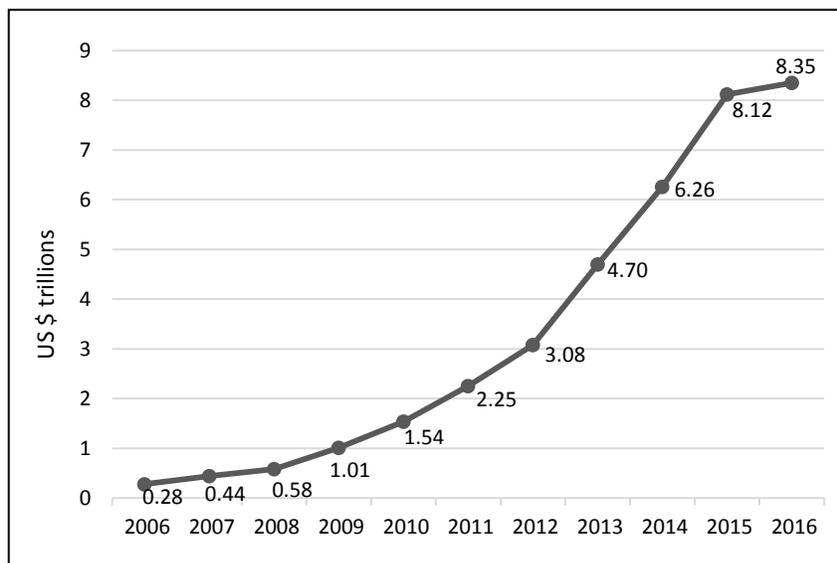
*Source:* U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Zennon Kapron, June 22, 2017.

China's payments sector has long been dominated by UnionPay, the country's state-owned payment card clearing and settlement network. Owned by a consortium of Chinese state-owned banks and led by a succession of former People's Bank of China (PBOC) officials, UnionPay has held a near-monopoly over China's bank card market.<sup>152</sup> Until 2015, UnionPay was the sole entity allowed to provide clearing services for RMB transactions.<sup>153</sup> According to PBOC data, Chinese bank card payment transactions reached \$8.4 trillion in 2016 (see Figure 8) and the market is projected to become the world's largest by 2020.<sup>154</sup> Debit cards dominate China's payment card market, accounting for 92 percent of the total number of bank cards in circulation in 2016.<sup>155</sup> Low credit card penetration stems partly from a lack of consumer credit ratings.<sup>156</sup> As of 2015, the PBOC had credit histories for 380 million Chinese citizens, less than one-third of China's adult population.\*<sup>157</sup>

#### *Market Access for Foreign Payment Companies*

The size of China's payments market offers opportunities for U.S. companies, but they face regulatory challenges and stiff competition from domestic incumbents. China committed to granting access to foreign payment companies as part of its accession to the WTO in

\*In comparison, 89 percent of U.S. adults have credit scores. Zennon Kapron and Michelle Meertens, "Social Networks, e-Commerce Platforms, and the Growth of Digital Payment Ecosystems in China," *Better Than Cash Alliance*, 28.

**Figure 8: Chinese Bank Card Payment Transactions, 2006–2016**

Source: People's Bank of China via CEIC database.

2001, but did not honor that commitment, prompting a U.S. challenge.<sup>158</sup> A 2012 WTO ruling determined China's policies governing access to its domestic electronic payments market unfairly discriminated against foreign payment card companies.<sup>159</sup> In response to the WTO ruling, in 2015 the State Council announced it would allow qualified domestic and foreign companies to apply for licenses to clear domestic Chinese payments.<sup>160</sup> According to the PBOC, foreign companies can set up bank card clearing businesses by meeting the same requirements as domestic companies.\* Previously, UnionPay was the only entity allowed to provide clearing services for RMB transactions.<sup>161</sup>

However, in November 2014 the PBOC announced a new technical standard that would raise the costs of market participation for foreign card companies.<sup>162</sup> The new PBOC rules require bank cards issued in China to comply with a technical standard known as PBOC 3.0.<sup>163</sup> The PBOC 3.0 standard is only used by UnionPay and is incompatible with the global industry standard, EMV, because it uses different encryption methods.<sup>164</sup> Visa, MasterCard, and other foreign payment companies would have to redesign their cards, potentially at great cost, to meet the new payment standards.<sup>165</sup>

As part of the initial outcomes of the 100-day action plan to address trade and investment issues between China and the United States, China agreed to issue guidelines to allow U.S.-owned suppliers of electronic payment services to "begin the licensing process."<sup>166</sup>

\*These requirements include that applicants hold at least RMB 1 billion (\$152 million) in registered capital and meet China's national and industry security standards. In addition, foreign bank card companies are required to set up a local entity and obtain a bank clearing permit. Roy Zou, Mark Parsons, and Andrew McGinty, "China Opens up the Domestic Bank Card Clearing Market to Foreign Competition," *Hogan Lovells*, May 12, 2015; Shu Zhang and Matthew Miller, "China Opens Its Markets to Foreign Bank Card Companies," *Reuters*, June 7, 2016.

The PBOC released guidelines in June 2017 laying out a two-step licensing process; industry analysts believe the process could take two years or longer.<sup>167</sup> According to Ker Gibbs, chairman of the American Chamber of Commerce in Shanghai, “Opening the market for electronic payments is mainly symbolic... At this point the domestic players are well entrenched so foreign companies will have a hard time entering.”<sup>168</sup> Nonetheless, major U.S.-based payment companies, including MasterCard and Visa, have indicated they plan to apply for domestic payment licenses.<sup>169</sup>

In order to operate in the Chinese market, U.S. payment networks like Visa and MasterCard partnered with Chinese banks to offer cobranded cards in China. Under this arrangement, foreign payment networks processed foreign currency payments for Chinese cardholders traveling abroad, while UnionPay processed domestic currency transactions.<sup>170</sup> However, in late 2016 the PBOC issued a notice instructing Chinese banks not to renew cobranded cards.<sup>171</sup> With the phasing out of cobranded cards in China, U.S. payment companies are experiencing declines in their reported volumes for cobranded cards, and it is estimated this negative trend will continue, particularly as UnionPay gains wider acceptance in international markets.<sup>172</sup>

### **Insurance**

China’s insurance market—the third largest in the world at \$1.8 trillion (RMB 12 trillion) in 2015—has been growing at a robust pace due to the continued expansion of China’s middle class.<sup>173</sup> There is substantial room for China’s insurance sector to grow: international experience has shown that consumers in countries with relatively low but rapidly increasing wealth have a disproportionately increasing demand for insurance products.<sup>174</sup> According to estimates from global reinsurer Munich Re, China’s insurance penetration rate (defined as premium volume as a percentage of GDP) was 4.2 percent in 2016, below the global average of 6.2 percent.<sup>175</sup> Growth in China’s life insurance market has been particularly strong, expanding 30 percent year-on-year in 2016.<sup>176</sup> In August 2014, the State Council released *Several Opinions on Accelerating the Development of the Modern Insurance Service Industry*, which recognized that “accelerating the development of the modern insurance service industry is an important part of improving the modern financial system” in China and endorsed further liberalization of China’s insurance market.<sup>177</sup>

### *Market Access for Foreign Insurers*

Foreign insurers continue to face significant market access barriers, with regulations preventing most foreign insurers from owning more than half of a Chinese insurer.<sup>178</sup> Foreign insurers also face delays in license issuances and new product approvals.<sup>179</sup> In the life insurance sector, foreign insurers can only participate through Chinese-foreign joint ventures, with foreign equity capped at 50 percent.<sup>180</sup> The market share of foreign-invested insurers in China’s life insurance market reached 6.4 percent in 2016.<sup>181</sup> China also caps foreign equity at 50 percent in the health insurance sector.<sup>182</sup> China allows wholly foreign-owned subsidiaries in the nonlife insur-

ance sector (i.e., property and casualty insurance), but the market share of foreign insurers in the nonlife insurance sector is just 2 percent.<sup>183</sup>

### ***Financial Technology's Growing Influence on China's Financial Services Sector***

Although parts of China's traditional financial services industry remain underdeveloped, China is quickly becoming a global leader in financial technology, or "fintech" (see the following textbox). China topped KPMG's ranking of global fintech companies in 2016, featuring four of the top five companies on the list.<sup>184</sup> Fintech's rapid growth in China is the result of several factors, including "the scale of unmet needs being addressed by dominant technology leaders, combined with regulatory facilitation and easy access to capital."<sup>185</sup> Long neglected by China's traditional financial institutions, Chinese consumers and SMEs are rapidly adopting fintech services such as online banking, payments, investments, and insurance.\*

#### **What Is Fintech?**

The Financial Stability Board defines financial technology, or "fintech," as "technologically enabled innovation that could result in new business models, applications, products, or services with an associated material effect on financial markets and institutions and the provision of financial services."<sup>186</sup> Examples of fintech innovations include peer-to-peer lending, equity crowdfunding, distributed ledger technology, and artificial intelligence and machine learning.<sup>187</sup> Although people most commonly associate fintech companies with startups breaking into areas traditional financial institutions have dominated, fintech players include what PricewaterhouseCoopers has called the "As, Bs, Cs, and Ds":<sup>188</sup>

- As are large, well-established financial institutions such as Bank of America, Chase, Wells Fargo, and Allstate.
- Bs are big technology companies that are active in the financial services space but not exclusively so, such as Apple, Google, Facebook, and Twitter.
- Cs are companies that provide infrastructure or technology that facilitates financial services transactions. This broad group includes companies like MasterCard, Fiserv, FirstData, various financial market utilities, and exchanges such as NASDAQ.
- Ds are disruptors: fast-moving companies, often startups, focused on a particular innovative technology or process. Companies include Stripe (mobile payments), Betterment (automated investing), Lending Club (peer-to-peer lending), Moven (retail banking), and Lemonade (insurance).

\*According to a 2016 report from Ernst & Young and DBS Bank, 40 percent of Chinese consumers are using new payment methods, compared to 4 percent of consumers in Singapore. Thirty-five percent of Chinese consumers are using fintech insurance products, compared to 1–2 percent in many Southeast Asian markets. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 4.

Leading domestic Internet companies looking to serve Chinese consumers across the full spectrum of financial and nonfinancial activities underpin fintech's rise in China.<sup>189</sup> These firms are able to leverage big data from e-commerce, messaging, social media, and other Internet-based services to provide new financial products. Their entry into China's financial sector—long dominated by large, state-owned firms—has reshaped the industry. Starting off with payments, Chinese Internet companies have since moved into other financial segments, targeting individual consumers and SMEs with unmet financial needs.<sup>190</sup> “Digital payment platforms remain a critical part of the underlying fintech infrastructure in China but are also an important source of transaction and financial data that is increasingly being leveraged by the payment companies for new fintech platforms, products, and services,” notes Zennon Kapron, principal at Shanghai-based fintech consultancy Kapronasia.<sup>191</sup>

Chinese fintech players are directly challenging traditional financial institutions. Analysis from Ernst & Young and DBS Bank estimates that traditional banks lost \$22.8 billion in card fees to digital payments in 2015.<sup>192</sup> Diverting payments from traditional banks also cuts incumbents off from important relationships with merchants and retail customers, which in turn cuts into other key business lines, such as loans, deposits, and investments.<sup>193</sup> In response to competition from fintech firms, Chinese commercial banks have worked on developing their own fintech capabilities and partnered with fintech firms to launch digital initiatives.<sup>194</sup>

### *Digital Payments*

Chinese consumers, accustomed to shopping online, have leaped from cash into digital payments, largely bypassing payment cards.<sup>195</sup> The transaction value of third-party mobile payments in China leapt from \$15 billion (RMB 100 billion) in 2011 to an estimated \$5.7 trillion (RMB 38.5 trillion) in 2016—more than 50 times the size of the U.S. mobile payments market (see Figure 9).<sup>196</sup>

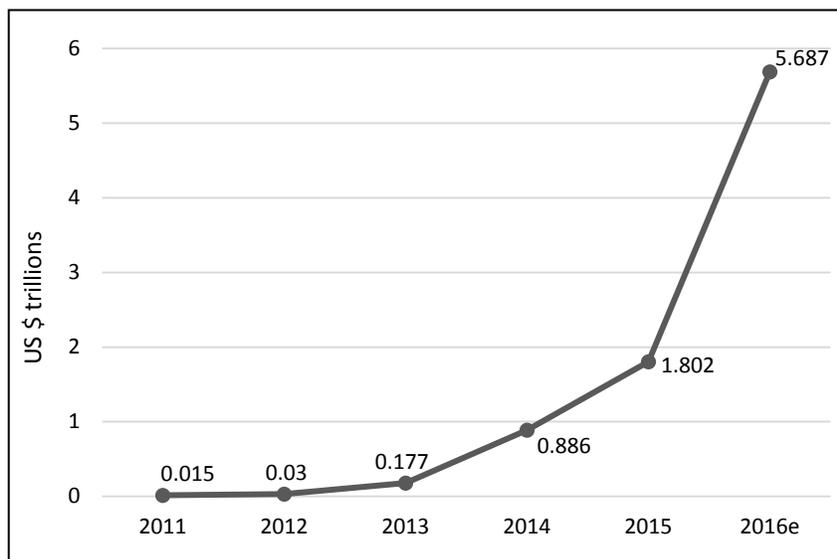
Alibaba's Alipay and Tencent's WeChat Pay dominate the market, accounting for 55 percent and 37 percent of market share, respectively, in the fourth quarter of 2016.<sup>197</sup> These platforms allow users to make payments in online shops—using their phone as wallets—and transfer money between friends all on one app, functions that are generally disaggregated in payment services available in the United States (e.g., in the United States, these functions are served, respectively, by PayPal, Apple Pay, and Venmo).<sup>198</sup> In addition, payment through QR codes\* on online payment platforms is increasingly commonplace in Chinese restaurants and shops, where users can make payments by opening up Alipay or WeChat on their smartphones and having their QR codes scanned.<sup>199</sup>

### *Peer-to-Peer Lending*

Online peer-to-peer (P2P) lending is a rapidly growing part of China's fintech industry—and at \$120 billion (RMB 816 billion) in outstanding loans at the end of 2016, China is the largest P2P

\*A Quick Response (QR) code is a type of barcode that can be read by a digital device and stores information. *Investopedia*, “Quick Response (QR) Code.”

**Figure 9: Transaction Value of Chinese Third-Party Mobile Payments, 2011–2016**



*Note:* Data for 2016 are estimates.

*Source:* iResearch Consulting Group, “GMV of China’s Third Party Mobile Payment, 2011–2019,” February 3, 2017.

lending market in the world.<sup>200</sup> Major players in China include Yirendai, Dianrong, and Lufax.<sup>201</sup> The sector has been rife with defaults and fraud due to Beijing’s initial hands-off approach to regulating the sector. According to the CBRC, as of June 2016 almost half of China’s 4,127 P2P platforms were “problematic”—meaning they were involved in fraud or had defaulted.<sup>202</sup> Regulators have stepped in to clean up the online finance sector, introducing new rules in 2016 that bar online lenders from providing guarantees for investment principal or returns, cap the size of loans for individuals and companies, and require lenders to use custodian banks.<sup>203</sup>

### *Credit Rating*

A major challenge for China’s financial sector has been the lack of accurate and complete credit information for consumers and businesses.<sup>204</sup> The lack of capability to assess credit risk has been a key obstacle for Chinese banks to expand lending to small businesses and consumers.<sup>205</sup> Chinese technology companies have started to fill this gap. In January 2015, the PBOC cleared eight private companies to develop consumer credit scoring services, including Alibaba and Tencent.<sup>206</sup> Soon after receiving PBOC approval, Ant Financial launched its Sesame Credit product, which uses the company’s massive trove of user data to assess the creditworthiness of consumers and small businesses.<sup>207</sup> Beijing is closely watching Sesame Credit and other private initiatives as it moves toward establishing a na-

tionwide social credit system.\*<sup>208</sup> (For more on China's proposed national social credit system, see Chapter 3, Section 5, "China's Domestic Information Controls, Global Media Influence, and Cyber Diplomacy.")

#### *Opportunities and Challenges for U.S. Fintech Firms*

Foreign entrants have experienced limited levels of success in a market dominated by strong domestic competitors and government restrictions on operations. Notably, Apple introduced its mobile payment service, Apple Pay, to China in February 2016 through a partnership with UnionPay, some of the country's largest banks, and Chinese digital payment processors Lian Lian, PayEase, and YeePay.<sup>209</sup> The partnership allows Apple to avoid the challenges foreign companies have encountered with obtaining payment licenses.<sup>210</sup> Third-party providers of payment services were only required to obtain a payment business license beginning in 2010, when the PBOC issued the first set of regulatory measures governing non-bank third-party payment providers.<sup>211</sup> From May 2011—when the PBOC first started issuing third-party payment licenses—to August 2016—when the PBOC announced it would indefinitely halt issuing payment licenses to nonfinancial payment providers—only two foreign-invested companies, Edenred China and Sodexo Pass China, received payment licenses.<sup>212</sup> Despite its partnership with UnionPay and Chinese banks, Apple Pay entered China at a point when the country's mobile payment market is already highly consolidated, and as a result has struggled to gain traction with Chinese consumers.<sup>213</sup>

Foreign companies will need to monitor the emerging regulatory environment for fintech. In July 2015, the PBOC, CBRC, China Insurance Regulatory Commission, China Securities Regulatory Commission, and MIIT jointly released China's first comprehensive regulation on fintech, *Guiding Opinions on Promoting the Healthy Development of Internet Finance*.<sup>214</sup> The *Guiding Opinions* established basic rules on Internet payment, Internet insurance, online lending, crowdfunding, and the online sales of funds.<sup>215</sup> Over the last year, the PBOC has stepped up efforts to regulate the industry.<sup>216</sup> Most recently, in May 2017 the PBOC set up a committee to monitor fintech's impact on financial markets, financial stability, monetary policy, and payment and clearing.<sup>217</sup> Chinese regulators are still in the process of working out how to protect consumers and control risk around these platforms while encouraging innovation in China's financial industry.<sup>218</sup>

---

\*Media reports suggest Chinese regulators' support for private credit scoring platforms may be waning; none of the eight firms that received initial approval from the PBOC to develop private credit scoring platforms have received licenses. Wan Cunzhi, director of the PBOC's Credit Information System Bureau, said at an April 2017 conference on credit reporting that the eight firms have a "major conflict of interest" as "their corporate governance structure don't have third party credit independence." Unlike major U.S. consumer credit reporting agencies such as Equifax and TransUnion, these Chinese firms have existing businesses in e-commerce and financial services. Furthermore, Wan noted that credit reports generated by the firms are not reliable: "It is not uncommon to see companies give a high credit score to a certain consumer, while the central bank credit bureau found out [the consumer] is not creditworthy at all." Cate Cadell and Shu Zhang, "No More Loan Rangers? Beijing's Waning Support for Private Credit Scores," Reuters, July 4, 2017; Zhang Yuzhe, Peng Qinqin, and Dong Tongjian, "China Gives Little Credit to Companies Handpicked to Develop Credit-Reporting Sector," Caixin, May 14, 2017.

### Chinese Financial Firms in the United States

Unlike China, the United States maintains a policy of national treatment\* towards foreign investors in the financial services sector.<sup>219</sup> Chinese financial firms' presence in the United States highlights China's lack of reciprocity in financial services market access.

In the United States, Chinese banks have focused on providing financing to Chinese companies overseas and offering U.S. customers access to RMB-denominated deposits.<sup>220</sup> China's "big four" state-owned commercial banks—the Industrial and Commercial Bank of China, Bank of China, China Construction Bank, and Agricultural Bank of China—all operate in the United States.<sup>221</sup> However, their presence has been limited due to the dominance of major U.S. banks like Bank of America, Citigroup, JP Morgan, and Wells Fargo, along with U.S. regulators' concerns about the adequacy of Chinese supervision of banks and Chinese banks' money-laundering controls.† U.S. regulators took enforcement actions against China Construction Bank and Agricultural Bank of China in July 2015 and September 2016, respectively, for deficiencies in their anti-money laundering controls.<sup>222</sup>

Over the past year, Chinese technology companies have also set their sights on the U.S. financial services sector. Ant Financial, an Alibaba affiliate company focused on financial services, entered the U.S. market through a deal with U.S. payment processor First Data and is attempting to acquire MoneyGram, the U.S.-based cross-border money transfer provider.<sup>223</sup> Ant Financial's May 2017 deal with First Data allows its payment service, Alipay, to be used at the point of sale for First Data's four million business clients in the United States.<sup>224</sup>

Alibaba's bid for MoneyGram has drawn congressional scrutiny. In a February 2017 op-ed in the *Wall Street Journal*, U.S. Representatives Robert Pittenger and Chris Smith claimed that, due to the Chinese government's ownership stake in Ant Financial, the deal would give the Chinese government "significant access to, and information on, financial markets and specific international consumer money flows."<sup>‡</sup><sup>225</sup> A May 2017 letter from two U.S. senators to U.S. Treasury Secretary Steven Mnuchin called upon the Committee on Foreign Investments in the United States (CFIUS) to investigate the deal, citing national security concerns.<sup>226</sup> The letter claimed the deal would give Ant Financial access to U.S. citizens' financial data.<sup>227</sup> The letter said Ant Financial's acquisition

\*The goal of national treatment is to accord foreign firms treatment that is no less favorable than that provided to domestic firms. National treatment clauses aim to prevent discrimination against foreign firms in favor of domestic firms. U.S. Department of the Treasury, *National Treatment under U.S. Laws and Regulations*, 1998; World Trade Organization, "Principles of the Trading System."

†The Foreign Bank Supervision Enhancement Act of 1991 requires the U.S. Federal Reserve to make a determination that a foreign bank seeking to acquire a U.S. bank is adequately supervised in their home country before approving the acquisition. In 2012, the Industrial and Commercial Bank of China gained approval from the Federal Reserve to acquire a U.S. subsidiary of Hong Kong's Bank of East Asia, the first time the Federal Reserve approved a Chinese financial institution to acquire a U.S. bank. Shahien Nasiripour, "First U.S. Approval for Chinese Bank Purchase," *Financial Times*, May 9, 2012; Sullivan & Cromwell LLP, "Federal Reserve Approves First Acquisition in the United States by a Chinese Bank," May 9, 2012.

‡In response to the op-ed, Douglas Feagin, president of Ant Financial International, wrote, "Ant Financial is a private sector company and while a handful of Chinese state-owned or -affiliated funds own non-controlling minority stakes, they do not participate in company management. Nor do they have board representation or any special rights." Douglas Feagin, "Ant Financial's MoneyGram Deal Is Clean," *Wall Street Journal*, February 28, 2017.

### **Chinese Financial Firms in the United States—Continued**

of MoneyGram “should trigger no less concern than if a Chinese company were to take control of a large, well-known bank” and noted the deal “highlights the inequity between U.S. and Chinese companies when it comes to international acquisitions.... [T]here is virtually no chance that a U.S. financial services company would be permitted to acquire a Chinese [rival].”<sup>228</sup> MoneyGram’s board voted to approve Ant Financial’s offer in May 2017.<sup>229</sup> Both parties expect the deal will be completed in the second half of 2017, pending CFIUS approval.<sup>230</sup>

### **Implications for the United States**

Services are the mainstay of the U.S. economy, accounting for 80 percent of private sector jobs.\*<sup>231</sup> The United States maintains a sizable services trade surplus with China, which reached \$38 billion in 2016, up from \$438 million in 2006.<sup>232</sup> China’s strong income growth, expanding middle class, and government policies focused on rebalancing the economy towards consumption should further boost U.S. services trade with China. In particular, the rapid growth in China’s e-commerce, logistics, and financial services sectors could present opportunities for U.S. companies.

Despite the growth potential for U.S. companies, the playing field in China’s consumer market remains decidedly uneven and highlights the lack of reciprocity in market access for services. China maintains market access barriers that restrict U.S. services companies, including caps on foreign equity, discriminatory licensing requirements, and data localization policies. While China has gradually opened up its services sector to foreign participation, the pace has been slow and may have come too late to be meaningful for U.S. companies. For example, while China’s regulatory framework for foreign investment in the e-commerce sector has undergone significant liberalization over the last two years, China’s e-commerce market has already become highly saturated, with Alibaba and JD.com holding over 80 percent market share combined.<sup>233</sup>

China’s consumer market is being reshaped by the country’s major technology companies; armed with government support, capital reserves, and troves of consumer data, they have become dominant players by integrating social media, e-commerce, and financial services, and capturing the consumer experience. China’s restrictions on foreign participation in the country’s digital ecosystem limit the ability of U.S. companies to similarly leverage Chinese consumer data. In addition, state-owned enterprises remain major players in the services sector, particularly in banking, transportation, and telecommunications.<sup>234</sup> U.S. firms cannot go toe-to-toe with China’s technology giants and state-owned enterprises, and in most consumer segments, are largely relegated to partnering with domestic firms. U.S. services trade with China will not reach its full potential as long as these barriers remain.

\*In comparison, services account for 42 percent of all employment in China. World Bank, “Employment in Services (% of Total Employment).” <http://data.worldbank.org/indicator/SL.SRV.EMPL.ZS>.

**Addendum I: E-Commerce, Logistics, and Financial Services Market  
Access Barriers**

<b>E-Commerce</b>	
<b><i>Barrier</i></b>	<b><i>Description</i></b>
Licensing	Although as of 2015, foreign investors are allowed to establish wholly foreign-owned e-commerce companies in China, to date only one foreign company has been awarded the value-added telecommunications services permit for online data processing and transaction processing business necessary to operate an e-commerce company.
Data localization	China's draft e-commerce law mandates local storage of Chinese consumer data. Under the draft law, foreign platforms allowing Chinese companies to sell on them and companies operating outside of China but targeting Chinese consumers would be subject to the requirement. China's new cybersecurity law may also mandate data localization for companies in the e-commerce sector if e-commerce is deemed "critical information infrastructure."
<b>Logistics</b>	
<b><i>Barrier</i></b>	<b><i>Description</i></b>
Ownership ban	Foreign companies are blocked from operating in the document segment of China's domestic express delivery market, where China Post maintains a monopoly.
Licensing	While both domestic and foreign firms have to apply for business licenses to operate in the express delivery sector, foreign companies experience longer waiting periods than domestic companies for getting their business licenses approved.
<b>Financial Services</b>	
<b><i>Barrier</i></b>	<b><i>Description</i></b>
Ownership caps	Foreign equity in domestic commercial banks is capped at 20 percent for a single investor and 25 percent for total foreign ownership. Foreign equity in domestic securities and asset management companies is capped at 49 percent. In the life insurance and health insurance sectors, foreign equity is capped at 50 percent.
Licensing	Foreign-invested banks and branches of foreign banks seeking to engage in RMB business are required to operate in China for a year before applying for a RMB license. While foreign companies are allowed to apply for licenses to clear domestic Chinese payments, to date only two foreign-invested companies have received payment licenses.
China-specific technical standard	PBOC rules released in November 2014 require bank cards issued in China to comply with a technical standard known as PBOC 3.0. The standard is only used by Union-Pay and is incompatible with the global industry standard, EMV. Foreign payment companies will have to redesign their cards to meet the new technical standard.

**Addendum I: E-Commerce, Logistics, and Financial Services Market  
Access Barriers—Continued**

Data localization and security review	Under China's new cybersecurity law, critical information infrastructure providers—which includes the financial services sector—are required to store data collected during the course of their business operations within China. Critical information infrastructure operators are also subject to security reviews by Chinese authorities to ensure they use products that meet China's standards of "secure and controllable" technology.
---------------------------------------	--

*Sources:* Various;<sup>235</sup> compiled by Commission staff.

## ENDNOTES FOR SECTION 3

1. Office of the U.S. Trade Representative, *2016 Report to Congress on China's WTO Compliance*, January 2017, 27.
2. U.S. Department of Commerce, International Trade Administration, *China eCommerce Overview*, 2016.
3. Organization for Economic Cooperation and Development, "Glossary of Statistical Terms," January 17, 2013.
4. United Nations Conference on Trade and Development, "In Search of Cross-Border E-Commerce Trade Data," *UNCTAD Technical Notes on ICT for Development*, April 2016, 1.
5. Organization for Economic Cooperation and Development, "Glossary of Statistical Terms," January 17, 2013.
6. United Nations Conference on Trade and Development, "In Search of Cross-Border E-Commerce Trade Data," *UNCTAD Technical Notes on ICT for Development*, April 2016, 1.
7. Vanessa Zeng, "E-Commerce Has Shifted China's Retail Landscape," *Forrester*, November 7, 2014.
8. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 4; Vanessa Zeng, "E-Commerce Has Shifted China's Retail Landscape," *Forrester*, November 7, 2014.
9. Jon Russell, "Half of China's Population Now Uses the Internet on a Mobile Device," *TechCrunch*, January 23, 2017.
10. Youchi Kuo, "3 Great Forces Changing China's Consumer Market," *World Economic Forum*, January 4, 2016.
11. Vanessa Zeng, "E-Commerce Has Shifted China's Retail Landscape," *Forrester*, November 7, 2014.
12. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 15–16; Hogan Lovells, "E-Commerce Liberalization in China: State Council and MIIT Push Forward," June 2015, 3.
13. Mark Ray, "An Introduction to E-Commerce in China," *Sovereign Group*, 2016, 12.
14. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 7; U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 3.
15. Richard Dobbs et al., "China's E-Tail Revolution," *McKinsey Global Institute*, March 2013.
16. Richard Dobbs et al., "China's E-Tail Revolution," *McKinsey Global Institute*, March 2013.
17. Helen H. Wang, "Three Strategies to Win in China's E-Commerce Market," *Forbes*, October 16, 2016.
18. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 5.
19. Alyssa Abkowitz, "China's Tencent and JD.com Launch Targeted Brand Advertising on WeChat," *Wall Street Journal*, May 19, 2016; Doug Young, "How Tencent Uses WeChat to Target Alibaba," *Forbes*, May 23, 2014.
20. Kevin Wei Wang, Alan Lau, and Fang Gong, "How Savvy, Social Shoppers Are Transforming Chinese E-Commerce," *McKinsey & Company*, April 2016.
21. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 3; Chenan Xia, "Cross-Border E-Commerce Is Luring Chinese Shoppers," *McKinsey Quarterly*, February 2016; Youchi Kuo, "3 Great Forces Changing China's Consumer Market," *World Economic Forum*, January 4, 2016.
22. Wai-Chan Chan, Imke Wouters, and Rae Wu, "China Cross-Border E-Commerce: An Opportunity Not to Be Missed," *Oliver Wyman*, August 2016, 3.
23. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 4; Chenan Xia, "Cross-Border E-Commerce Is Luring Chinese Shoppers," *McKinsey Quarterly*, February 2016.

24. Chenan Xia, "Cross-Border E-Commerce Is Luring Chinese Shoppers," *McKinsey Quarterly*, February 2016.
25. Yingzhi Yang and Yuan Yang, "PayPal Joins Baidu in Fight for China's Payments Market," *Financial Times*, July 26, 2017; Alibaba Group, "Form 20-F," June 15, 2017, 7; *Forbes*, "Weibo Advertising to Continue Driving Revenue for Sina," May 12, 2017; Chris Biggs et al., "What China Reveals about the Future of Shopping," *Boston Consulting Group and Alibaba*, May 4, 2017; iResearch Consulting Group, "The GMV of China's Third-Party Mobile Payment Hit 18.5 Trillion Yuan in Q4 2016," April 10, 2017; Zennon Kapron and Michelle Meertens, "Social Networks, e-Commerce Platforms, and the Growth of Digital Payment Ecosystems in China," *Better Than Cash Alliance*, 6; Tencent, "Tencent Announces 2016 Fourth Quarter and Annual Results," March 22, 2017; JD.com, "JD.com Announces Fourth Quarter and Full Year 2016 Results," March 2, 2017; Stat Counter, "Search Engine Market Share in China," December 2016.
26. Sidley Austin, "Liberalization of Foreign-Invested E-Commerce Business in China," August 3, 2015.
27. Hogan Lovells, "E-Commerce Liberalization in China: State Council and MIIT Push Forward," June 2015.
28. Hogan Lovells, "E-Commerce Liberalization in China: State Council and MIIT Push Forward," June 2015, 3.
29. Sarah Nassauer and Laurie Burkitt, "Wal-Mart Takes Full Ownership of Chinese E-Commerce Venture Yihaodian," *Wall Street Journal*, July 23, 2015.
30. Rick Carew, Alyssa Abkowitz, and Sarah Nassauer, "Wal-Mart to Sell Chinese E-Commerce Business to JD.com," *Wall Street Journal*, June 20, 2016.
31. iResearch Consulting Group, "Retail E-Commerce Sales Share in China, by Site, 2016," February 21, 2017; China E-Business Research Center via CEIC database.
32. Rick Carew, Alyssa Abkowitz, and Sarah Nassauer, "Wal-Mart to Sell Chinese E-Commerce Business to JD.com," *Wall Street Journal*, June 20, 2016.
33. *New York Times*, "Walmart Sells E-Commerce Site in China, Forging Strategic Alliance," June 20, 2016.
34. Sidley Austin, "Liberalization of Foreign-Invested E-Commerce Business in China," August 3, 2015.
35. Ian Lewis and Frank Wang, "Wal-Mart Acquisition Shows China E-Commerce Is Opening Up," *Law 360*, September 17, 2015.
36. Sheji Ho and Felicia Moursalien, "Forget China, There's an E-Commerce Gold Rush in Southeast Asia," *TechCrunch*, June 22, 2015.
37. eMarketer, "Alibaba's Tmall Maintains Reign over China's Retail E-Commerce," February 21, 2017.
38. eMarketer, "Alibaba's Tmall Maintains Reign over China's Retail E-Commerce," February 21, 2017.
39. *Forbes*, "How Alibaba Is Working Towards Establishing Itself in the United States?" February 25, 2016; James Peltz, "Why Chinese E-Commerce Giant Alibaba Stumbled with Its U.S. Shopping Site," *Los Angeles Times*, July 9, 2015.
40. Reuters, "Alibaba's Ma Meets Trump, Promises to Bring One Million Jobs to United States," January 9, 2017.
41. Dustin Walsh, "Gateway '17 Looks to Connect Michigan Business to China," *Crain's Detroit Business*, June 18, 2017.
42. BusinessWire, "Joint Statement for the Inaugural U.S.-China Business Leaders Summit," July 19, 2017.
43. John Rutwitch and Paul Carsten, "Alibaba Opens First U.S. Cloud Center, Enters Hotly Contested Market," Reuters, March 3, 2015.
44. He Wei, "Survey Says More E-Shoppers to Buy Foreign Stuff by 2020," *China Daily*, February 16, 2017.
45. eMarketer, "China Embraces Cross-Border E-commerce," June 14, 2016.
46. Michael Zakkour, Vice President, China/APAC Practice, Tompkins International, interview with Commission staff, April 21, 2017.
47. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 5.
48. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 5.
49. China-Britain Business Council, *China Business Handbook*, 2016, 33.
50. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 5.

51. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 6; China-Britain Business Council, *China Business Handbook*, 2016, 33.
52. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 6.
53. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 6.
54. China-Britain Business Council, *China Business Handbook*, 2016, 33.
55. China-Britain Business Council, *China Business Handbook*, 2016, 33.
56. Hau Lee et al., "U.S.-to-China B2C E-Commerce: Improving Logistics to Grow Trade," *Stanford Graduate School of Business White Paper*, August 2016.
57. Mark Ray, "An Introduction to E-Commerce in China," *Sovereign Group*, 2016, 23.
58. Deborah Weinswig, "International Retailers' Guide to Cross-Border Ecommerce in China," *Fung Global Retail & Technology*, December 2, 2016, 16.
59. Bloomberg News, "A \$60 Billion E-Commerce Loophole in China May Be Narrowing," May 18, 2017; U.S. Department of Agriculture, Foreign Agriculture Service, *Chinese Government Policies Change for Cross-Border E-Commerce*, December 7, 2016.
60. Chen Mengfa and Wu Gang, "China Postpones New Tax Rules on E-Commerce Imports, Again," *Caixin*, September 21, 2017; Mark Schaub and Chen Bing, "MOF-COM Holds Back Implementation of Tough E-Commerce Policies," *King & Wood Mallesons*, March 24, 2017; U.S. Department of Agriculture, Foreign Agriculture Service, *Chinese Government Policies Change for Cross-Border E-Commerce*, December 7, 2016.
61. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 17; U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Richard Cant, June 22, 2017, 11.
62. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Zakkour, June 22, 2017, 17.
63. Office of the United States Trade Representative, *2016 Out-of-Cycle Review of Notorious Markets*, December 2016, 12.
64. Office of the United States Trade Representative, *2016 Out-of-Cycle Review of Notorious Markets*, December 2016, 12.
65. Mark Melnicoe, "China's Draft E-Commerce Law Aims to Protect IP Rights," *Bloomberg BNA*, January 26, 2017; U.S. Department of Commerce, International Trade Administration, *China E-Commerce*, December 29, 2016.
66. Scott Cendrowski, "How New Balance Ran into a Wall in China," *Fortune*, May 28, 2016.
67. Kathy Chu and Liza Lin, "Fake Goods on Alibaba Hurt U.S. Small Businesses," *Wall Street Journal*, March 6, 2017.
68. Mark Melnicoe, "China E-Commerce Proposed Law Includes Data Security," *Bloomberg BNA*, February 1, 2017.
69. Mark Melnicoe, "China E-Commerce Proposed Law Includes Data Security," *Bloomberg BNA*, February 1, 2017.
70. Mark Melnicoe, "China E-Commerce Proposed Law Includes Data Security," *Bloomberg BNA*, February 1, 2017.
71. U.S.-China Business Council, "Technology Security and IT in China: Benchmarking and Best Practices," July 2016, 9.
72. Louise Lucas, "China's Ecommerce Gold Rush Is On, and Deliverymen Dig In," *Financial Times*, January 30, 2017.
73. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 11; *Economist*, "Logistics: The Flow of Things," July 12, 2014.
74. World Bank, "2016 Logistics Performance Index." <https://lpi.worldbank.org/international/global/2016>.
75. Xinhua, "China Takes More Measures to Reduce Logistics Costs," July 6, 2017; Bert Hofman, "Performance and Prospects of Global Logistics," *CaiNiao Global Smart Logistics Conference*, Hangzhou, China, May 22, 2017.

76. *Economist*, “Logistics: The Flow of Things,” July 12, 2014.
77. PricewaterhouseCoopers, “What China Plans to Do in 2016 and the Next Five Years,” March 2016, 5; Xinhua, “China Takes More Measures to Reduce Logistics,” July 6, 2017.
78. *China Daily*, “China’s Logistics Sector Continues to Grow in 2016,” March 9, 2017; Office of the U.S. Trade Representative, *2016 USTR Report to Congress on China’s WTO Compliance*, January 2017, 161.
79. Xinhua, “China Takes More Measures to Reduce Logistics Costs,” July 6, 2017; Daniel Ren, “China’s Big Five Parcel Delivery Companies Seek to Raise Funds Ahead of Consolidation Wave,” *South China Morning Post*, October 18, 2016; Jing Yang, “Six-Year Logistics Blueprint Released,” *South China Morning Post*, October 6, 2014.
80. Iris Mir, “Logistics Revolution in China: Will Delivery Companies Deliver?” *CKGSB Knowledge*, June 24, 2013.
81. Jill Mao, “Six Chinese Billionaires Spring Up With Delivery Fortunes Worth \$47 Billion,” Bloomberg, February 28, 2017; Elzio Barreto and Julie Zhu, “ZTO Spurs Huge China Valuations for Benefits of U.S. Listing,” Reuters, October 21, 2016.
82. Jill Mao, “Six Chinese Billionaires Spring up with Delivery Fortunes Worth \$47 Billion,” Bloomberg, February 28, 2017.
83. State Postal Bureau via CEIC database.
84. Ryan McMorro, “ZTO Express of China Has Largest U.S. IPO This Year,” *New York Times*, October 27, 2016.
85. U.S. Securities and Exchange Commission, *Form F-1 Registration Statement, ZTO Express*, September 30, 2016, 104; He Wei, “Delivery Firm Cancels IPO,” *China Daily*, December 31, 2013.
86. *Economist*, “Courier Firms: The Big Sort,” November 10, 2016; U.S. Securities and Exchange Commission, *Amendment No. 1 to Form F-1 Registration Statement, ZTO Express*, October 14, 2016, 129; Knowledge@Wharton, “Myriad Bottlenecks: Tackling Logistics,” July 4, 2012.
87. Jill Mao, “Six Chinese Billionaires Spring up with Delivery Fortunes Worth \$47 Billion,” Bloomberg, February 28, 2017; *Economist*, “Courier Firms: The Big Sort,” November 10, 2016.
88. Jill Mao, “Six Chinese Billionaires Spring up with Delivery Fortunes Worth \$47 Billion,” Bloomberg, February 28, 2017.
89. Winnie Lo, “Last Mile Delivery: A Pain Point of Online Shopping,” *Fung Business Intelligence*, March 2017; Teresa Lam and Lucia Leung, “Express Delivery Sector Enters a ‘New Era of Service’; New Business Models Bring New Opportunities,” *Fung Business Intelligence Center*, 2016.
90. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China’s Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 7.
91. Iris Mir, “Logistics Revolution in China: Will Delivery Companies Deliver?” *CKGSB Knowledge*, June 24, 2013.
92. *Economist*, “Courier Firms: The Big Sort,” November 10, 2016.
93. Hau Lee et al., “U.S.-to-China B2C E-Commerce: Improving Logistics to Grow Trade,” *Stanford Graduate School of Business White Paper*, August 2016, 18.
94. Hau Lee et al., “U.S.-to-China B2C E-Commerce: Improving Logistics to Grow Trade,” *Stanford Graduate School of Business White Paper*, August 2016, 18.
95. Hau Lee et al., “U.S.-to-China B2C E-Commerce: Improving Logistics to Grow Trade,” *Stanford Graduate School of Business White Paper*, August 2016, 18.
96. Andrew Batson, “China Is Poised to Approve New Postal Law,” *Wall Street Journal*, April 24, 2009.
97. Drake Bennett, “Alibaba and China’s Shipping Problem,” Bloomberg, May 29, 2014.
98. Office of the U.S. Trade Representative, *2016 USTR Report to Congress on China’s WTO Compliance*, January 2017, 160.
99. Office of the U.S. Trade Representative, *2016 USTR Report to Congress on China’s WTO Compliance*, January 2017, 160; Consumer Postal Council, “Index of Postal Freedom: China,” 2012.
100. Office of the U.S. Trade Representative, *2016 USTR Report to Congress on China’s WTO Compliance*, January 2017, 160.
101. Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers—China*, 2013, 18.
102. Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers—China*, 2013, 18.
103. Brenda Goh, “UPS, FedEx Get Approval for Express Services in More Chinese Cities,” Reuters, August 14, 2014.

104. Brenda Goh, "UPS, Fedex Gets Approval for Express Services in More Chinese Cities," Reuters, August 14, 2014; Bruce Einhorn, "In China, FedEx and UPS Wait for Regulators to Renew Permits," *Bloomberg Businessweek*, March 6, 2014.
105. Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers—China*, 2013, 84.
106. Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*, 2017, 89; Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers—China*, 2013, 92.
107. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 13.
108. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 13.
109. Hau Lee et al., "U.S.-to-China B2C E-Commerce: Improving Logistics to Grow Trade," *Stanford Graduate School of Business White Paper*, August 2016, 17.
110. Brenda Goh, "UPS, FedEx Get Approval for Express Services in More Chinese Cities," Reuters, August 14, 2014.
111. Consumer Postal Council, "Index of Postal Freedom: China," 2012.
112. U.S. Department of Commerce, International Trade Administration, *China – Express Delivery*, June 2016; *Forbes*, "Why UPS Is Expanding Its Presence in China," June 3, 2014.
113. Greg Knowler, "Consolidation Coming to China's Price Driven Courier Market," *Journal of Commerce*, December 2, 2014; Fung Business Intelligence Center, "Logistics Industry in China," August 2013, 13; Zacks Equity Research, "FedEx, UPS Moving on Chinese Market," June 29, 2012.
114. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 13.
115. Laura Stevens and Erica E. Phillips, "Amazon Plans Air Cargo Service for Chinese Customers," *Wall Street Journal*, March 15, 2017; Mari Saito and Brenda Goh, "Amazon Expands Logistics Reach in China," Reuters, February 9, 2016; Leslie Hook, "Amazon Lands China Ocean Shipping License," *Financial Times*, January 14, 2016.
116. Trefor Moss, "UPS, China's S.F. Express Joins Forces to Offer Special Delivery Business," *Wall Street Journal*, May 25, 2017.
117. Trefor Moss, "UPS, China's S.F. Express Joins Forces to Offer Special Delivery Business," *Wall Street Journal*, May 25, 2017.
118. Stephen Aldred and Clare Jim, "As China E-Commerce Basks in Alibaba IPO Glow, Ageing Warehouses Lure Global Investors," Reuters, May 11, 2014.
119. Jones Lang LaSalle, "China60: From Fast Growth to Smart Growth," 2015, 8.
120. Stephen Aldred and Clare Jim, "As China E-Commerce Basks in Alibaba IPO Glow, Ageing Warehouses Lure Global Investors," Reuters, May 11, 2014.
121. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Cathy Roberson, June 22, 2017, 6; Elzio Barreto, "As China E-Commerce Booms, Private Equity Sees Room for Growth in Storage Space," Reuters, August 23, 2016; Stephen Aldred and Clare Jim, "As China E-Commerce Basks in Alibaba IPO Glow, Ageing Warehouses Lure Global Investors," Reuters, May 11, 2014.
122. Benedikt Rauch and Michael Menhart, "Weaker Economic Growth—But the Insurance Market Is Booming," *Munich Re*, January 24, 2017.
123. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 5.
124. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3. U.S. International Transactions, Expanded Detail by Area and Country – China*, June 20, 2017.
125. U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. International Trade in Goods and Services, Exhibit 3. U.S. Exports of Services by Major Category*, December 2016.
126. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Hirson, June 22, 2017, 1.
127. Maggie Zhang and Alun John, "Ten Years On, What Are Foreign Banks Getting from China's Big Bang?" *South China Morning Post*, April 29, 2017; Ran Li et al., "Consequences of China's Opening to Foreign Banks," in Ligang Song et al., eds., *China's Domestic Transformation in A Global Context*, ANU Press, 2015, 67–87; Nicholas Hope, James Laurenceson, and Fengming Qin, "The Impact of Direct Investment

by Foreign Banks on China's Banking Industry," *Stanford Center for International Development Working Paper*, April 2008, 21–22.

128. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 164–178.

129. China Banking Regulatory Commission via CEIC database.

130. Stijn Claessens and Neeltje van Horen, "Foreign Banks: Trends, Impact and Financial Stability," *International Monetary Fund Working Paper*, January 2012, 3.

131. China Banking Regulatory Commission via CEIC database.

132. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Anne Stevenson-Yang, June 22, 2017, 2; Gabriel Wildau, "China Eases Rules for Foreign Banks," *Financial Times*, December 21, 2014.

133. Ernst & Young, "Banking in Asia-Pacific: Size Matters and Digital Drives Competition," 2015, 8.

134. Norton Rose Fulbright, "Supervision of International Bank Branches—China."

135. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Hirson, June 22, 2017, 5; Norton Rose Fulbright, "Financial Institutions M&A in China," December 2014.

136. Norton Rose Fulbright, "Financial Institutions M&A in China," December 2014.

137. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Anne Stevenson-Yang, June 22, 2017, 1.

138. Maggie Zhang and Alun John, "Ten Years On, What Are Foreign Banks Getting from China's Big Bang?" *South China Morning Post*, April 29, 2017.

139. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Anne Stevenson-Yang, June 22, 2017, 2.

140. Sun Hong, "Chinese Banking Restrictions Relaxed: New Rules Further Open Banking Sector to Investors," *Norton Rose Fulbright*, January 2015.

141. Knowledge@Wharton, "Foreign Banks in China Can Leverage Digital Expertise for Growth," February 20, 2015; Patrick H. Hu, "China Further Opens up to Foreign Banks," *Jones Day*, January 2015.

142. Sun Hong, "Chinese Banking Restrictions Relaxed: New Rules Further Open Banking Sector to Investors," *Norton Rose Fulbright*, January 2015; Gabriel Wildau, "Chinese Eases Rules for Foreign Banks," *Financial Times*, December 21, 2014.

143. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Hirson, June 22, 2017, 7–8; Sui-Lee Wee, "China's New Cybersecurity Law Leaves Foreign Firms Guessing," *New York Times*, May 31, 2017; American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 166.

144. Sui-Lee Wee, "China's New Cybersecurity Law Leaves Foreign Firms Guessing," *New York Times*, May 31, 2017.

145. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Hirson, June 22, 2017, 8.

146. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Michael Hirson, June 22, 2017, 8.

147. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 17.

148. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Zennon Kapron, June 22, 2017, 3.

149. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Zennon Kapron, June 22, 2017, 3.

150. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Zennon Kapron, June 22, 2017, 3.

151. Patti Waldmeir and Simon Rabinovitch, "China Falls out of Love with Cash," *Financial Times*, February 27, 2014.

152. Gabriel Wildau, "Ant's Alipay Challenges China UnionPay's Dominance," *Financial Times*, July 31, 2016.

153. AnnaMaria Andriotis, "China Opens Market Access to U.S. Credit-Card Networks," *Wall Street Journal*, May 12, 2017.
154. People's Bank of China via CEIC database; Shu Zhang and Matthew Miller, "China Opens Its Markets to Foreign Bank Companies," Reuters, June 7, 2016.
155. People's Bank of China via CEIC database.
156. *Economist*, "Credit in China: Just Spend," November 17, 2016.
157. *Economist*, "Credit in China: Just Spend," November 17, 2016.
158. Christopher Balding, "Trump Makes a Decent Deal with China," Bloomberg, May 12, 2017.
159. World Trade Organization, *China—Certain Measures Affecting Electronic Payment Services*, Dispute DS413.
160. Roy Zou, Mark Parsons, and Andrew McGinty, "China Opens up the Domestic Bank Card Clearing Market to Foreign Competition," *Hogan Lovells*, May 12, 2015; Davis Polk, "China Opens Bank Card Clearing Market to Foreign Competition," May 11, 2015.
161. *DavisPolk*, "China Opens Bank Card Clearing Market to Foreign Competition," May 11, 2015.
162. Gabriel Wildau, "Visa and MasterCard Face down China Techno-Nationalism," *Financial Times*, June 14, 2015.
163. Gabriel Wildau, "Visa and MasterCard Face down China Techno-Nationalism," *Financial Times*, June 14, 2015.
164. Li Xiaoxiao and Zhang Yuzhe, "Visa and MasterCard Confront China's Stacked Deck," *China File*, November 17, 2014.
165. Gabriel Wildau, "Visa and MasterCard Face down China Techno-Nationalism," *Financial Times*, June 14, 2015.
166. U.S. Department of Commerce, *Joint Release: Initial Results of the 100-Day Action Plan of the U.S.-China Comprehensive Economic Dialogue*, May 11, 2017.
167. Sumeet Chatterjee, "U.S. Bank Card Companies to Seek Licenses to Operate in China in Months," Reuters, July 20, 2017; Doug Palmer, "China Drags Its Feet on Opening Market to Electronic Payments like Visa and MasterCard," *Politico*, July 12, 2017.
168. Shawn Donnan and Tom Mitchell, "Trump Administration Hails U.S.-China Trade Deal," *Financial Times*, May 12, 2017.
169. Sumeet Chatterjee, "U.S. Bank Card Companies to Seek Licenses to Operate in China in Months," Reuters, July 20, 2017; AnnaMaria Andriotis, "China Opens Market Access to U.S. Credit-Card Networks," *Wall Street Journal*, May 12, 2017.
170. Don Weinland, "Bank Card Groups to Lose China Market Share," *Financial Times*, December 2016.
171. Don Weinland, "Bank Card Groups to Lose China Market Share," *Financial Times*, December 2016.
172. AnnaMaria Andriotis, "China Opens Market Access to U.S. Credit-Card Networks," *Wall Street Journal*, May 12, 2017.
173. Xinhua, "China Becomes the World's Third Largest Insurance Market," February 8, 2016.
174. Benedikt Rauch and Michael Menhart, "Weaker Economic Growth—But the Insurance Market Is Booming," *Munich Re*, January 24, 2017.
175. Benedikt Rauch and Michael Menhart, "Weaker Economic Growth—But the Insurance Market Is Booming," *Munich Re*, January 24, 2017.
176. Allianz, "Insurance Markets in 2016: China Saves the Day," March 13, 2017.
177. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 272.
178. U.S.-China Economic and Security Review Commission, *Hearing on U.S. Access to China's Consumer Market: E-Commerce, Logistics, and Financial Services*, written testimony of Christine Bliss, June 22, 2017, 4.
179. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 274.
180. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 274.
181. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 272.
182. American Chamber of Commerce in the People's Republic of China, "American Business in China White Paper," 2017, 274.
183. Office of the U.S. Trade Representative, *2016 Report to Congress on China's WTO Compliance*, January 2017, 18.
184. KPMG, "The Fintech 100 – Announcing the World's Leading Fintech Innovators for 2016," October 24, 2016.

185. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 4.
186. Financial Stability Board, "Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention," June 27, 2017, 7.
187. John Schindler, "FinTech and Financial Innovation: Drivers and Depth," *Federal Reserve Board of Governors*, 2017, 2; Financial Stability Board, "Monitoring of Fintech." <http://www.fsb.org/what-we-do/policy-development/additional-policy-areas/monitoring-of-fintech/>.
188. PricewaterhouseCoopers, "What Is FinTech?" April 2016, 3.
189. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 4.
190. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 31–36.
191. Gabriel Wildau and Leslie Hook, "China Mobile Payments Dwarf Those in U.S. as Fintech Booms, Research Shows," *Financial Times*, February 13, 2017.
192. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 23.
193. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 23.
194. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 24.
195. Sachin Mittal and James Lloyd, "The Rise of FinTech in China: Redefining Financial Services," *Ernst & Young and DBS Bank*, November 2016, 17.
196. Louise Lucas and Yuan Yang, "Tencent Credit Check Takes Mobile Payments Battle to Alibaba," *Financial Times*, August 7, 2017; Gabriel Wildau and Leslie Hook, "China Mobile Payments Dwarf Those in U.S. as Fintech Booms, Research Shows," *Financial Times*, February 13, 2017; iResearch Consulting Group, "GMV of China's Third Party Mobile Payment, 2011–2019," February 3, 2017.
197. Louise Lucas, "Race for China's \$5.5 Trillion Mobile Payment Market Hots Up," *Financial Times*, May 1, 2017; iResearch Consulting Group, "The GMV of China's Third-Party Mobile Payment Hit 18.5 Trillion Yuan in Q4 2016," April 10, 2017.
198. *Economist*, "In Fintech, China Shows the Way," February 25, 2017.
199. *Economist*, "In Fintech, China Shows the Way," February 25, 2017.
200. Don Weinland, "China P2P Lenders Braced for Regulatory Crackdown," *Financial Times*, January 9, 2017; Shu Zhang and Nick Heath, "China Takes Forceful Steps to Tame Unruly Peer-to-Peer Lending Sector," Reuters, August 24, 2016.
201. MJ Kim, "A Brief Look at the Current State of China's P2P Lending Industry," *TechNode*, March 10, 2017.
202. Shu Zhang and Nick Heath, "China Takes Forceful Steps to Tame Unruly Peer-to-Peer Lending Sector," Reuters, August 24, 2016.
203. Louise Lucas and Sherry Fei Ju, "One of China's Biggest P2P Lenders Quits Ahead of Clampdown," *Financial Times*, July 30, 2017; Don Weinland, "China P2P Lenders Braced for Regulatory Crackdown," *Financial Times*, January 9, 2017; Shu Zhang and Nick Heath, "China Takes Forceful Steps to Tame Unruly Peer-to-Peer Lending Sector," Reuters, August 24, 2016.
204. Zennon Kapron, "Alibaba and Credit Scoring: More Thoughts on Sesame Credit," *Kapronasia*, February 3, 2015.
205. Gabriel Wildau, "Alibaba's Finance Arm Launches Credit Scoring Service," *Financial Times*, January 27, 2015.
206. Zennon Kapron and Michelle Meertens, "Social Networks, e-Commerce Platforms, and the Growth of Digital Payment Ecosystems in China," *Better Than Cash Alliance*, 28.
207. Zennon Kapron and Michelle Meertens, "Social Networks, e-Commerce Platforms, and the Growth of Digital Payment Ecosystems in China," *Better Than Cash Alliance*, 9.
208. Amy Hawkins, "Chinese Citizens Want the Government to Rank Them," *Foreign Policy*, May 24, 2017; Simon Denyer, "China's Plan to Organize Its Society Relies on 'Big Data' to Rate Everyone," *Washington Post*, October 22, 2016.
209. Paul Carsten, "Apple Pay Takes on China's Internet Kings in Mobile Payments," Reuters, February 18, 2016; *China Retail News*, "Apple Introduces Payment Service in China," February 18, 2016.
210. Bloomberg News, "Apple Pay Enters China through UnionPay's Network," February 18, 2016.
211. Hunton & Williams, "China Enacts Administrative Measures for Online Payment Businesses," January 13, 2016.

212. *China Daily*, “China to Halt Licensing of New Non-Bank Payment Agencies,” August 12, 2016; Liu Xiaozhuo, “Foreign Companies Granted Third-Party Payment Licenses,” *China Daily*, July 11, 2013.
213. Emma Lee, “Nearly One Year after Launch, Apple Pay Finds Limited Traction in China,” *TechCrunch*, February 28, 2017; Paul Carsten, “Apple Pay Takes on China’s Internet Kings in Mobile Payments,” Reuters, February 18, 2016.
214. Norton Rose Fulbright, “China Issues Comprehensive Regulations on Internet Finance,” October 2015.
215. Norton Rose Fulbright, “China Issues Comprehensive Regulations on Internet Finance,” October 2015.
216. Qu Yunxu, Zhang Yuzhe, and Han Wei, “China’s Battles over Virtual Wallets Intensifies,” Caixin, February 9, 2017.
217. Xinhua, “Chinese Central Bank Sets up Fintech Committee,” May 15, 2017.
218. Daniel Allen, “The Future of China’s Fintech Boom,” *EastWestBank*.
219. U.S. Department of the Treasury, *National Treatment under U.S. Laws and Regulations*, 1998.
220. Jon Hilsenrath, Robin Sidel, and Lingling Wei, “Chinese Banks Get Nod in United States,” *Wall Street Journal*, May 10, 2012.
221. Koh Gui Qing, “China Banks Miss Out on U.S. Investment Banking Bonanza,” Reuters, April 26, 2017; Hibah Yousuf, “Three Chinese Banks Expanding in the United States,” CNN Money, May 9, 2012.
222. Koh Gui Qing, “China Banks Miss Out on U.S. Investment Banking Bonanza,” Reuters, April 26, 2017; Board of Governors of the Federal Reserve System, *Federal Reserve Board Issues Enforcement Action with Agricultural Bank of China and Agricultural Bank of China New York Branch*, September 29, 2016; Board of Governors of the Federal Reserve System, *Federal Reserve Board Issues Enforcement Action with China Construction Bank Corporation and Termination of Enforcement Action with Atlantic Coast Financial Corporation*, July 21, 2015.
223. Jennifer Surane and Selina Wang, “China’s Alipay Grabs Slice of U.S. Market with First Data,” Bloomberg, May 8, 2017.
224. First Data, “First Data to Power Alipay in North America,” May 8, 2017.
225. Robert Pittenger and Chris Smith, “Check China’s Financial Investments in the United States,” *Wall Street Journal*, February 21, 2017.
226. James Fontanella-Khan, “U.S. Lawmakers Sharpen Criticism of \$1.2 Billion MoneyGram Deal,” *Financial Times*, May 14, 2017.
227. James Fontanella-Khan, “U.S. Lawmakers Sharpen Criticism of \$1.2 Billion MoneyGram Deal,” *Financial Times*, May 14, 2017.
228. James Fontanella-Khan, “U.S. Lawmakers Sharpen Criticism of \$1.2 Billion MoneyGram Deal,” *Financial Times*, May 14, 2017.
229. MoneyGram, “MoneyGram Stockholders Overwhelmingly Approve Merger with Ant Financial,” May 16, 2017.
230. Jon Russell and Catherine Shu, “Alibaba’s Ant Financial May Have Won the Bidding War for MoneyGram after Upping Its Offer to \$1.2 Billion,” *TechCrunch*, April 16, 2017.
231. U.S. International Trade Commission, *Recent Trends in U.S. Services: 2013 Annual Report*, July 2013, 1.
232. U.S. Department of Commerce, Bureau of Economic Analysis, *Table 1.3. U.S. International Transactions, Expanded Detail by Area and Country – China*, June 20, 2017.
233. eMarketer, “Alibaba’s Tmall Maintains Reign over China’s Retail E-Commerce,” February 21, 2017.
234. Max J. Zenglein, “China’s Overrated Service Sector,” *MERICs China Monitor*, October 13, 2016, 7.
235. Paul Triolo, Roger Creemers, and Graham Webster, “China’s Ambitious Rules to Secure Critical Information Infrastructure,” *New America*, July 14, 2017; Mark Melnicoe, “China E-Commerce Proposed Law Includes Data Security,” Bloomberg BNA, February 1, 2017; Office of the U.S. Trade Representative, “2016 USTR Report to Congress on China’s WTO Compliance,” January 2017, 18, 160; American Chamber of Commerce in the People’s Republic of China, “American Business in China White Paper,” 2017, 166; Karen Ip, Damien Bailey, and James Gong, “First WFOE Obtains VATS License from MIIT,” Herbert Smith Freehills LLP, August 5, 2016; *China Daily*, “China to Halt Licensing of New Non-Bank Payment Agencies,” August 12, 2016; Gabriel Wildau, “Visa and MasterCard Face down China Techno-Nationalism,” *Financial Times*, June 14, 2015; Sun Hong, “Chinese Banking Restrictions Relaxed: New Rules Further Open Banking Sector to Investors,” Norton Rose Fulbright, January 2015; Norton Rose Fulbright, “Financial Institutions M&A in China,” December 2014; Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers—China*, 2010, 74.



## CHAPTER 2

### U.S.-CHINA SECURITY RELATIONS

#### SECTION 1: YEAR IN REVIEW: SECURITY AND FOREIGN AFFAIRS

##### Key Findings

- China's territorial disputes in the South China Sea and in South Asia flared in 2017. China continued to rely primarily on non-military and semiofficial actors (such as the China Coast Guard and maritime militia) to advance its interests in the disputed South China Sea, straining already-unsettled relations with the Philippines and Vietnam. The 2016 ruling by the Permanent Court of Arbitration in The Hague, which overwhelmingly sided against China's position, has not deterred Beijing. China's territorial assertiveness was also on display when Chinese armed forces attempted to consolidate control over territory disputed by Bhutan and India. Ultimately, India was more successful than the Philippines and Vietnam in countering Chinese coercion.
- China's One Belt, One Road initiative continued to expand in 2017. Although China claims the mega-project is primarily economic in nature, strategic imperatives are at the heart of the initiative. China aims to use One Belt, One Road projects to expand its access to strategically important places, particularly in the Indian Ocean; to enhance its energy security; and to increase its leverage and influence over other countries.
- The People's Liberation Army continues to extend its presence outside of China's immediate periphery by opening its first overseas military base in Djibouti, increasing its contributions to UN peacekeeping operations, and conducting more bilateral and multilateral exercises. China's arms exports continued to grow in volume and sophistication in 2017, although they remain limited to low- and middle-income countries and are dwarfed by U.S. and Russian sales in value. The People's Liberation Army's expanded exercise portfolio includes new partners, such as Burma and Nepal, as well as long-time partners Pakistan and Russia. China's defense ties with Russia continued an upward trend in 2017.
- U.S.-China security relations saw new dialogue formats emerge following the U.S. presidential transition, but were marked by growing tension due to disagreements over issues such as North Korean denuclearization and China's continued coercive actions in regional territorial disputes.

## Introduction

The year 2017 saw the continued expansion of China’s military, security, and other foreign policy activities in pursuit of national interests close to home and far afield. Beijing continued to advance its maritime and territorial claims to the frustration of its neighbors and the international community; Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping continued his ambitious military reform and reorganization effort; and China’s global security engagement and international military footprint continued to expand. Although the Xi government and the Donald Trump Administration sought common ground, tensions increased.

This section, based on Commission hearings and briefings, the Commission’s May 2017 fact-finding trip to Asia, discussions with outside experts, and open source research and analysis, considers these and other trends. It examines China’s territorial disputes in the South China Sea and with India; the One Belt, One Road initiative; military reform and reorganization; international military engagement; and security ties with the United States, among other things. (For a full discussion of recent developments in China’s military modernization, see Chapter 2, Section 2, “China’s Military Modernization in 2017.”)

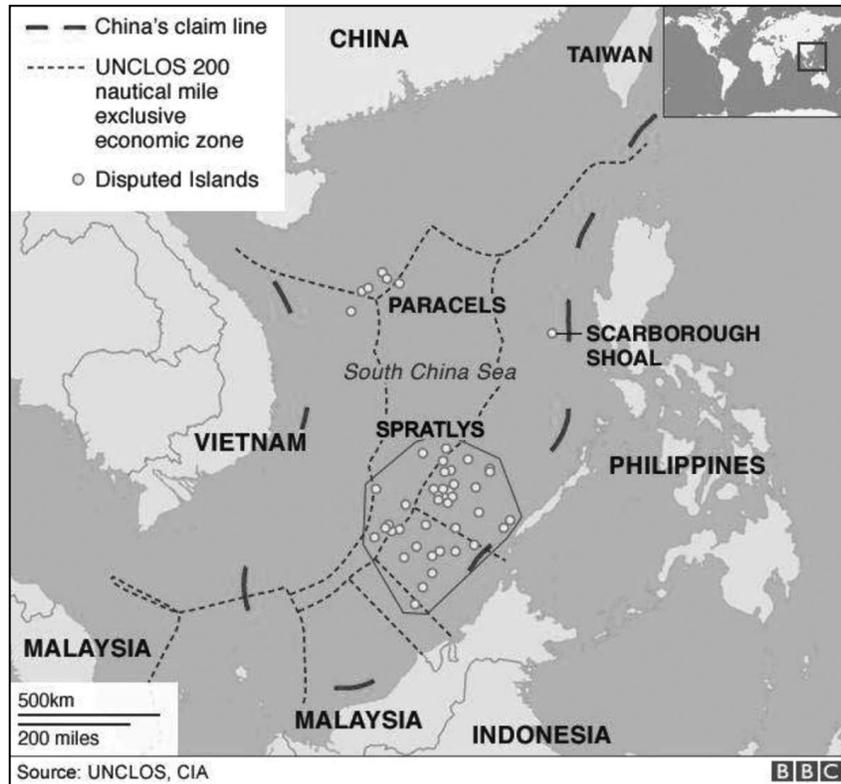
## Major Developments in China’s Security and Foreign Affairs in 2017

### *China’s South China Sea Disputes*

Throughout 2017, China tightened its effective control over the South China Sea by continuing to militarize the artificial islands it occupies there and pressuring other claimants such as Vietnam and the Philippines to accept its dominance.<sup>1</sup> China still rejects the July 2016 ruling by the Permanent Court of Arbitration in The Hague regarding its occupation and reclamation of land features in the South China Sea,<sup>2</sup> and it has increased tensions in several other ways, including by illegally seizing a U.S. Navy underwater unmanned vehicle.<sup>3</sup> In September 2017, several U.S. officials told the *Wall Street Journal* U.S. Pacific Command had developed a plan to carry out two to three freedom of navigation operations (FONOPs)\* in the region in the following months, after carrying out three FONOPs in the South China Sea earlier in the year.<sup>4</sup> Meanwhile, a final Code of Conduct (COC) between the Association of Southeast Asian Nations (ASEAN) and China—intended to reduce the risk of accidents in the region’s busy sea lanes and manage crises—has yet to emerge.<sup>5</sup> (See Chapter 3, Section 2, “China and Northeast Asia,” for a discussion of the East China Sea dispute.)

\*According to U.S. Pacific Fleet, “[FONOPs] challenge excessive maritime claims across the globe to demonstrate [the United States’] commitment to uphold the rights, freedoms, and uses of the sea and airspace guaranteed to all nations under international law.” U.S. Pacific Fleet reported that “[U.S. forces] conducted FONOPs challenging excessive maritime claims of 22 different coastal States, including claims of [U.S.] allies and partners” in fiscal year 2016. Sam LaGrone, “UPDATED: USS Stethem Conducts Freedom of Navigation Operation Past Triton Island in South China Sea,” USNI News, July 2, 2017; U.S. Department of Defense, “U.S. Department of Defense (DOD) Freedom of Navigation (FON) Report for Fiscal Year (FY) 2016,” February 28, 2017.

Figure 1: Map of the South China Sea



Source: BBC, "Why Is the South China Sea Contentious?" July 12, 2016.

### *China's Rejection of the Arbitral Ruling and Its Dispute with the Philippines*

It has been more than one year since the Permanent Court of Arbitration in The Hague interpreted the UN Convention on the Law of the Sea (UNCLOS)\* in favor of the Philippines against China in July 2016.<sup>6</sup> Although it rejected the ruling, China has been careful to conduct some of its activities in the South China Sea in ways that do not overtly violate the ruling.<sup>7</sup> For example, it has refrained from constructing additional artificial islands in the Spratly Islands,<sup>†</sup> seizing control of land features from other claimants, and drilling for oil and gas in some disputed areas.<sup>8</sup> Nonetheless, Bei-

\*UNCLOS, ratified in 1982, set the historical "free seas" traditions dating from the 17th century into formal international law with more than 160 state parties; China ratified UNCLOS in 1996. Although the United States has not ratified UNCLOS, it contends the binding principles of UNCLOS conform to customary international law. United Nations, "The United Nations Convention on the Law of the Sea (A Historical Perspective)," 2012.

†The Center for Strategic and International Studies' Asia Maritime Transparency Initiative reported in August 2017 that China has continued to reclaim land in the northern Paracel Islands (which Vietnam and Taiwan also claim), particularly Tree Island, North Island, and Middle Island. The Permanent Court of Arbitration ruling did not address disputes in the Paracels. Center for Strategic and International Studies Asia Maritime Transparency Initiative, "Update: China's Continuing Reclamation in the Paracels," August 9, 2017.

China has acted increasingly aggressive in other ways to enforce its de facto control over the South China Sea. For example, Chinese authorities continue to “intercept and intimidate” Philippine fishing boats in the Spratly Islands, according to Bill Hayton, associate fellow at the British think tank Chatham House.<sup>9</sup> In March 2017, a China Coast Guard vessel reportedly fired on an unarmed Philippine fishing trawler operating not far from Gaven Reef, the location of one of China’s artificial islands.<sup>10</sup> The only significant concession China has made to the Philippines in the wake of the arbitral ruling has been to no longer impede access of Philippine fishermen to the waters surrounding Scarborough Reef.<sup>11</sup>

Some analysts believe it is only a matter of time before China begins reclamation of Scarborough Reef, which it seized in 2012.<sup>12</sup> Philippine Secretary of National Defense Delfin Lorenzana said in February 2017 that he believed China would eventually begin building on the strategic location, and Philippine Supreme Court senior associate justice Antonio Carpio made a similar assessment in May 2017.<sup>13</sup> During the Commission’s meeting with the Center for Strategic and International Studies’ Pacific Forum in March 2017, analysts told the Commission the Philippines had “given up” on Scarborough Reef and that Philippine President Rodrigo Duterte believes China will eventually occupy it.<sup>14</sup>

Some Philippine officials remain frustrated with the situation. Justice Carpio urged the Duterte Administration in May to file another international arbitration case and to lodge a complaint with the UN, arguing that a failure to do so would be tantamount to “selling [the Philippines] out” in exchange for Chinese loans and investment.<sup>15</sup> In the absence of an effective dispute resolution mechanism, Philippine Foreign Secretary Alan Peter Cayetano suggested in May 2017 that ASEAN and China settle on a “gentlemen’s agreement.”<sup>16</sup> After the first China-Philippines bilateral meeting on the issue, however, little progress was announced other than an agreement to meet again in 2018.<sup>17</sup> Secretary Cayetano said in September 2017 that the Philippines has not wavered from its territorial claims, but has merely “changed [its] strategy” to effectively implement the findings of the arbitration.<sup>18</sup> According to Secretary Cayetano, Presidents Duterte and Xi agreed to maintain the status quo in the South China Sea by not inhabiting additional disputed features, including Scarborough Reef.<sup>19</sup>

Resource competition, a historical flashpoint in the China-Philippines dispute, flared again in 2017 as well. In July, Ismael Ocampo, director of the Philippine Department of Energy’s Resource Development Bureau, announced the Philippines might resume exploratory drilling for oil and natural gas in more than 20 blocks near disputed Reed Bank in the South China Sea and in the Sulu Sea near the Philippine island of Palawan by the end of 2017.<sup>20</sup> The Philippines had suspended exploratory drilling in Reed Bank in late 2014 as it pursued its suit with the Permanent Court of Arbitration,<sup>21</sup> which later ruled that Reed Bank fell within the Philippines’ 200-nautical mile (nm) exclusive economic zone (EEZ).<sup>22</sup> President Duterte had

\*An EEZ is a 200-nm zone extending from a country’s coastline, within which that country can exercise exclusive sovereign rights to explore for and exploit natural resources, but over which it does not have full sovereignty. UN Convention on the Law of the Sea, “Part 5: Exclusive Economic Zone.”

claimed in May that China threatened him with war if he tried to drill for oil in the disputed region,<sup>23</sup> but by August, Secretary Cayetano said the two countries were working on a commercial deal to explore joint energy exploitation options in the South China Sea.<sup>24</sup> Secretary Cayetano insisted no Philippine territory would be lost as a result of any future agreement between the two countries.<sup>25</sup> In late September, Philippine Energy Secretary Alfonso Cusi said a long-delayed joint venture for oil and natural gas exploration in the Palawan Sea between Philippine and Chinese state-owned companies and a Canada-listed company was ready for President Duterte's approval.<sup>26</sup>

As Beijing pursues coercive tactics to strengthen its de facto control of disputed areas, it exerts pressure on Southeast Asian countries to refrain from opposing its activities—a strategy that has proven largely successful. Carl Thayer, a Southeast Asia specialist at the University of New South Wales, said in April 2017, “The reality is that ASEAN is gradually accepting that the South China Sea has become China’s lake.”<sup>27</sup> Since the arbitration, instead of responding to the Philippines’ sweeping legal victory over China by more forcefully and vocally opposing China’s claims and filing suits of their own, ASEAN member countries largely have remained silent on the matter.<sup>28</sup>

Over the last two years, China has exploited ASEAN’s requirement for unanimity to its advantage by applying pressure on countries such as Cambodia and even the Philippines to prevent summit statements from including language explicitly critical of China.<sup>29</sup> The ASEAN summit’s official joint statement in April 2017 omitted any mention of 2016’s UNCLOS arbitration, land reclamation, or militarization, instead merely making a vague reference to “concerns expressed by some leaders over recent developments in the area.”<sup>30</sup> The joint statement from the August 2017 ASEAN Foreign Minister’s Meeting “took note of the concerns expressed by some Ministers on the land reclamations and activities in the area, which have eroded trust and confidence, increased tensions, and may undermine peace, security, and stability in the region,” and it “emphasized the importance of non-militarization and self-restraint in the conduct of all activities by claimants and all other states.”<sup>31</sup> Secretary Cayetano said the Philippines initially opposed including the harsher language but relented in favor of “what the majority [of ASEAN] wants.”<sup>32</sup>

#### *China’s Consolidation of Control over Artificial Islands and New Armaments*

Since China suspended new land reclamation activities in the Spratly Islands, it has deployed anti-aircraft and antiship missile batteries in the Paracel Islands and at Yulin Naval Base on Hainan Island in order to build “a maritime and aerial control corridor in the South China Sea,” according to a report by ImageSat International, a satellite image analysis firm.<sup>33</sup> According to the firm, this control corridor is supported by the installation of point-defense systems,\* combat aircraft, ships, and facilities to

\*Point defense systems, such as the U.S. Patriot missile, are capable of protecting particular targets or small clusters of targets. U.S.-China Economic and Security Review Commission, 2015

service them, advanced radar equipment, and hardened missile shelters. Gregory Poling, director of the Center for Strategic and International Studies' Asia Maritime Transparency Initiative, argued that China's goal is to "extend [an] umbrella over the entire nine-dash line,\* which means effectively establishing administration over all of [the waters and airspace] that China claims."<sup>34</sup>

The U.S. Department of Defense (DOD) reported in its *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017* that "major construction features at the largest [Spratly Islands] outposts include new airfields—all with runways at least 8,800 feet in length—large port facilities, and water and fuel storage" as well as 24 fighter jet-sized hangars, which could house up to three regiments of jets.<sup>35</sup> Between May and December 2016, China constructed what appeared to be point-defense installations consisting of anti-aircraft guns and unknown hexagonal structures at each of its outposts in the Spratly Islands in the southern portion of the South China Sea.<sup>36</sup> By June 2017, Fiery Cross Reef had a total of 12 hardened missile shelters, while Subi Reef and Mischief Reef had eight each.<sup>†</sup><sup>37</sup>

**Figure 2: New Defenses on Fiery Cross Reef**



*Note:* The image on the left depicts the reef's new missile shelters, storage facilities, and radar facilities, and the one on the right depicts its new point-defense systems.

*Source:* Center for Strategic and International Studies Asia Maritime Transparency Initiative, "Updated: China's Big Three near Completion," June 29, 2017; Center for Strategic and International Studies Asia Maritime Transparency Initiative, "China's New Spratly Island Defenses," December 13, 2016.

*Annual Report to Congress*, November 2015, 363.

\*The so-called "nine-dash line" or "cow's tongue" encompasses the extent of China's territorial claims in the South China Sea—about 90 percent of its area—based on China's alleged "historical rights" that have been found not to have any legal basis in international law. For more information, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 374.

†In addition to new missile defenses, in May 2017 Chinese state-run media reported short-range rockets to ward off enemy frogmen—military divers trained in underwater demolition, sabotage, and infiltration—also had been deployed on Fiery Cross Reef, though the rockets had been deployed there without official acknowledgment since at least March 2013. Philip Wen, "China Installs Rocket Launchers on Disputed South China Sea Island—Report," Reuters, May 18, 2017; Keluo Liaofu, "Accidental Reveal: Navy Spratly Reef Defense Force Equipment Antifrogman Automatic Grenade Launcher," Sina, March 2, 2013. Translation.

China also has significantly improved the defenses of its facilities on Hainan Island—which includes China’s main submarine base in the region—and deployed some of its most modern aircraft to bases there. The ImageSat International report shows what appear to be several missile launch pads, including HQ–9 surface-to-air missile batteries, a radar center, and antiship missiles on a hill in the southern part of Hainan.<sup>38</sup> Images from May 2017 reveal the deployment of two KJ–500 airborne early warning and control aircraft, four Y–8Qs—China’s newest antisubmarine warfare aircraft—and three BZK–005 high-altitude, long-range reconnaissance unmanned aerial vehicles (UAVs) at the southern Lingshui Air Base.<sup>39</sup> Mike Yeo, Asia correspondent for *Defense News*, wrote in June 2017 that the close timing of the Y–8Q and the KJ–500 deployment demonstrated “China’s intention of beefing up [its] ... sea control capabilities\* with the latest equipment in its inventory.”<sup>40</sup>

### *China-Vietnam Dispute*

Tensions flared in the ongoing dispute between Beijing and Hanoi in the South China Sea in 2017 as well. In June, China cut short a planned “border defense friendship exchange” summit with Vietnam, citing “reasons related to working arrangements.”<sup>†</sup><sup>41</sup> The *New York Times* reported that Central Military Commission (CMC) Vice Chairman General Fan Changlong arrived in Hanoi as planned but left early.<sup>42</sup> Observers suggested China canceled the summit either in response to Vietnam’s perceived attempts to increase strategic cooperation with Japan and the United States or in retaliation for Vietnam’s recent oil exploration in disputed areas of the South China Sea.<sup>43</sup>

In June 2017, Hanoi granted permission to Talisman-Vietnam, a local subsidiary of the Spanish-owned energy firm Repsol, to drill an oil “appraisal well” in an area that Mr. Hayton asserts is within Vietnam’s EEZ according to “mainstream interpretations” of UNCLOS.<sup>44</sup> Repsol began operations in the area on June 21.<sup>45</sup> Days before the planned summit, China moved an ultradeepwater oil rig to its waters close to a median line between China and Vietnam in their overlapping EEZs as a means of pressuring Vietnam to stop its own drilling.<sup>‡</sup><sup>46</sup>

\*DOD defines sea control as “operations designed to secure use of the maritime domain by one’s own forces and to prevent its use by the enemy.” Chairman of the Joint Chiefs of Staff, *Joint Publication 3–32 Command and Control for Joint Maritime Operations*, August 7, 2013, i–3.

†Vietnamese state media reported in late September that the border defense friendship exchange took place September 23–24 with Vietnam’s vice secretary of the Central Military Commission and defense minister Ngo Xuan Lich and China’s vice chairman of the Central Military Commission Fan Changlong participating. The exchange occurred in Vietnam’s Lai Chau Province and in China’s Yunnan Province. Nhân Dân Online, “Fourth Vietnam-China Border Defence Friendship Exchange Launched,” September 23, 2017.

‡Between May and July 2014, the same Chinese oil rig, *Haiyang Shiyu 981*, conducted exploration activities in sites 130–150 miles off Vietnam’s coast, escorted by a large contingent of China Coast Guard, fishing, and commercial ships. According to DOD, Chinese naval “ships supported operations ... and fighters, helicopters, and reconnaissance aircraft patrolled overhead. Chinese paramilitary ships frequently resorted to ramming and use of water cannons to deter Vietnamese ships and enforce the security cordons around the rig. In mid-May, anti-Chinese protests over the rig’s deployment erupted in Vietnam and resulted in at least two Chinese deaths and more than 100 injured, after which more than 3,000 Chinese nationals were evacuated from Vietnam. China also suspended some plans for bilateral diplomatic exchanges with Vietnam.” In January 2016, the same rig was deployed to another disputed area. Mike Ives, “Vietnam Objects to Chinese Oil Rig in Disputed Waters,” *New York Times*, January 20, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2015*, April, 2015, 7.

In early July, Hanoi also renewed the license of ONGC Videsh, an Indian firm, to conduct exploratory oil drilling in blocks that include waters claimed by China.<sup>47</sup> According to Harsh V. Pant, a professor at King's College in London, by accepting Vietnam's invitation to drill against China's wishes, "ONGC Videsh not only expressed India's desire to deepen its friendship with Vietnam, but also ignored China's warning to stay away."<sup>48</sup> A senior official of the Indian firm told Reuters that Vietnam's interest in developing this block is primarily strategic due to only moderate potential for oil development; he said that "Vietnam also wants [India] to be there because of China's interventions in the [South China Sea]."<sup>49</sup> In mid-July, as a result of Chinese threats, Hanoi ended the Repsol subsidiary's drilling.<sup>50</sup>

Amid these developments, the United States has continued to quietly enhance defense ties with Vietnam. In August 2017, U.S. Secretary of Defense James Mattis and his Vietnamese counterpart Ngo Xuan Lich agreed that a U.S. aircraft carrier would visit Vietnam in 2018, the first such visit since 1975.<sup>51</sup>

#### *China's Seizure of U.S. Navy Underwater Unmanned Vehicle*

In mid-December 2016, People's Liberation Army (PLA) Navy sailors seized a U.S. Navy underwater unmanned vehicle conducting scientific research in international waters about 50 nm northwest of the Philippines' Subic Bay. In a statement addressing the incident, China's Ministry of National Defense stated its opposition to U.S. surveillance activities in unspecified "maritime areas facing China" and described the area in question as "[China's] waters," referring neither to international law nor to its own claimed historic rights, suggesting this opposition was an expansion of Beijing's prior stance.<sup>52</sup> Additionally, in May 2017, after the U.S. destroyer *Dewey* conducted a FONOP within 12 nm of Mischief Reef—one of the main artificial island bases China occupies in the Spratlys—China's Ministry of National Defense responded by claiming sovereignty over vague "adjacent sea areas," which is not a term that appears in UNCLOS.<sup>53</sup>

#### *Limited Progress on South China Sea Code of Conduct*

Seventeen years after it was first proposed, in August 2017 China and the members of ASEAN adopted a negotiating framework for a future COC to manage tensions related to overlapping territorial claims in the South China Sea.<sup>54</sup> Chinese Vice Foreign Minister Liu Zhenmin called the framework "comprehensive" and said it respected the concerns of all parties, but he warned against "outside interference" in the drafting process, which was widely interpreted to be a reference to the United States.<sup>55</sup> Nevertheless, a leaked version of the draft framework explicitly states the COC will not be "an instrument to settle territorial disputes or maritime delimitation issues."<sup>56</sup> Further, the draft framework lacks enforcement mechanisms, citing instead reliance on "mutual trust," a "duty to cooperate," and "self-restraint."<sup>57</sup> At the ministerial meeting of the Trilateral Strategic Dialogue in August 2017, Japan, Australia, and the United States "urged ASEAN member states and China to en-

sure that the COC be ... legally binding, meaningful, effective, and consistent with international law.”<sup>58</sup>

#### *U.S. Freedom of Navigation Operations (FONOPs)*

FONOPs, which the U.S. government has used worldwide since 1983 to signal its opposition to excessive maritime territorial claims, have occurred three times in the South China Sea in 2017.<sup>59</sup> The United States conducted only one FONOP in the South China Sea in 2015 and three in 2016.<sup>60</sup> Three requests by the U.S. Navy in February and March 2017 to conduct FONOPs near Scarborough Reef were turned down by Pentagon officials, surprising analysts after initial indications that the Trump Administration might increase the tempo of FONOPs.<sup>61</sup> Dr. Mira Rapp-Hooper, then senior fellow at the Center for a New American Security, and Dr. Charles Edel, associate professor at the U.S. Naval War College, argued in May that FONOPs send the legal message that the South China Sea “is an international waterway over which China is not entitled to make spurious maritime claims ... and failing to carry them out suggests to Beijing that it can expand its reach with impunity.”<sup>62</sup>

In mid-May, a bipartisan group of seven senators wrote to President Trump urging him to conduct more FONOPs, calling freedom of navigation and overflight in the South China Sea “critical to U.S. national security interests and to peace and prosperity in the Asia-Pacific region.”<sup>63</sup> In late May, the U.S. Navy destroyer *Dewey* conducted a FONOP near Mischief Reef, a feature claimed by both the Philippines and China, the first such operation in 214 days.<sup>64</sup> Secretary Mattis testified during a Congressional hearing that he had initially rejected a request for a FONOP because he wanted the operations to be part of an overall strategy, not “as a stand-alone.”<sup>65</sup> Secretary Mattis said that he approved the *Dewey* FONOP once he was satisfied that it “support[ed] Secretary [of State Rex] Tillerson’s view of foreign policy, engaging in that part of the world.”<sup>66</sup> Following Secretary Mattis’ approval, the U.S. destroyer *Stethem* carried out a FONOP near Triton Island in the Paracel Islands in early July, and the destroyer *John S. McCain* sailed within 12 nm of Mischief Reef in the Spratlys in August.<sup>67</sup>

In early June 2017 at the annual Shangri La Dialogue in Singapore, the defense ministers of Australia and Japan called for more U.S. FONOPs and expressed approval of actions taken by the United States to demonstrate its resolve in upholding international law.<sup>68</sup>

#### ***China’s One Belt, One Road Initiative***

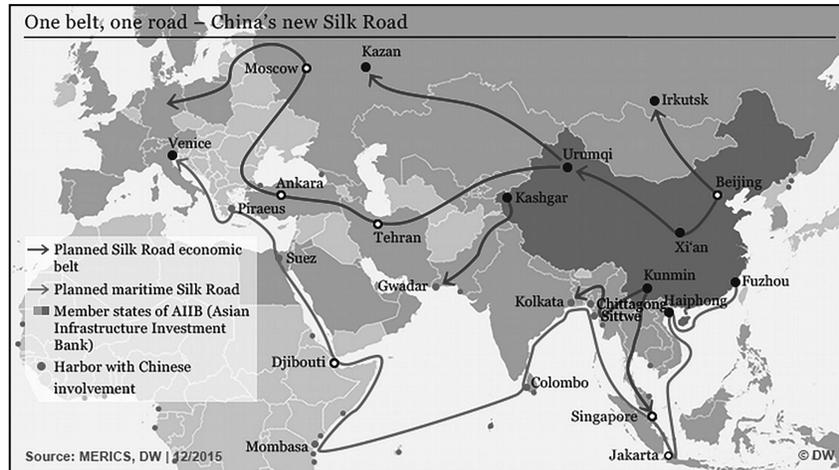
In 2017, China’s One Belt, One Road (OBOR) campaign continued to expand.† OBOR, initially launched by President Xi during a visit to Kazakhstan in 2013, is a top-priority economic and strategic program. OBOR loosely covers around 60 countries (see Figure 3)

\*The United States does not single out China-held features as FONOP targets. Since 2015, U.S. FONOPs have targeted all of the claimants in the South China Sea territorial disputes. The United States also conducts FONOPs regularly all over the world. Ankit Panda, “For the United States, Freedom of Navigation in Asia Concerns More than Just China,” *Diplomat*, March 7, 2017.

†China rebranded OBOR in 2017 as the Belt and Road Initiative to reflect the initiative’s multiple infrastructure networks. This section continues to use the original OBOR designation. Angela Stanzel, “China’s Belt and Road—New Name, Same Doubts?” *European Council on Foreign Relations*, May 19, 2017.

and, according to analysis from Fitch, includes \$900 billion worth of projects (planned or already underway).<sup>69</sup> In May 2017, President Xi pledged an additional \$124 billion to OBOR.<sup>70</sup>

**Figure 3: China's One Belt, One Road Initiative**



Source: Galina Petrovskaya, "Silk Road' in EU: Trans-Caspian Transit Bypassing Russia," Deutsche Welle, September 3, 2016. Translation.

China leverages financial institutions outside the established multilateral development bank framework to support OBOR projects (see Table 1). Chinese policy banks, namely the Export-Import Bank of China and China Development Bank, have been the most active investors in OBOR-affiliated projects. The latter promised to invest more than \$890 billion in OBOR countries,<sup>71</sup> and at the end of 2016, the two banks' reported OBOR-related lending totaled \$101.8 billion.<sup>72</sup> In addition, China set up the Silk Road Fund in 2014, with an original endowment of \$40 billion.<sup>73</sup> The Asian Infrastructure Investment Bank (AIIB), created in 2014, has lent around \$2 billion since it was established in 2016 (the bank is authorized to lend up to \$250 billion).<sup>74</sup> China retains 26 percent of AIIB's voting power, which gives it de facto veto power over the bank's decisions.\* Another potential contributor to OBOR projects is the New Development Bank (the so-called "BRICS Bank"), established in July 2014 with \$100 billion in initial capital.<sup>75</sup>

\*AIIB's president has said as other members join, China is prepared to lose its veto power. James Kyngé, "AIIB Chief Unveils Aim to Rival Lenders such as ADB and World Bank," *Financial Times*, May 3, 2017.

Table 1: Select Government Funds Investing in Belt and Road Projects, 2017

 <b>国家开发银行</b> CHINA DEVELOPMENT BANK	<b>\$890 billion</b>
 <b>丝路基金</b> Silk Road Fund	<b>\$40 billion</b>
 <b>ASIAN INFRASTRUCTURE INVESTMENT BANK</b>	<b>[\$250 billion]</b>
 <b>New Development Bank</b>	<b>[\$100 billion]</b>

*Note:* The amounts for AIIB and the New Development Bank are their authorized lending caps, and do not represent amounts invested in OBOR projects. Because AIIB and the New Development Bank are multilateral institutions, their investments do not necessarily reflect the unilateral decisions of the Chinese government.

*Source:* Compiled by Commission staff.

Although Chinese officials generally only cite OBOR's economic objectives, it has several unspoken strategic objectives as well:<sup>76</sup>

**Establishing strategic access:** As China's economic and geostrategic interests expand, Beijing seeks the ability to protect these interests wherever and whenever required. With so many economic interests outside China's borders, the imperative to protect these interests—using the Chinese Navy in particular—has grown. China's 2013 defense white paper codified this requirement, noting for the first time the necessity of protecting Chinese nationals and other interests abroad.<sup>77</sup> A few years later, China opened its first military base abroad, in Djibouti (discussed later in this section). As China's economic interests along the economically and geostrategically important Indian Ocean grow, China likely will look to establish more bases there.<sup>78</sup>

Chinese investments in port infrastructure associated with OBOR potentially could pave the way for Chinese naval access to the region. Chinese companies are involved in 28 existing or planned port projects along the main OBOR route: Bangladesh (2), Burma (Myanmar) (2), Cambodia (1), Djibouti (1), Egypt (1), Eritrea (1), Georgia (1), Greece (1), Israel (2), Kenya (2), Malaysia (2), Maldives (1), Mozambique (2), Pakistan (2), Somalia (1), Sri Lanka (2), Tanzania (2), Turkey (1), and Yemen (1) have existing or planned regional ports with Chinese involvement. Chinese companies are involved in a further 16 port projects in West Africa and Western Europe.<sup>79</sup> According to an estimate from Grisons Peak, an investment bank, in the 12-month period from June 2015 to June 2016, Chinese companies

announced plans to purchase or invest in \$20 billion worth of port infrastructure around the world.<sup>80</sup>

***Enhancing China's energy security:*** China has shifted from energy self-sufficiency in the 1980s to dependence on external sources of oil for more than half of its oil consumption needs.\* Eighty percent of China's energy imports arrive from the Middle East and West Africa by passing through the narrow Strait of Malacca. China's military strategists refer to this as the "Malacca Dilemma," noting that sea lanes such as the Strait of Malacca have become "life-lines" for China's economic development and that in the event of war or maritime crises these lines are likely to be cut off as China cannot control them.<sup>81</sup> Chinese leaders therefore look to alternative (often overland) routes to diversify China's energy sources and bypass critical maritime chokepoints. Although no single source can replace oil from the Middle East, in combination, these new sources may partially alleviate this dependence. A report by one of China's major oil companies projects that by 2030, OBOR countries will become China's "national energy security supply base," accounting for about half of China's crude oil imports and one-third of its natural gas imports.<sup>82</sup>

As the following examples demonstrate, China has pursued energy projects around the world. In countries that have access to the Indian Ocean, China's energy development projects tend to be linked to Chinese port infrastructure developments.

- Central Asian oil and natural gas are transported to China via two existing pipeline networks: the Kazakhstan-China oil pipeline delivers Kazakh oil to China's westernmost Xinjiang Province, and the Central Asia-China natural gas pipeline delivers Turkmen (and to a lesser extent, Uzbek) natural gas to China by way of Turkmenistan, Uzbekistan, and Kazakhstan. Chinese companies are investing in building up additional capacity.†
- The \$54 billion China-Pakistan Economic Corridor has a significant energy component, though a great share of it is aimed at alleviating Pakistan's own energy shortfalls. This initiative aims to connect Kashgar, Xinjiang, with Gwadar, Pakistan, located at the edge of the Strait of Hormuz in the Arabian Sea, via 2,000 miles of rail, road, and oil and natural gas pipelines.‡
- In Southeast Asia, one key OBOR project will run across Burma, stretching from the Chinese city of Kunming to the Indian Ocean deepwater port at Kyaukphyu. Chinese firms have already constructed natural gas and oil pipelines along this corridor and are seeking an 85 percent share in the port at the pipeline's terminus.<sup>83</sup>

***Achieving regional and domestic stability through economic development:*** Chinese officials believe accelerating economic de-

\* In 2015, 62 percent of all crude oil consumed in China was imported. China's National Bureau of Statistics via CEIC database.

† For an in-depth assessment of China's OBOR efforts in Central Asia, see U.S.-China Economic and Security Review Commission, Chapter 3, Section 1, "China and Central Asia," in *2015 Annual Report to Congress*, November 2015, 391–418.

‡ For China's OBOR projects in South Asia, see U.S.-China Economic and Security Review Commission, Chapter 3, Section 1, "China and South Asia," in *2016 Annual Report to Congress*, November 2016, 313–346.

velopment is “an important historic opportunity to safeguard social stability and lasting political order.”<sup>84</sup> Following the blueprint of previous domestic initiatives to promote domestic stability with economic development, Beijing believes trade and investment with its Central and South Asian neighbors will reduce poverty, thereby encouraging peace and stability and making the region more resistant to fundamentalism and terrorism.<sup>85</sup> By fostering economic linkages between Central Asian and South Asian countries and Xinjiang,\* Beijing hopes to encourage economic development and stability domestically as well.

Chinese policymakers hope the opening of new markets for Chinese products will rejuvenate China’s infrastructure- and export-led development model. As domestic markets become saturated, encouraging companies to compete abroad will generate new returns—especially for inefficient state-owned companies—while enabling the government to postpone painful economic reforms (e.g., privatizing state companies). OBOR’s heavy emphasis on infrastructure creates an outlet for China’s tremendous excess capacity, especially in industries associated with construction, such as steel and glass, which are dominated by state-owned companies.<sup>86</sup>

By promoting Chinese companies, services, and technologies, OBOR also serves as a vehicle for entrenching Chinese standards and practices in host markets. Chinese companies deploying Chinese power grids or Chinese rail gauges across vast parts of Europe and Asia will shape international standards.<sup>87</sup> More pressing, given Chinese government’s emphasis on “technonationalism,”<sup>†</sup> is the role Chinese information and communication technology companies will play in establishing standards for a new generation of technologies. Already, Chinese telecom companies ZTE and Huawei are among major developers of 5G mobile network standards.<sup>88</sup>

***Gaining influence and leverage over other countries, and countering U.S. influence:*** As Chinese investment becomes more and more important to other countries’ economic health, Beijing’s ability to use that dependence as leverage grows. According to Nadège Rolland, a scholar of OBOR and a senior fellow for political and security affairs at the National Bureau of Asian Research:

*Economic cooperation is not just a way to boost development or to bring financial returns. It is also a tool to be used for political and strategic gain.... When Xi tells China’s neigh-*

\*Xinjiang Uyghur Autonomous Region, China’s westernmost province and home to China’s Muslim Uyghur ethnic group, has experienced varying degrees of unrest in the past several decades. As in Tibet, many residents of Xinjiang do not culturally or politically identify with China, and some Uyghur groups advocate for greater autonomy or full independence for Xinjiang. Beijing views the existence of these groups as a threat to China’s sovereignty and security and has sought to silence them while simultaneously integrating Xinjiang into the social, economic, and political fabric of greater China. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 393.

<sup>†</sup>Technonationalism refers to the Chinese government’s goal of moving up the high-tech value-added chain and achieving dominance in key technologies by relying on domestic innovation. In pursuit of this goal, the Chinese government has relied on a full range of policy tools, including extensive subsidies to domestic companies, rules and regulations that marginalize foreign companies and demand transfers of technologies in exchange for accessing the Chinese market, financial and regulatory support for acquisition of foreign technologies and, in some cases, theft of intellectual property. The key tenet of Chinese technonationalism is that domestic—not foreign—companies should achieve dominant positions in China, and then start expanding to overseas markets. For a discussion of China’s industrial policy and technological development, see Chapter 4, Section 1, “China’s Pursuit of Dominance in Computing, Robotics, and Biotechnology.”

*bors they should take advantage of the economic opportunities offered by development and by [OBOR], this is what he has in mind. Countries that are friendly to China, support its interests, or at a minimum do not challenge it on sensitive issues will receive economic and security benefits from Beijing; conversely, countries that oppose China, or infringe on its security and sovereignty, will be denied access to these rewards and might even be actively punished.<sup>89</sup>*

The westward-looking element of OBOR is beneficial to Beijing. To its east, China faces U.S. military might, U.S. allies, maritime disputes,\* tensions with Taiwan, and a growing reputation for bullying and coercion against its maritime neighbors. By making OBOR the centerpiece of China's foreign policy, Beijing attempts to redirect the spotlight away from its adversarial approach to its eastern neighbors to its relatively uncontroversial and "win-win" diplomacy with its western neighbors. It is also easier for China to establish influence and leverage in these countries, where the United States already has fairly limited influence.<sup>90</sup> Recognizing that the United States is still viewed as the region's security guarantor, Beijing is leaning on its natural strength—its economic might—to compete with Washington for influence, particularly in developing countries.†<sup>91</sup> This may partially explain the conspicuous absence of key maritime Asian U.S. allies—like Japan, South Korea, and Australia—from OBOR, although these countries' high level of economic development probably plays a larger role in their exclusion.

### ***China's Border Disputes with Bhutan and India***

As the Commission noted in its *2016 Annual Report to Congress*, the border dispute between China and India remains the most likely source of armed conflict between the two countries, although the probability of such a conflict is low.<sup>92</sup> There have been no major border clashes since 1967, but diplomatic sparring, the buildup and occasional movement of troops, and regular complaints of border incursions from both sides are commonplace.<sup>93</sup> In mid-June 2017, a new challenge emerged at Doklam, near the "trijunction" of the China-India-Bhutan border (see Figure 4), complicating the border dispute and raising the stakes for all three countries.

The standoff began after Chinese road construction crews, escorted by Chinese border guards, began extending an existing dirt road

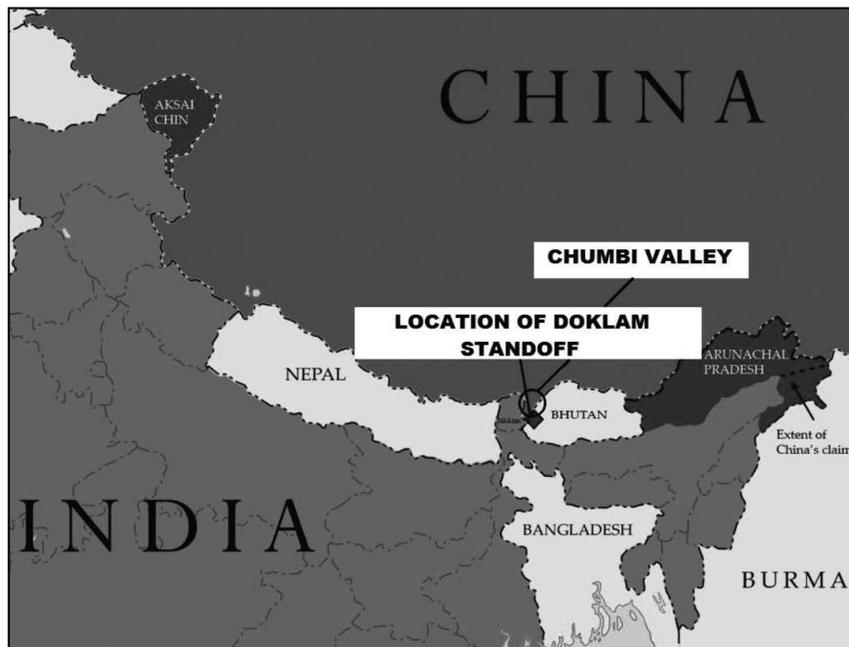
\*China has competing maritime claims with Brunei, Indonesia, Japan, the Philippines, Malaysia, Taiwan, and Vietnam.

†In an indication of China's growing influence with its westward neighbors, in 2017 China ordered Chinese exchange students from the largely Muslim Uyghur ethnic group who had been studying abroad in places like Turkey and Egypt to return to China. When many students failed to obey the orders, Beijing reportedly pressured Egyptian authorities to round up and detain at least 200 ethnic Uyghur and Kazakh Chinese students, a move international human rights groups called a violation of international law. Some of these students attempted to flee to Turkey, which historically has been welcoming to Uyghurs; however, amid warming China-Turkey ties, Ankara has been less hospitable to Chinese Uyghurs, and reportedly has turned several away at the border. Days after Egyptian authorities rounded up the Uyghur students, China and Turkey pledged to enhance defense cooperation, and Ankara pledged to limit domestic media reporting critical of China. Radio Free Asia, "Egyptian Authorities Forcibly Disappear 16 Uyghur Students from Notorious Prison," September 25, 2017; Gary Shih, "China and Turkey Pledge Security Cooperation as Ties Warm," Associated Press, August 3, 2017; Emily Feng, "China Targets Muslim Uyghurs Studying Abroad," *Financial Times*, August 1, 2017; Radio Free Asia, "Uyghurs Studying Abroad Ordered back to Xinjiang under Threat to Their Families," May 9, 2017.

into the Doklam region of the disputed China-Bhutan border. After Bhutanese border forces apparently failed to convince the Chinese crew to retreat,<sup>94</sup> Indian troops moved into the area to block the Chinese crew's path.<sup>95</sup> Several hundred Chinese and Indian border forces remained there in a tense standoff until late August, when China and India agreed to disengage and retreat to their respective pre-June positions on the same day, allowing the confrontation to deescalate without either side losing face.<sup>96</sup>

This outcome was interpreted by many observers as a “win” for India and Bhutan and a model for countering Chinese territorial aggression because China retreated to its pre-standoff position.<sup>97</sup> Nevertheless, India's tactical victory is unlikely to deter China from advancing its claims at another time, or in another way. On the day the standoff ended, a Chinese Ministry of Foreign Affairs spokesperson said “the Chinese military has taken effective countermeasures to ensure the territorial sovereignty and legitimate rights and interests of the state.”<sup>98</sup> China may have agreed to retreat because it did not want to raise tensions ahead of important meetings like the September BRICS summit and the CCP's 19th Party Congress in October. It also may see its tactical “defeat” as justification to build up its infrastructure and military presence near the border.<sup>99</sup> As this Report went to print, unconfirmed Indian media reports claimed Chinese forces remain in the vicinity of the standoff location<sup>100</sup> and Chinese builders were expanding an existing road about six miles from the standoff location.<sup>101</sup>

**Figure 4: Location of Doklam Standoff**



*Source:* Adapted from Jeff Smith, “High Noon in the Himalayas: Behind the China-India Standoff at Doka La,” *War on the Rocks*, July 13, 2017.

Although Bhutan is an independent country, from 1949–2007, India managed its foreign and defense policies.<sup>102</sup> Since 2007, Bhutan has had nominally more control over these matters, but India retains significant influence over its smaller neighbor.<sup>103</sup> Bhutan does not have formal diplomatic relations with China, and is the only country besides India with which China still has a land border dispute. Some observers see China’s Doklam incursion as an effort to test India’s commitment to Bhutan in the hopes that the latter will distance itself from the former and see value in cultivating better relations with China instead.<sup>104</sup>

For its part, India views stopping China’s move southward along the disputed China-Bhutan border near India’s Sikkim State as a strategic imperative. According to Jeff Smith, then director of Asian Security Programs at the American Foreign Policy Council, “For all practical purposes, the standoff has become an extension of the China-India border dispute.”<sup>105</sup> Mr. Smith explains:

*Chinese control over the Doklam plateau would represent a grave strategic threat. The Chinese-controlled Chumbi valley bisecting Sikkim and Bhutan cuts toward the Siliguri Corridor, a narrow, strategically-vulnerable strip of territory connecting the main mass of the Indian subcontinent to its more remote northeastern provinces. A Chinese offensive into this “Chicken’s Neck” could sever India’s connection to the northeast, where China still claims up to 90,000 square kilometers in Arunachal Pradesh. China’s Global Times seemed to acknowledge as much, and further stoke Indian anxieties by arguing “northeast India might take the opportunity to become independent” if Delhi’s fears were realized and China launched an operation to “quickly separate mainland India from the northeast.”<sup>106</sup>*

It remains to be seen how the Doklam standoff will impact China’s ongoing efforts to grow its economic and geostrategic influence in South Asia, where it is betting that economic engagement with smaller South Asian countries will enable it to challenge India’s longstanding regional influence.\*

### ***PLA Reform and Reorganization Efforts in 2017***

In January 2016, China began executing a reform† and reorganization of the PLA intended to strengthen the CCP’s control over the military and improve the PLA’s capability to fight regional conflicts at greater distances from China through integrated joint operations.‡<sup>107</sup> The reforms call for restructuring the CMC, creating a Joint Staff Department, expanding the service headquarters sys-

\*For a more in-depth examination of China’s relations with South Asia, see U.S.-China Economic and Security Review Commission, Chapter 3, Section 1, “China and South Asia,” in *2016 Annual Report to Congress*, November 2016, 313–355.

†This latest reform is the PLA’s 11th since 1949. The largest previous structural reorganization occurred in 1985 when the PLA’s 13 military regions were restructured and reduced to 7 (Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou, and Chengdu). For additional information on PLA troop reductions and reorganizations since 1949, see Kevin McCauley, “PLA Transformation: Difficult Military Reforms Begin,” *China Brief*, September 18, 2015.

‡Integrated joint operations incorporate all services under a unified commander rather than having each service conduct sequential service-specific operations within a military campaign.

tem, transitioning from a military region to a theater joint command structure, and reducing the size of the PLA.<sup>108</sup>

### *Force Reduction*

In September 2015, President Xi announced 300,000 troops would be cut from the PLA by the end of 2017,<sup>109</sup> a process that is now underway. This reduction is focused largely on the PLA Army and reflects the growing importance of PLA Navy, Rocket Force, and Air Force missions in light of China's aggressive ambitions in the maritime and space domains.<sup>110</sup>

### Force Reduction and Implications for Ground Force Structure

In January 2016, the CMC stated the PLA would reduce personnel and equipment to “accelerate the transformation of the military from a numbers-and-scale model to that of quality and efficiency.”<sup>111</sup> China's 18 group armies\* were reduced to 13 and redesignated with the numbers 71 through 83.<sup>112</sup>

Although the full extent of this restructuring is unclear, some troops and newer equipment from disbanded group armies were transferred to renumbered group armies that remained in theater commands, while older equipment and other units may have been decommissioned or retired from the PLA.<sup>113</sup> Furthermore, some group armies may have had units transferred out of the PLA Army to other services.† (See Addendum I, “New Group Army Structure in Theater Commands,” for a summary of the new group army structure.)

### *Reform and Theater Training*

Changes underway within the PLA require adjustments in doctrine, plans, and training.<sup>114</sup> To address these requirements, the PLA has conducted training to identify and address operational problems at the theater level.<sup>115</sup> As the PLA continues to carry out reform efforts, exercises will refine operational processes at the theater level focused on conducting and sustaining integrated joint operations.

### Integrated Joint Operations and Theater Training

The establishment of the five theater commands in 2016 has led to military training focused on theater joint operations in addition to annual transregional exercises. A number of these exercises were designed to test leadership within the new joint theater command structure in addition to their original purpose: enhancing transregional mobility and practicing joint operations.<sup>116</sup> The Joint Staff Department has also dispatched observers to theater-level training

\* PLA ground forces are organized into formations known as “group armies” comprising 45,000 to 60,000 personnel. Group armies contain divisions, brigades, regiments, battalions, companies, platoons, and squads. However, the 13 group armies are not identical. For example, two group armies—the 71st and 78th—do not have army aviation units, and four group armies—the 72nd, 74th, 81st, and 83rd—do not have special operations forces. Dennis J. Blasko, “Recent Developments in the Chinese Army's Helicopter Force,” *China Brief*, June 9, 2017; Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century*, Routledge, 2006, 21; Dennis J. Blasko, “PLA Ground Forces: Moving toward a Smaller, More Rapidly Deployable, Modern Combined Arms Force,” in James C. Mulvenon and Andrew N. D. Yang, eds., *The People's Liberation Army as Organization*, RAND Corporation, 2002, 317.

† For example, the 77th Motorized Infantry Brigade likely moved from the newly established 74th Group Army to the PLA Navy Marine Corps. Dennis J. Blasko, “What Is Known and Unknown about Changes to the PLA's Ground Combat Units,” *China Brief*, May 11, 2017; Dennis J. Blasko, “Walk, Don't Run: Chinese Military Reforms in 2017,” *War on the Rocks*, January 9, 2017.

events to identify new operational planning requirements.<sup>117</sup> Over the next year, PLA theater exercises likely will continue focusing on identifying deficiencies in the joint theater structure to improve China's capability to fight a regional conflict.

#### Theater Service Training

In addition to integrated joint operational training, the services are conducting training at the theater level intended to integrate services into the new command structure.<sup>118</sup> The Western Theater Command Air Force, for example, conducted training in 2016 to identify and resolve operational deficiencies before holding larger joint exercises to test the new theater command structure.<sup>119</sup> Like the PLA Air Force, the PLA Navy also engaged in theater-level training intended to test its capability to address maritime threats faced in the Eastern, Southern, and Northern Theater Commands.<sup>120</sup>

#### Establishment of Joint Logistics Support Force and Joint Training

In September 2016, as part of the reorganization, the PLA established the Joint Logistics Support Force to support theater operations as well as operations abroad.<sup>121</sup> The Joint Logistics Support Force likely will support long-distance exercises and strengthen the PLA's capability to sustain theater operations as well as expeditionary operations and warfighting missions farther into the Western Pacific and beyond.

#### *Leadership Changes and Joint Command*

Although the reforms suggest senior leadership positions at the national and theater levels would be more reflective of a truly "joint" structure, these positions remain staffed mostly by army officers.<sup>122</sup> Dennis Blasko, a former U.S. military attaché in China, asserts the PLA needs to "formalize and implement a PLA-wide program to develop joint-qualified officers through education, training, and assignments" to address this problem.<sup>123</sup> Despite experimentation with developing "joint officers"<sup>124</sup> the PLA still faces a shortage of officers with joint operational experience.<sup>125</sup> Leadership changes at the theater and national levels should start to address some of the ground force dominance that remains in the system at senior levels within the PLA. For example, PLA Navy Vice Admiral Yuan Yubai was selected to lead the Southern Theater Command,<sup>126</sup> marking the first instance of a non-PLA Army officer commanding a theater or military region before the theater structure and possibly indicating changes in other theaters as reforms continue through 2020. There also are likely to be national-level leadership changes within the CMC during the October 2017 19th Party Congress, which could rebalance the 11-member body and reduce the dominance of the ground forces.<sup>127</sup> Currently, only four of the ten uniformed members of the CMC are not ground force personnel.

### **China's Global Security Activities in 2017**

#### ***PLA Overseas Activities***

In 2017, China's global security engagement continued to grow, reflecting recently expanded mission requirements to "safeguard the security of [its] overseas interests," as stated in its 2015 defense

white paper.<sup>128</sup> These overseas interests include protecting Chinese citizens abroad, foreign investments, access to raw materials, and sea lines of communication.<sup>129</sup>

#### *Gulf of Aden Antipiracy Deployments and Related Operations*

In August 2017, China's 27th consecutive naval task group deployed to the Gulf of Aden for antipiracy patrols.<sup>130</sup> Since China began its Gulf of Aden antipiracy operations in 2008, the PLA Navy has conducted more than 1,000 escort missions and rescued or assisted more than 60 ships.<sup>131</sup> In April 2017, the 25th naval task group operated jointly with Indian and Pakistani ships to rescue a Tuvaluan commercial ship hijacked by Somali pirates, and delivered three suspected pirates back to Somalia.<sup>132</sup>

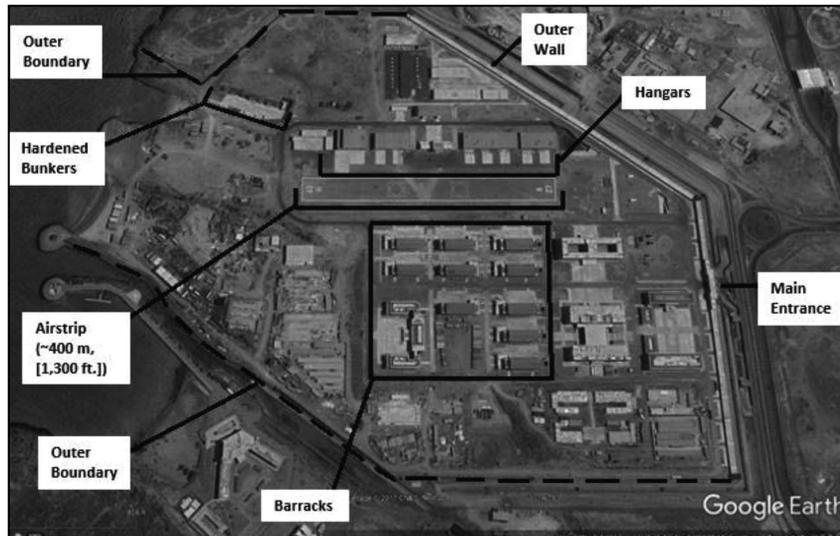
China has included nuclear submarines in its antipiracy task groups. According to DOD, this "demonstrat[e]s the PLA Navy's emerging capability both to protect China's sea lines of communication and to increase China's power projection into the Indian Ocean."<sup>133</sup> China's nuclear submarines' presence near India's coast has become constant, according to Indian Navy officials; the submarines regularly stop in Colombo, Sri Lanka, or Karachi, Pakistan.<sup>134</sup> In January 2017, a Chinese attack submarine made a stopover in Malaysia for the first time while returning from an antipiracy patrol in the Gulf of Aden.<sup>135</sup>

#### *PLA Unveils Djibouti Military Base*

On August 1, 2017, the PLA officially opened its first permanent overseas military base in Djibouti, a small country on the Horn of Africa (see Figure 5).<sup>136</sup> Other countries, including the United States, have bases there. Stratfor, a geopolitical intelligence firm, reported the base is fortified with three layers of security at its perimeter and a 250,000-square-foot underground space "[allowing] for unobserved activity."<sup>137</sup> No docks had been constructed as this Report went to print, but Stratfor noted the PLA could use Djibouti's commercial port until it constructs its own dock at the base.<sup>138</sup> Analysts at CNA Corporation judged all PLA Navy ships would be capable of docking at the commercial port (assuming berths of equal length), except for its two largest platforms—the *Liaoning* aircraft carrier and the Type 071 amphibious transport dock.<sup>139</sup> September imagery of the base shows an airstrip with two helipads and eight hangars, which could accommodate helicopters but not fighter jets or other fixed-wing aircraft, according to Stratfor.<sup>140</sup> The base's location is particularly sensitive for the United States because it is located several miles away from Camp Lemonnier—one of the largest and most critical U.S. military installations abroad.\*<sup>141</sup> U.S. defense officials fear the PLA could use the base to surveil U.S. military activities out of Camp Lemonnier. In addition, some observers reportedly are concerned increased Chinese economic engagement with Djibouti could serve to weaken U.S.-Djibouti security ties over the long term.<sup>142</sup>

\*Approximately 4,000 U.S. personnel are stationed at Camp Lemonnier, which serves as the hub for U.S. counterterrorism operations in North Africa and the Arabian Peninsula. Commander, Navy Installations Command, *Camp Lemonnier, Djibouti*. [https://cnic.navy.mil/regions/cnreura/swa/installations/camp\\_lemonnier\\_djibouti.html](https://cnic.navy.mil/regions/cnreura/swa/installations/camp_lemonnier_djibouti.html); Eric Schmitt, "U.S. Signs New Lease to Keep Strategic Military Installation in the Horn of Africa," *New York Times*, May 5, 2014.

Figure 5: China's Military Base in Djibouti (September 4, 2017)



Source: Adapted from Google Earth; Jeremy Binnie (@JeremyBinnie), "Our annotated satellite imagery of the Chinese base in Djibouti," August 4, 2017, 5:34 A.M. Tweet; Stratfor, "Looking over China's Latest Great Wall," July 26, 2017.

According to China's Ministry of National Defense, the "support facility will be mainly used to provide rest and rehabilitation for the Chinese troops taking part in escort missions in the Gulf of Aden and waters off Somalia, UN peacekeeping, and humanitarian rescue [operations]."<sup>143</sup> Notably, DOD's *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017* changed its assessment of the Djibouti installation from a "military support facility" to a "base," which could imply a more substantial footprint for the facility.<sup>144</sup> In September 2017, troops from the base conducted their first live-fire exercise at a training range controlled by the Djibouti government.<sup>145</sup> The Djibouti location itself will serve as a strategic asset for China and help it increase power projection in the region.<sup>146</sup> Djibouti occupies a key chokepoint for sea lines of communications between the Red Sea and the Indian Ocean, through which travels a large portion of hundreds of billions of dollars in trade between China and the Middle East and Europe.<sup>147</sup>

DOD judges "China most likely will seek to establish additional military bases in countries with which it has a longstanding friendly relationship and similar strategic interests, such as Pakistan, and in which there is precedent for hosting foreign militaries."<sup>148</sup> In April 2017, the Pakistan government announced it granted a 40-year lease to Chinese state-owned firm China Overseas Port Holding Company to develop Gwadar's deepwater port.<sup>149</sup>

#### *UN Peacekeeping Operations*

China's involvement in UN peacekeeping operations dates back to 1990 when it first contributed military observers.<sup>150</sup> Since then, China's participation has increased to more than 2,600 personnel

active in 10 countries\*—the largest contribution among the permanent members of the UN Security Council.†<sup>151</sup> In terms of contributions to the 2016 UN peacekeeping budget, China provided \$764.8 million (10.3 percent), second behind the United States' \$2.75 billion (28.6 percent).<sup>152</sup> China's participation in these operations supports several objectives, including international prestige, operational experience for the PLA, and intelligence collection.<sup>153</sup>

- In August 2017, at the UN's request, Beijing deployed its first PLA helicopter unit for peacekeeping purposes to the Darfur region of Sudan.<sup>154</sup> The unit consists of 140 soldiers and four Mi-171 helicopters. Its mission reportedly will involve air patrol and transportation of personnel and equipment.<sup>155</sup>
- In February and March 2017, the UN awarded China's peacekeeping forces in Lebanon and Liberia with the UN Peace Medal of Honor, which "commend[s] those who have made prominent contributions to human peace."<sup>156</sup> Chinese peacekeeping forces have now received the award five times.<sup>157</sup>

According to Mr. Blasko, "While [peacekeeping operations provide] some PLA units the still infrequent opportunity to operate beyond the borders of China and [enhance] the PLA's confidence in itself and its prestige both at home and abroad, [these missions] do not substitute for the kind of warfighting experience necessary for future mid- or high-intensity combined arms and joint operations."<sup>158</sup>

### ***Military-to-Military Engagement***

China uses the PLA's engagement with foreign militaries to bolster its security relations with foreign countries, improve the PLA's image abroad, and address other countries' concerns about the PLA's growing capabilities and expanding missions.<sup>159</sup> This engagement involves contacts between the PLA and foreign military personnel, defense industrial cooperation, military exercises, and naval port calls.<sup>160</sup> In 2017, the PLA continued to expand its engagement with foreign militaries, participating in new types of exercises and deepening defense cooperation.

#### *The PLA's Exercises with Foreign Militaries*

Through bilateral and multilateral exercises, the PLA improves its defense ties with foreign countries, gains operational knowledge and experience,‡ and facilitates its military modernization goals. Exercises help the PLA practice battlefield tactics and combat methods; bolster its logistics capabilities operating in unfamiliar environments; and improve its capacity for nontraditional security operations, such as antipiracy, humanitarian assistance and disaster

\*As of August 2017, Chinese personnel were active in the following countries: Afghanistan, Cyprus, Democratic Republic of the Congo, Israel, Lebanon, Liberia, Mali, South Sudan, Sudan, and the Western Sahara. United Nations, "Summary of Contributions to UN Peacekeeping by Country, Mission, and Post," August 31, 2017.

†As of August 2017, China ranks 11th among all contributors to UN Peacekeeping Operations missions, following Ethiopia (first), Bangladesh, India, Pakistan, Rwanda, Nepal, Senegal, Egypt, Ghana, and Indonesia (10th). The top five contributors all contribute more than double the number of China's personnel. United Nations, "Summary of Troop Contributing Countries by Ranking," August 31, 2017; Dennis Blasko, "China's Contribution to Peacekeeping Operations: Understanding the Numbers," *China Brief*, December 5, 2016.

‡The PLA lacks recent combat experience. Its most recent large-scale campaign was the 1979 Sino-Vietnamese War following Vietnam's invasion and occupation of Cambodia.

relief, and noncombatant evacuation operations. While conducting these exercises, the PLA gains intelligence on foreign militaries.<sup>161</sup>

Since October 2016, the PLA has been involved in at least 18 bilateral and multilateral exercises, focused primarily on counterterrorism, humanitarian assistance and disaster relief, and maritime operations; others have included missile defense, maritime, and air warfare training (see Addendum II, “Selected PLA Bilateral and Multilateral Military Exercises, October 2016–September 2017”). Several of these exercises were the first between the PLA and a particular country, including the April 2017 counterterrorism exercise with Nepal and the May 2017 naval exercise with Burma.<sup>162</sup>

### China-Russia Defense Relations

China and Russia continued to advance defense cooperation in 2017, extending the momentum of closer bilateral ties since 2014, when the United States and Europe imposed sanctions on Russia after its annexation of Crimea.\* The PLA and Russian Armed Forces conducted a bilateral naval exercise, interacted through military competitions,† facilitated defense industrial cooperation, and promoted high-level contacts.

#### *Joint Sea-2017*

Beijing and Moscow decided to conduct their 2017 Joint Sea naval exercise (held annually since 2012) in two separate phases: the July phase was held in the Baltic Sea and the September phase was staged in the Sea of Japan and Sea of Okhotsk (north of the Japanese island of Hokkaido).<sup>163</sup> The decision to exercise in the Baltic Sea and the Sea of Okhotsk—where the two navies had never previously exercised together—reflects the expanding geographic scope of naval exercises in recent years and a willingness to operate together in sensitive waterways.‡<sup>164</sup> Further, extending the exercise into two phases marked the second time in the last three years the PLA Navy and Russian Navy had done so.<sup>165</sup>

Notably, as the PLA Navy sailed to the Baltic Sea for the first phase, it conducted a live-fire exercise in the Mediterranean Sea, seemingly indicating its increased confidence operating outside China’s periphery.<sup>166</sup> Building on previous exercises, the first phase involved the formation of two mixed combat groups of three ships under a combined command structure. The two navies conducted maritime search and rescue drills as well as antiship,

\*For more information on China-Russia military-to-military cooperation in recent years, see Ethan Meick, “China-Russia Military-to-Military Relations: Moving toward a Higher Level of Cooperation,” *U.S.-China Economic and Security Review Commission*, March 20, 2017.

†Since the Russian Defense Ministry hosted the first annual International Army Games—a series of military competitions—in 2015, the PLA has expanded its involvement each year. In the 2017 iteration, the PLA for the first time hosted competitions in China: four army and two air force events, out of the 28 total. PLA Navy, Air Force, and Army troops participated in the games with their Russian counterparts. These competitions serve as another valuable venue for the militaries to train together and build mutual trust. China’s Ministry of National Defense, *Defense Ministry’s Regular Press Conference on August 31*, August 31, 2017; China Military Online, “China Sends Troops to Participate in International Army Games 2017,” July 12, 2017; Liang Pengfei and Liu Yiwei, “Preparatory Work of International Army Games Advances Steadily,” China Military Online, June 1, 2017.

‡Previous China-Russia naval exercises have been staged in the South China Sea (2016), the Mediterranean Sea (2015), and the East China Sea (2014). Ethan Meick, “China-Russia Military-to-Military Relations: Moving toward a Higher Level of Cooperation,” *U.S.-China Economic and Security Review Commission*, March 20, 2017, 8–10.

### **China-Russia Defense Relations—Continued**

anti-aircraft, and antisubmarine drills, among others.<sup>167</sup> One of China's most advanced destroyers, the Type 052D (LUYANG III-class), made its debut in a Joint Sea exercise, while the Russian Navy used its latest Project 20380 (STEREGUSHCHIY-class) corvettes.<sup>168</sup> The second phase, reportedly more complex, focused on antisubmarine warfare and submarine rescue operations.<sup>169</sup> According to China's state-run Xinhua News, it was the first time the two navies "conduct[ed] [these drills] involving multiple arms of [the navy] and multiple types of aircraft and ships."<sup>170</sup> Although both phases of the exercise were smaller in scale than previous Joint Sea iterations,<sup>171</sup> the sensitive locations of the exercise, the use of each side's latest platforms, and the exercise's increased complexity represented an advancement from previous exercises.

#### *Announced Missile Defense Exercise*

The latest emerging area of the China-Russia military exercise portfolio is missile defense. This was driven in part by their joint opposition to the U.S.-South Korea deployment of a Terminal High Altitude Area Defense (THAAD) missile defense battery in South Korea and the expanding U.S.-led missile defense network in Northeast Asia.<sup>172</sup> (For more on China's reaction to the THAAD deployment, see Chapter 3, Section 2, "China and Northeast Asia.") Following the first iteration of the bilateral computer-simulated missile defense exercise Aerospace Security-2016 in May 2016,<sup>173</sup> China and Russia jointly announced a follow-on exercise in 2017.<sup>174</sup> As this Report went to print, the exercise had not yet occurred.

#### *Defense Industrial Cooperation*

Given the rapid advancement of China's defense industry over the last several decades, the PLA no longer relies on imports of major platforms from Russia (notwithstanding sales of two advanced systems in 2015: the S-400 SAM system and the Su-35 fighter jet); however, cooperation across defense industries remains robust. China is due to receive 24 Su-35 fighters by the end of 2018 (China already received four Su-35s in late 2016).<sup>175</sup> Continuing the recent upward trend in Chinese and Russian defense science and technology cooperation, in January 2017 the China Aviation Research Institute—a subsidiary of state-owned Aviation Industry Corporation of China—signed a memorandum of understanding with Russian research and development center Central Institute of Aviation Motors to support potential collaboration in aero-engine technology development.<sup>176</sup> Further, several joint production projects remain in the pipeline over the medium to long term, including a next-generation heavy-lift helicopter<sup>177</sup> and a new advanced diesel attack submarine.<sup>178</sup> Collaboration on advanced systems and components could help China's defense industry accelerate the research and development process on next-generation defense technology.

### **China-Russia Defense Relations—Continued**

#### *High-Level Contacts*

The increasing number of high-level military contacts in recent years between China and Russia provide opportunities for defense officials and officers to facilitate arms packages, prepare for military exercises, and discuss regional and global security concerns.<sup>179</sup> At a June 2017 meeting between Chinese Defense Minister Chang Wanquan and his Russian counterpart Sergei Shoigu, the two sides signed an agreement on a military cooperation roadmap through 2020.<sup>180</sup> This appears to reflect broad consensus on the development path for closer cooperation moving forward.

### **China-Iran Relations**

The steady expansion of China-Iran security ties could have broad implications for U.S. interests in the Middle East, including in the nonproliferation and geostrategic realms. China has served as a key contributor to Iran's military modernization, particularly in the 1980s and 1990s, when it assisted in the development of Tehran's missile and nuclear programs.<sup>181</sup> Chinese entities and individuals over the last decade have continued to proliferate missile technology to Iran and regularly face U.S. sanctions.\*<sup>182</sup>

China and Iran bolstered cooperation in the aftermath of the 2015 Iran nuclear deal (the Joint Comprehensive Plan of Action).<sup>†</sup> In January 2016, President Xi and Iranian President Hassan Rouhani agreed to establish a "comprehensive strategic partnership," signaling the intention of both sides to improve relations.<sup>183</sup> In the defense realm, the two sides signed an agreement in late 2016 to expand cooperation in bilateral military exercises and counterterrorism efforts.<sup>184</sup> Building on regular naval port calls in recent years and a 2014 naval exercise,<sup>185</sup> the PLA Navy in June 2017 visited Iran for four days and held a combined drill in the Strait of Hormuz focusing on formation movement and communication.<sup>186</sup> Among the 17 economic and environmental agreements also signed at the meeting, one included Chinese financial assistance to build a high-speed rail system in Iran as part of OBOR.<sup>187</sup> Since then, Chinese Foreign Minister Wang Yi has noted Iran's "important" role in OBOR, and both sides have expressed interest in expanding cooperation under the initiative.<sup>188</sup>

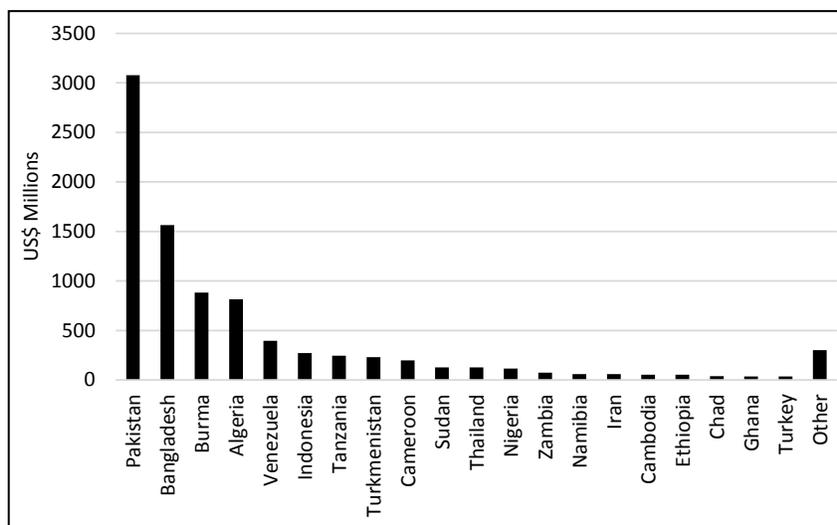
\*In March 2017, the United States sanctioned six Chinese firms and three individuals for transfers to Iran's missile program in violation of the Iran, North Korea, and Syria Nonproliferation Act. U.S. Department of State, *Iran, North Korea, and Syria Nonproliferation Act Sanctions*, March 24, 2017.

†The nuclear deal was reached between the five permanent members of the UN Security Council (the United States, United Kingdom, France, China, and Russia), Germany, the European Union, and Iran. Under the agreement, Iran agreed to reduce its uranium enrichment, allow for international inspections of its nuclear facilities, and other changes to its nuclear program in exchange for ending sanctions. The deal went into effect on January 16, 2016, one week before President Xi's visit to Tehran to upgrade bilateral ties. BBC, "Iran Nuclear Deal: Key Details," January 16, 2016; David E. Sanger, "Iran Complies with Nuclear Deal; Sanctions Are Lifted," *New York Times*, January 16, 2016.

### Military Sales

China was the third-largest arms exporter worldwide in aggregate terms during the 2012–2016 period with \$8.8 billion in exports, following the United States with \$47.2 billion and Russia with \$33.2 billion.<sup>189</sup> Comparing five-year periods, China’s exports of major arms rose 74 percent from \$4.5 billion between 2007–2011 and 2012–2016 while U.S. and Russian exports rose 21 and 4.7 percent, respectively,\* meaning China’s share of global arms sales rose from 3.8 to 6.2 percent.<sup>190</sup> During the past five years China has sold arms to 44 countries, with Pakistan (35 percent), Bangladesh (18 percent), and Burma (10 percent) as top recipients.<sup>191</sup> China’s customer base has also expanded across Africa, Asia, and South America, with its exports to countries in Africa rising 122 percent over the previous five-year period, and exports to former Soviet countries (Kazakhstan and Turkmenistan) for the first time in 2016.<sup>192</sup> All recipients of China’s arms exports to date have been low- and middle-income countries (see Figure 6).<sup>193</sup>

**Figure 6: China’s Arms Sales by Recipient, 2012–2016 (constant 1990 dollars)**



Source: Stockholm International Peace Research Institute, “SIPRI Arms Transfers Database.”

Major Chinese arms exports agreed upon or reported in 2017 include the following:

- Thailand signed a contract in May 2017 to purchase a YUAN class diesel-electric submarine from China. This represents China’s second submarine export contract, alongside a contract to sell eight submarines to Pakistan signed in 2015.<sup>194</sup> As the Commission noted in 2016, the purchase is indicative of Thailand’s efforts to pursue closer relations with China, as relations with the United States, a treaty ally, have soured following

\*This represents a decline from the Commission’s 2016 comparison of back-to-back five year periods (2006–2010 and 2011–2015), which showed an 88 percent increase. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 226.

Thailand's 2014 military coup and the suspension of U.S. military assistance programs as required by U.S. law.<sup>195</sup>

- Malaysia signed a contract for the purchase of four littoral mission ships from China in April 2017, pursuant to an agreement in November 2016. Two vessels are scheduled for construction in China and two in Malaysia, with delivery scheduled in a sequence from 2019 to 2021.<sup>196</sup>
- Burma entered negotiations with Pakistan to license-build the JF-17, an inexpensive multirole fighter jointly produced by China and Pakistan,<sup>197</sup> according to a February 2017 report. Burma reportedly ordered 16 JF-17 aircraft in 2015, and may begin taking delivery of these aircraft in late 2017.<sup>198</sup> Burma would be the first export customer for this aircraft; prospective customers have withdrawn from negotiations in several previous cases.\*<sup>199</sup> (For an in-depth examination of China's relations with both Thailand and Burma, see Chapter 3, Section 1, "China and Continental Southeast Asia.")
- Nigeria's government has appropriated funds to purchase three JF-17s, although it has not yet signed an official contract, according to unofficial reports.<sup>200</sup>
- Media reporting in 2017 noted China has sold armed UAVs to Jordan, Kazakhstan, and Turkmenistan.<sup>201</sup> As of 2016, sales had already been reported to Egypt, Iraq, Burma, Nigeria, Pakistan, Saudi Arabia, and the United Arab Emirates.<sup>202</sup> China also announced plans to build UAVs in the Middle East for the first time, signing an agreement with Saudi Arabia in March 2017 to jointly produce as many as 100 UAVs in Saudi Arabia.<sup>203</sup>

Following the maiden flight of its armed Wing Loong II UAV, China reportedly secured an international contract for the platform with an unnamed buyer, said by Xinhua News to be the "biggest overseas purchase order in the history of Chinese [UAV] foreign military sales."<sup>204</sup> The Wing Loong II is an integrated reconnaissance and strike, medium-altitude, long-endurance platform<sup>205</sup> close in size to the U.S. MQ-1 Predator.<sup>206</sup> Chinese media also reported in July 2017 that the latest version of the Caihong or Rainbow series, the medium-altitude long-endurance CH-5, seen as a close competitor to the U.S. MQ-9 Reaper, is ready for mass production and sale to international buyers, although no buyers have yet been publicly disclosed.<sup>207</sup> Both models improve upon previous versions, but lag behind U.S. counterparts in areas such as speed and service ceiling † due to weaker engines.<sup>208</sup>

\*In February 2015, Argentina announced it would explore fighter aircraft purchases from China, potentially involving the JF-17, but did not sign a contract and no longer appears to be interested. Malaysia reportedly was discussing a JF-17 purchase, but its defense minister denied this report in December 2015. Sri Lanka was reported to have signed an agreement to buy JF-17s, but denied this in January 2016; India had lobbied against the purchase. At least 11 other countries have been named as potential buyers in past media reports, but none have signed agreements to date. Richard D. Fisher Jr., "DSA 2016: Pakistan Bullish on JF-17 Sales," *IHS Jane's Defense Weekly*, April 21, 2016; Ankit Panda, "Revealed: Why Sri Lanka Backed off the Sino-Pakistani JF-17 Thunder," *Diplomat*, January 11, 2016; MercoPress, "Argentina's Purchase of Israeli Fighter Jets Will Be Left to Next Government," November 12, 2015; Franz-Stefan Gady, "Is This Country the Sino-Pak JF-17 Fighter's First Customer?" *Diplomat*, June 24, 2015.

†An aircraft's service ceiling is the maximum height at which it can sustain a specified rate of climb, dependent on engine type.

## **U.S.-China Security Relations in 2017**

Despite efforts by the Trump and Xi administrations to set a positive tone for the bilateral relationship in early 2017, U.S.-China relations suffered from tensions over longstanding disagreements such as the South China Sea, Taiwan, and especially North Korea.

### ***Areas of Cooperation***

#### *Presidential Summit*

President Trump and President Xi held their first face-to-face meeting at a summit in April 2017 and established a new framework for bilateral security relations. The two sides agreed to initiate a new “U.S.-China Comprehensive Dialogue.” This features four “pillars” of dialogue on diplomatic and security, economic, law enforcement and cybersecurity, and social and cultural issues. This framework replaces the U.S.-China Strategic and Economic Dialogue begun under the Obama Administration. According to U.S. officials, the two sides additionally “had candid discussions on regional and maritime security” and “reaffirmed their commitment to a denuclearized Korean peninsula,” without discussing specific arrangements.<sup>209</sup> Although the U.S. side affirmed it is prepared to take action on the Korean Peninsula without China, the Chinese side argued military actions should be stopped in exchange for North Korea halting its nuclear program. President Trump reportedly emphasized U.S. support for international norms in the East and South China seas and opposition to militarization of disputed areas, and President Xi emphasized his desire for U.S. participation in China’s OBOR initiative and for U.S. cooperation in returning Chinese fugitives to China.<sup>210</sup> (For the economic outcomes of the summit, and outcomes from the ensuing Economic Dialogue, see Chapter 1, Section 1, “Year in Review: Economics and Trade.”)

Since the summit, China’s Foreign Ministry spokesperson has referred to “the consensus achieved” there, later criticizing a U.S. arms sale to Taiwan and U.S. sanctions on North Korea that target a Chinese bank as going against this “consensus,”<sup>211</sup> but U.S. officials have not referred to this supposed “consensus.”

#### *2017 U.S.-China Diplomatic and Security Dialogue*

The United States and China held the first “pillar” dialogue, the U.S.-China Diplomatic and Security Dialogue, in Washington, DC, in June 2017. Statements from the U.S. side following the meeting noted discussion on areas of agreement such as the need to achieve a denuclearized North Korea, as well as frank exchanges on China’s responsibility to exert greater pressure on North Korea, China’s actions in the South China Sea, and China’s human rights record.<sup>212</sup> Statements by China also cited a “constructive and fruitful” dialogue, but stressed the need for U.S. respect of China’s political systems, development path, sovereignty, and territorial integrity; its opposition to U.S. missile defense deployments in South Korea; and its desire for strengthened exchanges and cooperation in counter-terrorism.<sup>213</sup>

### *2017 U.S.-China Social and Cultural Dialogue*

U.S. Secretary of State Rex Tillerson and Chinese Vice Premier Liu Yandong held the first U.S.-China Social and Cultural Dialogue—the fourth “pillar” of the U.S.-China Comprehensive Dialogue—in September 2017 in Washington, DC. Both sides expressed support for a range of cooperative efforts in areas including education, science and technology, and health. According to the U.S. side, “China committed that its Foreign Non-Government Organization (NGO) Management Law\* would not impede the activities of American NGOs in China”; a new consultation on China’s Foreign NGO Management Law is to be held before the end of 2017. The U.S. side also stated both parties acknowledged the importance of intellectual property protections for researchers cooperating under the U.S.-China Science and Technology Agreement.† Vice Premier Liu stated he hoped both sides would “make full use of the unique role of people-to-people exchanges, so as to constantly reinforce social and public support for China-U.S. relations.”<sup>214</sup>

### *Other Exchanges*

The outcomes of another “pillar” dialogue, the Law Enforcement and Cybersecurity Dialogue held in early October, had not been reported as this Report went to print. Although the Trump Administration has expressed concern about China’s cyber policies,<sup>215</sup> it has not publicized concrete efforts to address the persistent challenge of Chinese cyber espionage, and there have been no new bilateral agreements related to cyber issues since the 2015 memorandum of understanding between the Xi government and the Obama Administration that “neither country’s government will conduct or knowingly support cyber-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors.”<sup>216</sup>

President Trump and President Xi met on the sidelines of the G20 summit in Hamburg, Germany, in July 2017, where they discussed North Korea’s nuclear and ballistic missile programs as well as economic issues.<sup>217</sup> They also directed their respective governments to “make progress in upcoming dialogues.”<sup>218</sup> President Trump accepted an invitation from President Xi in April 2017 for a future state visit to Beijing<sup>219</sup> and the White House later announced this visit would occur during President Trump’s first trip to Asia, planned for November.<sup>220</sup>

---

\*China’s government approved the Law on the Management of Foreign NGO Activities in Mainland China in April 2016. The Law increases state oversight on more than 7,000 foreign NGOs in China and gives the government broad powers to inspect NGO offices and operations. For more information on the law, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 60–61.

†The United States and China signed the U.S.-China Agreement on Cooperation in Science and Technology in 1979; it was most recently extended in 2011. The agreement promotes bilateral science and technology exchanges and has fostered cooperative research across a range of fields. White House, *U.S., China Extend Science and Technology Agreement*, January 19, 2011. U.S. Department of State Office of Science and Technology Cooperation, *United States-China Science and Technology Cooperation (Biennial Report to the U.S.-China Economic and Security Review Commission)*, December 2006.

### Select U.S.-China Security-Related Visits and Exchanges in 2017

*Shangri-La Dialogue:* In his address at the 16th Shangri-La Dialogue,\* held in Singapore in June 2017, Secretary Mattis stated the Asia Pacific is a priority region for the United States, and that the United States remains committed to reinforcing the rules-based international order.<sup>221</sup> He noted U.S. opposition to actions taken by China to undermine this order, and specifically criticized China's unilateral actions in the South China Sea:

*We oppose countries militarizing artificial islands and enforcing excessive maritime claims unsupported by international law. We cannot and will not accept unilateral coercive changes to the status quo. We will continue to fly, sail and operate wherever international law allows, and demonstrate resolve through operational presence in the South China Sea and beyond.*<sup>222</sup>

China sent a smaller than usual delegation to the dialogue,<sup>223</sup> and state-run Chinese language media made few references to the event. China officially expressed opposition to Secretary Mattis' "irresponsible remarks" on the South China Sea,<sup>224</sup> and English reporting by state-run media outlets denounced the critical statements regarding China's actions made at the dialogue and blamed other countries for threatening regional security.<sup>225</sup>

*Port visits:* In June 2017, U.S. Navy destroyer *Sterett* visited Zhanjiang, China, headquarters of the PLA Navy's South Sea Fleet, where U.S. Navy personnel conducted low-level interactions with the PLA Navy.<sup>226</sup> The U.S. Navy aircraft carrier *Ronald Reagan* made a port visit to Hong Kong in October 2017,<sup>227</sup> the first such visit since China denied entry to Hong Kong for U.S. aircraft carrier *John C. Stennis* in April 2016.<sup>228</sup>

*High-level official visits:* U.S. Chairman of the Joint Chiefs of Staff General Joseph Dunford visited China in August 2017, meeting with counterpart General Fang Fanhui, chief of the PLA Joint Staff Department, and signing an agreement to create a "Joint Staff Dialogue Mechanism" between the two militaries.<sup>229</sup> According to U.S. officials, the trip was in support of U.S. diplomatic and economic efforts to deter North Korea,<sup>230</sup> and the agreement is intended for crisis mitigation and is hoped to lead to communication that reduces the risk of miscalculation.<sup>231</sup> General Dunford also made a rare visit to China's Northern Theater Command headquarters, which would be responsible for a North Korea contingency operation.<sup>232</sup>

*Other exchanges:* In July 2017, President Xi announced China's Navy would participate in the biennial U.S.-led Rim of the Pacific (RIMPAC) exercises in 2018,<sup>233</sup> as it did in 2014 and 2016.<sup>234</sup>

\*The Shangri-La Dialogue, or Asia Security Summit, is hosted annually by the International Institute for Strategic Studies. It is attended by defense ministers and their civilian and military chiefs of staff from over 50 Asia Pacific countries. International Institute for Strategic Studies, "About the IISS Shangri-La Dialogue."

### ***Areas of Tension***

As discussed earlier, China continued its series of coercive actions in regional territorial disputes in the South China Sea in 2017, sparking additional tension in U.S.-China security relations. China's dispute with Japan over the Senkaku Islands in the East China Sea was a central driver of China-Japan frictions in 2017 as well. (See Chapter 2, Section 3, "Hotspots along China's Maritime Periphery," for an examination of how China's territorial disputes in the South China Sea could escalate into armed conflict, and how the United States would be impacted. For an in-depth exploration of the East China Sea dispute and other facets of the China-Japan relationship, see Chapter 3, Section 2, "China and Northeast Asia.")

Taiwan remains a central area of disagreement between the United States and China. In June 2017 the United States announced an arms sale to Taiwan in the amount of \$1.4 billion,<sup>235</sup> the first such sale since 2015.<sup>236</sup> In response, China's foreign ministry spokesperson demanded that the United States halt the sale, claiming it would hurt China's sovereignty and violate the United States' commitment to the "One China" policy.\*<sup>237</sup> As this Report went to print, China had not retaliated against the United States. By comparison, Beijing threatened sanctions against the U.S. companies involved after a U.S. arms sale in 2015 and suspended military exchanges with the United States after a sale in 2010.<sup>238</sup> (For a detailed discussion on developments in cross-Strait relations in 2017, see Chapter 3, Section 3, "China and Taiwan.")

Of the challenges facing the U.S.-China relationship in 2017, the Korean Peninsula is the most urgent and dangerous. Beijing's long-standing support for Pyongyang, combined with its hostility toward Seoul's decision to deploy the U.S. THAAD missile defense system to defend against the North Korean threat, puts it fundamentally at odds with U.S. interests and values. (For more on China's relations with North Korea and South Korea, see Chapter 3, Section 2, "China and Northeast Asia.")

---

\*The United States' "One China" policy is the acknowledgement of China's position that "there is but one China and Taiwan is part of China." It is not an endorsement of China's position. Richard C. Bush, "A One-China Policy Primer," *Brookings*, March 2017, iii-iv; U.S. Department of State, *U.S. Relations with Taiwan*, September 13, 2016.

**Addendum I: New Group Army Structure in Theater Commands**

The new operational PLA Army structure at the theater level encompasses the following:<sup>239</sup>

- *Eastern Theater Command:* The Eastern Theater Command was the only command to transition with its force structure largely intact and a name change to the group army designator. The 12th, 1st, and 31st Group Armies have become the 71st, 72nd, and 73rd, respectively.
- *Southern Theater Command:* In the Southern Theater Command, the 14th Group Army was eliminated and the 41st Group Army became the 74th, while the 42nd became the 75th Group Army.
- *Western Theater Command:* The Western Theater Command's group army structure was reduced by one, the 47th Group Army. The remaining two group armies, the 21st and 13th, were re-designated the 76th and 77th Group Armies, respectively.
- *Northern Theater Command:* Of the four group armies that were assigned to the Northern Theater Command, only the 40th was eliminated. The 16th, 39th, and 26th Group Armies became the 78th, 79th, and 80th Group Armies.
- *Central Theater Command:* The only theater command to lose multiple group armies was the Central Theater with the elimination of the 20th and 27th Group Armies. The 65th, 38th, and 54th became the 81st, 82nd, and 83rd Group Armies.

**Addendum II: Selected PLA Bilateral and Multilateral Military Exercises,  
October 2016–September 2017**

<b>Date (Duration)</b>	<b>Exercise Name or Type (Location)</b>	<b>Other Participants (Number)</b>	<b>Type of Exercise</b>	<b>Details</b>
October–December 2016 (Not reported)	Warrior-4 <sup>240</sup> (Pabbi, Pakistan)	Pakistan (Special operations forces; total not reported)	Counterterrorism	The annual counterterrorism exercise focused on operations in urban and rural environments.
October 2016 (15 days)	Exploration-2016 <sup>241</sup> (Chengdu, China)	Saudi Arabia (50 total; 25 each, mixed groups)	Counterterrorism	The two sides conducted their first counterterrorism exercise together with special forces. It involved hostage rescue and sharing best practices.
October 2016 (15 days)	Friendship-2016 <sup>242</sup> (Pabbi, Pakistan)	Pakistan (240 total; 120 each [PLA: special operations brigade 21st Group Army])	Counterterrorism	In the annual exercise between Chinese and Pakistani special operations troops, the two sides worked on counterterrorism combat and shared skills, tactics, and experiences.
October 2016 (5 days)	Combined Aid-2016 <sup>243</sup> (Chongqing, China)	Germany (Total participants not reported)	Humanitarian assistance/disaster relief (HA/DR)	In the first medical military exercise between the PLA and a European military, both sides conducted a joint humanitarian response to an earthquake under simulated real-world conditions.
October 2016 (1 day)	Sino-India Cooperation-2016A <sup>244</sup> (Ladakh, Jammu, and Kashmir, India)	India (Total participants not reported)	HA/DR	In the first exercise between China and India in Jammu and Kashmir, close to the India-China border, the two sides simulated a joint HA/DR operation following an earthquake.
October 2016 (4 days)	Combined counterterrorism exercise <sup>245</sup> (Tajikistan, near the Afghanistan border)	Tajikistan (more than 10,000 total troops; the PLA brought “one mobile company”)	Counterterrorism	The exercise marked the first bilateral counterterrorism exercise between the two countries. It focused on coordinating counterterrorism operations in mountainous terrain.
November 2016 (3 days)	ASEAN Defense Ministers’ Meeting (ADMM)-Plus Maritime Security Exercise, Exercise Mahi Tangaroa <sup>246</sup> (Hauraki Gulf, Auckland, New Zealand)	Australia, Brunei, Indonesia, Japan, New Zealand, Singapore, United States (eight ships and special operations troops)	Maritime	In the second ADMM-Plus maritime security exercise, the navies of eight countries focused on interoperability and combating maritime security threats. On the Chinese side, a guided-missile frigate and special operations troops participated.

**Addendum II: Selected PLA Bilateral and Multilateral Military Exercises, October 2016–September 2017—Continued**

<b>Date (Duration)</b>	<b>Exercise Name or Type (Location)</b>	<b>Other Participants (Number)</b>	<b>Type of Exercise</b>	<b>Details</b>
November 2016 (11 days)	Hand in Hand-2016 <sup>247</sup> (Pune, India)	India (about 280 total; two companies each)	Counterterrorism	The annual exercise involved counterterrorism reconnaissance, removing improvised explosives, and combating terrorists. Both sides focused on improving confidence and trust through combined operations with mixed companies.
November 2016 (4 days)	Peace and Friendship-2016 <sup>248</sup> (Selangor, Malaysia)	Malaysia (300 total; 195 from PLA)	HA/DR	The exercise focused on various HA/DR elements, including hostage rescue and survival skills. Notably, Joint Staff Department Chief and Central Military Commission member Fang Fenghui spoke at the opening ceremony and the PLA Hong Kong Garrison participated in its first exercise with a foreign military.
December 2016 (8 days)	Golden Dragon 2016 <sup>249</sup> (Kampong Speu Province, Cambodia)	Cambodia (377 total; 97 from PLA)	HA/DR	Reportedly the first exercise of its kind in Cambodia, the focus of the exercise was on natural disaster medical treatment, landmine detection, and flood relief. The exercise underlined the deepening defense relations between the two countries.
February 2017 (5 days)	Aman-17 <sup>250</sup> (waters near Karachi, Pakistan)	36 other countries, including the United States (15 ships; three Chinese ships: a frigate, destroyer, and supply ship)	Maritime	The exercise involved three mixed naval taskforces, which conducted ship formation maneuvers, replenishment at sea, and maritime blockade drills.
April 2017 (10 days)	Sagarmatha Friendship-2016 <sup>251</sup> (Kathmandu, Nepal)	Nepal (Total participants not reported)	Counterterrorism	In the first exercise of its kind between the PLA and the Nepal Army, the two sides' special forces units focused on counterterrorism and counterinsurgency tactics. The exercise also was designed to promote closer cooperation and enhance mutual trust.

**Addendum II: Selected PLA Bilateral and Multilateral Military Exercises, October 2016–September 2017—Continued**

<b>Date (Duration)</b>	<b>Exercise Name or Type (Location)</b>	<b>Other Participants (Number)</b>	<b>Type of Exercise</b>	<b>Details</b>
May 2017 (1 day)	Maritime exercise <sup>252</sup> (Gulf of Martaban, Burma)	Burma (five ships; three Chinese ships: a frigate, destroyer, and supply ship)	Maritime	In the first exercise between the two navies, they focused on formation maneuvers and search and rescue operations. The two navies worked to deepen mutual trust.
July 2017 (7 days)	Joint Sea-2017 (I) <sup>253</sup> (Baltic Sea, waters off the coast of Baltiysk, Russia)	Russia (about 10 ships, more than 10 fixed-wing aircraft, and helicopters; 3 Chinese ships [a destroyer, frigate, and supply ship] and helicopters)	Maritime	The first exercise between the two navies in the Baltic Sea focused on maritime search and rescue as well as antiship, anti-aircraft, and antisubmarine warfare.
August–September 2017 (19 days)	Eagle Strike-2017 <sup>254</sup> (Thailand)	Thailand (total not reported; China sent six aircraft)	Air	In the second iteration of the training exercise, the two air forces reportedly promoted cooperation, exchanged combat tactics, deepened equipment development, and improved realistic combat training.
September 2017 (21 days)	Shaheen-6 <sup>255</sup> (Xinjiang, China)	Pakistan (fighters, early-warning aircraft [China sent fighters, early-warning aircraft, and air force, surface-to-air missile, and naval aviation troops])	Air	The sixth exercise of its kind between the two air forces reportedly was more complex, involving more drills and aircraft than previous exercises. It also focused on practical combat training, such as night operations and counterterrorism elements, and operated under more realistic combat conditions.
September 2017 (8 days)	Joint Sea-2017 (II) <sup>256</sup> (Sea of Japan, Sea of Okhotsk)	Russia (11 ships, 2 submarines, 4 antisubmarine warfare aircraft, helicopters [China sent a destroyer, frigate, supply ship, rescue ship, and helicopters])	Maritime	In the second phase of this naval exercise, the two sides focused on anti-submarine warfare and submarine rescue operations.
TBA	Announced missile defense exercise	Russia	Missile defense	N/A

## ENDNOTES FOR SECTION 1

1. Kyodo, "China Deploys Surface-to-Air Missiles on Hainan Island in Bid to Create South China Sea No-Fly Zone: Report," May 20, 2017; Andrew Browne, "China Throws out South China Sea Rule Book," *Wall Street Journal*, December 20, 2016; Bill Hayton, "Beijing Is Ready to Go Eyeball to Eyeball with Trump," *Foreign Policy*, December 19, 2016.
2. Julian Ku and Christopher Mirasola, "Tracking China's Compliance with the South China Sea Arbitral Award," *Lawfare*, October 3, 2016.
3. Andrew Browne, "China Throws Out South China Sea Rule Book," *Wall Street Journal*, December 20, 2016; Bill Hayton, "Beijing Is Ready to Go Eyeball to Eyeball with Trump," *Foreign Policy*, December 19, 2016.
4. Gordon Lubold and Jeremy Page, "U.S. to Challenge China with More Patrols in Disputed Waters," *Wall Street Journal*, September 1, 2017; Ankit Panda, "The U.S. Navy's First Trump-Era South China Sea FONOP Just Happened: First Takeaways and Analysis," *Diplomat*, May 25, 2017; Gordon Lubold and Jeremy Page, "U.S. Navy Patrols near Disputed Island in South China Sea," *Wall Street Journal*, July 3, 2017.
5. Sok Khemara, "VOA Exclusive: ASEAN, China Expected to Endorse Initial Code of Conduct in South China Sea," Voice of America, July 25, 2017.
6. Tom Phillips, Oliver Holmes, and Owen Bowcott, "Beijing Rejects Tribunal's Ruling in South China Sea Case," *Guardian*, July 12, 2016.
7. Julian Ku and Christopher Mirasola, "Tracking China's Compliance with the South China Sea Arbitral Award," *Lawfare*, October 3, 2016.
8. Bill Hayton, "Beijing Changes Tack after South China Sea Ruling," *Nikkei Asian Review*, July 12, 2017; Julian Ku and Christopher Mirasola, "Tracking China's Compliance with the South China Sea Arbitral Award," *Lawfare*, October 3, 2016.
9. Bill Hayton, "Beijing Changes Tack after South China Sea Ruling," *Nikkei Asian Review*, July 12, 2017.
10. Bonnie Glaser and Matthew Funaiolo, "Shooting at Union Banks Underscores Need for Code of Conduct," *Center for Strategic and International Studies Asia Maritime Transparency Initiative*, May 15, 2017.
11. Ralph Jennings, "China Reopens Hotly Disputed Fishing Spot to Philippine Boats," Voice of America, August 28, 2017; Steve Mollman, "China Is Letting Filipino Fishermen Return to a Shoal It Seized in 2012—For Now," *Quartz*, October 28, 2016.
12. Paul Carsten, "South China Sea: Beijing Says 'Situation' at Disputed Scarborough Shoal 'Has Not Changed and Will Not,'" Reuters, October 31, 2016.
13. Patricia Lourdes Viray, "Why China Is Likely to Militarize Scarborough Shoal," *Philippine Star*, May 11, 2017; Agence France-Presse, "China Likely to Reclaim Scarborough Shoal: Lorenzana," February 7, 2017.
14. Center for Strategic and International Studies Pacific Forum, meeting with Commission, Honolulu, Hawaii, March 28, 2017.
15. Reuters, "Philippines' Top Diplomat Downplays Alleged China War Threats from Xi-Duterte Dialogue," *Japan Times*, May 22, 2017; Karen Lema, Martin Petty, and Ben Blanchard, "Philippines, China Play Down Duterte's Talk of War in Disputed Sea," Reuters, May 22, 2017.
16. Martin Petty and Manuel Mogato, "Philippines Calls for 'Gentlemen's Agreement' between ASEAN, China on Sea Code," Reuters, May 19, 2017.
17. Laura Zhou, "Beijing and Manila End Talks as 'War' Threat Recalled," *South China Morning Post*, May 20, 2017.
18. Alan Peter S. Cayetano, Philippine Foreign Secretary, CSIS-Pertamina Banyan Tree Leadership Forum, Center for Strategic and International Studies, Washington, DC, September 26, 2017.
19. Alan Peter S. Cayetano, Philippine Foreign Secretary, CSIS-Pertamina Banyan Tree Leadership Forum, Center for Strategic and International Studies, Washington, DC, September 26, 2017.
20. Nyshka Chandran, "South China Sea Concerns Flare Up as Duterte Considers Drilling in Beijing's Claims," CNBC, July 14, 2017; Enrico Dela Cruz, "Drilling for Oil in Disputed Sea May Resume This Year: Philippine Official," Reuters, July 12, 2017; Lenie Lectura, "DOE Sets Offering of Some Areas near Disputed West Philippine Sea for Petroleum Exploration," *Business Mirror*, July 12, 2017.
21. Enrico Dela Cruz, "Drilling for Oil in Disputed Sea May Resume This Year: Philippine Official," Reuters, July 12, 2017.
22. Nyshka Chandran, "South China Sea Concerns Flare Up as Duterte Considers Drilling in Beijing's Claims," CNBC, July 14, 2017.
23. Karen Lema, Martin Petty, and Ben Blanchard, "Philippines, China Play Down Duterte's Talk of War in Disputed Sea," Reuters, May 22, 2017.

24. Manuel Mogato, "Philippines Says China Agrees on No New Expansion in South China Sea," Reuters, August 15, 2017.
25. Andreo Calonzo and Norman P. Aquino, "Philippines Weighs China Energy Deal in Disputed South China Sea," Bloomberg, August 15, 2017.
26. Enrico Dela Cruz, "Philippines to Explore for Oil and Gas with China near Disputed Waters," Reuters, September 28, 2017; Danessa Rivera, "Philippines, China Set up Joint Exploration in Palawan Field," *Philippine Star*, September 28, 2017.
27. Charlie Campbell, "While the U.S. Is Distracted, Beijing Is Winning the Battle to Control the South China Sea," *Time*, May 19, 2017.
28. Manuel Mogato and Amy Sawitta Lefevre, "Seeking Smoother Summit, ASEAN to Skirt Mention of South China Sea Ruling," Reuters, September 5, 2016; Manuel Mogato, Michael Martina, and Ben Blanchard, "ASEAN Deadlocked on South China Sea, Cambodia Blocks Statement," Reuters, July 25, 2016; Prashanth Parameswaran, "ASEAN Can't Be Silent on South China Sea Ruling," *Diplomat*, July 14, 2016.
29. Greg Torode, "China Leaning On Singapore to Keep ASEAN Calm over South China Sea: Sources," Reuters, August 8, 2017; Manuel Mogato, Michael Martina, and Ben Blanchard, "ASEAN Deadlocked on South China Sea, Cambodia Blocks Statement," Reuters, July 25, 2016; Hannah Beech, "What a Retracted Statement Says about China's Growing Power in the South China Sea," *Time*, June 15, 2016.
30. Association of Southeast Asian Nations, *Chairman's Statement: 30th ASEAN Summit: Manila, 29 April 2017: Partnering for Change, Engaging the World*, April 29, 2017, 24.
31. Association of Southeast Asian Nations, *Joint Communiqué of the 50th Asean Foreign Ministers' Meeting*, August 5, 2017, 24.
32. Michaela del Callar, "PHL Wanted Issues Resented by China Dropped from ASEAN Statement," GMA News, August 8, 2017.
33. ImageSat International, "New Deployment Of HQ-9 in the South Of Hainan May Create a No-Fly Zone in the South China Sea," May 11, 2017.
34. Ralph Jennings, "Obstacles at Bay, Beijing Steps up Control over Disputed South China Sea," Voice of America, June 19, 2017.
35. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 12.
36. Center for Strategic and International Studies Asia Maritime Transparency Initiative, "China's New Spratly Island Defenses," December 13, 2016; Center for Strategic and International Studies Asia Maritime Transparency Initiative, "Build It and They Will Come," August 1, 2016.
37. Center for Strategic and International Studies Asia Maritime Transparency Initiative, "Updated: China's Big Three near Completion," June 29, 2017.
38. Kyodo, "China Deploys Surface-to-Air Missiles on Hainan Island in Bid to Create South China Sea No-Fly Zone: Report," May 20, 2017; ImageSat International, "New Deployment of HQ-9 in the South of Hainan May Create a No-Fly Zone in the South China Sea," May 11, 2017.
39. Mike Yeo, "China Deploys New Anti-Submarine Aircraft to Fringes of South China Sea," *Defense News*, June 22, 2017; Mike Yeo, "Satellite Image Shows Chinese Deployment of New Aircraft to South China Sea," *Defense News*, May 12, 2017.
40. Mike Yeo, "China Deploys New Anti-Submarine Aircraft to Fringes of South China Sea," *Defense News*, June 22, 2017.
41. Mike Ives, "China Cancels Military Meeting with Vietnam over Territorial Dispute," *New York Times*, June 21, 2017.
42. Mike Ives, "China Cancels Military Meeting with Vietnam over Territorial Dispute," *New York Times*, June 21, 2017.
43. Carl Thayer, "Is a New China-Vietnam Maritime Crisis Brewing in the South China Sea?" *Diplomat*, June 29, 2017; Ralph Jennings, "Vietnam Faces New Oil Dispute with China after Beijing Cuts Visit Short," Voice of America, June 26, 2017; Mike Ives, "China Cancels Military Meeting with Vietnam over Territorial Dispute," *New York Times*, June 21, 2017; Steve Mollman, "As a Diplomat, Rex Tillerson Would Face Off with Beijing over Gas Projects He Steered as a Big Oil CEO," *Quartz*, January 20, 2017.
44. Bill Hayton, "The Week Donald Trump Lost the South China Sea," *Foreign Policy*, July 31, 2017.
45. Bill Hayton, "The Week Donald Trump Lost the South China Sea," *Foreign Policy*, July 31, 2017; Bill Hayton, "Vietnam Drills for Oil in South China Sea," BBC, July 5, 2017; Carl Thayer, "Is a New China-Vietnam Maritime Crisis Brewing in the South China Sea?" *Diplomat*, June 29, 2017.
46. Duan Dang (@duandang), "It's in the overlapping EEZ. Because there's no delimitation agreement and it is exploratory drilling, it violates UNCLOS," June 22,

2017, 2:09 P.M. Tweet; Mike Ives, "China Cancels Military Meeting with Vietnam over Territorial Dispute," *New York Times*, June 21, 2017.

47. Bill Hayton, "The Week Donald Trump Lost the South China Sea," *Foreign Policy*, July 31, 2017; Mai Nguyen, Nidhi Verma, and Sanjeev Miglani, "Vietnam Renews India Oil Deal in Tense South China Sea," Reuters, July 6, 2017.

48. Harsh V. Pant, "Why Vietnam Is at the Center of India's Policy to Counter China," *Scroll*, August 23, 2017.

49. Mai Nguyen, Nidhi Verma, and Sanjeev Miglani, "Vietnam Renews India Oil Deal in Tense South China Sea," Reuters, July 6, 2017.

50. Bill Hayton, "The Week Donald Trump Lost the South China Sea," *Foreign Policy*, July 31, 2017.

51. Eric Beech and My Pham, "Vietnam Wins U.S. Defense Pledges as Tension with China Grows," Reuters, August 8, 2017.

52. Andrew Browne, "China Throws Out South China Sea Rule Book," *Wall Street Journal*, December 20, 2016; Yao Jianing, ed., "China Hands Over Underwater Drone to U.S.," Xinhua, December 20, 2016; Bill Hayton, "Beijing Is Ready to Go Eyeball to Eyeball With Trump," *Foreign Policy*, December 19, 2016; *China Daily*, "Ministry of National Defense Demands that the U.S. Navy Cease Conducting Close Reconnaissance and Military Surveillance in Maritime Areas Facing China," December 18, 2016. Translation.

53. Graham Webster (@gwbstr), "China MOD avoids UNCLOS language in opposing US op. Dewey entered '邻近海域'; claims sov over '附近海域'; No mention of 领海. <http://www.mod.gov.cn/topnews/2017-0>," May 25, 2017, 12:59 P.M. Tweet; China's Ministry of National Defense, *Ministry of National Defense: Conducted Identity Verification of American Ship, Warned It to Leave*, May 25, 2017.

54. Charlie Campbell, "While the U.S. Is Distracted, Beijing Is Winning the Battle to Control the South China Sea," *Time*, May 19, 2017.

55. Matthew Brown, "Singapore Offers to Help Bankroll China's Global Ambitions," Associated Press, June 12, 2017; Mark J. Valencia, "A South China Sea Code of Conduct? Don't Get Your Hopes Up," *Diplomat*, May 30, 2017; Ben Blanchard, "China, ASEAN Agree on Framework for South China Sea Code of Conduct," Reuters, May 18, 2017; Christopher Bodeen, "Russia, China in Agreement on North Korea, South China Sea," Associated Press, April 29, 2016.

56. Mark J. Valencia, "A South China Sea Code of Conduct? Don't Get Your Hopes Up," *Diplomat*, May 30, 2017; Carlyle Alan Thayer, "ASEAN-China Framework of a Code of Conduct," *Thayer Consultancy Background Brief*, August 6, 2017.

57. Ian Storey, "Assessing the ASEAN-China Framework for the Code of Conduct for the South China Sea," ISEAS-Yusof Ishak Institute, August 8, 2017, 1; *Economist*, "What a New Agreement Means for the South China Sea," May 30, 2017.

58. U.S. Department of State, *Australia-Japan-United States Trilateral Strategic Dialogue Ministerial Joint Statement*, August 6, 2017.

59. Praveen Menon, "Naval Accidents No Setback to South China Sea Operations, U.S. Pacific Air Chief Says," Reuters, August 25, 2017; U.S. Department of Defense, *U.S. Department of Defense Freedom of Navigation Program*, February 28, 2017; Alex Lockie, "Trump Just Approved a Plan for the US Navy to Check Beijing in the South China Sea," *Business Insider*, July 22, 2017; Ankit Panda, "The U.S. Navy's First Trump-Era South China Sea FONOP Just Happened: First Takeaways and Analysis," *Diplomat*, May 25, 2017; Gordon Lubold and Jeremy Page, "U.S. Navy Patrols near Disputed Island in South China Sea," *Wall Street Journal*, July 3, 2017; U.S. Department of Defense, *U.S. Department of Defense Freedom of Navigation Program*, March 2015.

60. David B. Larter, "The Navy Is Planning Fresh Challenges to China's Claims in the South China Sea," *Asia Maritime Executive*, February 12, 2017; Ankit Panda, "South China Sea: U.S. Navy Destroyer Asserts Freedom of Navigation in Parcel Islands," *Diplomat*, October 22, 2016.

61. Ankit Panda, "Bipartisan Group of U.S. Senators Call for South China Sea FONOPs," *Diplomat*, May 12, 2017; Helene Cooper, "Trump's Turn toward China Curtails Navy Patrols in Disputed Zones," *New York Times*, May 2, 2017; Reuters, "Tillerson Says China Should Be Barred from South China Sea Islands," January 12, 2017.

62. Mira Rapp-Hooper and Charles Edel, "Adrift in the South China Sea: The High Cost of Stopping Freedom of Navigation Operations," *Foreign Affairs*, May 18, 2017.

63. Dan de Luce, "Senators to Trump: Show Resolve with Beijing in South China Sea," *Foreign Policy*, May 10, 2017.

64. Ankit Panda, "The U.S. Navy's First Trump-Era South China Sea FONOP Just Happened: First Takeaways and Analysis," *Diplomat*, May 25, 2017.

65. Press Trust of India, "Freedom of Navigation Exercise in South China Sea Part of Strategy: Defense Secretary James Mattis," June 15, 2017.

66. Press Trust of India, "Freedom of Navigation Exercise in South China Sea Part of Strategy: Defense Secretary James Mattis," June 15, 2017.
67. China's Ministry of National Defense, *China Ministry of National Defense Spokesperson Wu Qian's Statement on the U.S. Ship's Unauthorized Entry into Waters Adjacent to Relevant Reefs in China's Spratly Islands*, August 11, 2017; Idrees Ali, "U.S. Destroyer Challenges China's Claims in South China Sea," Reuters, August 10, 2017.
68. Mike Yeo, "Global Allies Call for Continued U.S. Patrols in South China Sea," *Defense News*, June 24, 2017.
69. Peter Wells and Don Weinland, "Fitch Warns on Expected Returns from One Belt, One Road," *Financial Times*, January 25, 2017.
70. Brenda Goh and Yawen Chen, "China Pledges \$124 Billion for New Silk Road as Champion of Globalization," Reuters, May 13, 2017.
71. Xinhua, "China Exim Bank Boosts Lending to Belt and Road Projects," January 14, 2016.
72. David Dollar, "Yes, China Is Investing Globally—But Not So Much in Its Belt and Road Initiative," *Brookings*, May 8, 2017.
73. Jeremy Page, "China to Contribute \$40 Billion to Silk Road Fund," *Wall Street Journal*, November 8, 2014.
74. James Kynge, "AIIB Chief Unveils Aim to Rival Lenders such as ADB and World Bank," *Financial Times*, May 3, 2017.
75. Reuters, "BRICS Bank to Lend between \$2.5–3 Bln in 2017—China Daily," March 2, 2017.
76. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 109–110.
77. China's State Council, *The Diversified Employment of China's Armed Forces*, April 2013.
78. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April, 2015, 5.
79. Mercator Institute for China Studies, "China Aims to Build a Global Infrastructure Network"; AidData, "China Provides Sellers Credits for the Construction of a Drydock"; Yimou Lee and Wa Lone, "China's \$10 Billion Strategic Project in Myanmar Sparks Local Ire," Reuters, June 8, 2017.
80. James Kynge, "Chinese Purchases of Overseas Ports Top \$20 Billion in Past Year," *Financial Times*, July 16, 2017.
81. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 210. Translation.
82. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 112–113.
83. Kyaw Min, "China-Myanmar Gas Pipeline Becomes Fully Operational," *Myanmar Business Today*, October 28, 2013; Yimou Lee, "Exclusive: China Seeks up to 85 Percent State in Strategic Port in Myanmar," Reuters, May 5, 2017.
84. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 110.
85. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 111.
86. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 99–101.
87. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 104.
88. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 104.
89. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 115–116.
90. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 115, 117.
91. Nadège Rolland, "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative," *National Bureau of Asian Research*, 2017, 115, 188–119.
92. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 325; Daniel S. Markey, "Armed Confrontation between

China and India,” *Council on Foreign Relations*, November 2015, 1; Jeff Smith, *Cold Peace: China-India Rivalry in the Twenty-First Century*, Lexington Books, 2014, 65.

93. Jeff Smith, *Cold Peace: Sino-Indian Rivalry in the Twenty-First Century*, Lexington Books, 2014, 22, 28, 39–51.

94. *Hindu*, “Why Bhutan Is Special to India,” July 2, 2017.

95. Ajai Shukla, “Doklam Faceoff: Motives, Stakes, and What Lies Ahead,” *Business Standard*, July 18, 2017.

96. Oriana Skylar Mastro and Arzan Tarapore, “Countering Chinese Coercion: The Case of Doklam,” *War on the Rocks*, August 29, 2017; Ajai Shukla, “Doklam Faceoff: Motives, Stakes, and What Lies Ahead,” *Business Standard*, July 18, 2017.

97. M. Taylor Fravel, “Why India Did Not ‘Win’ the Standoff with China,” *War on the Rocks*, September 1, 2017; Rory Medcalf, “Doklam: Who Won?” *Interpreter*, August 31, 2017; Oriana Skylar Mastro and Arzan Tarapore, “Countering Chinese Coercion: The Case of Doklam,” *War on the Rocks*, August 29, 2017; Dhruva Jaishankar, “China Miscalculated how to Handle India, Allowed Face-Saving Exit,” NDTV, August 29, 2017.

98. China’s Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hua Chunying’s Regular Press Conference on August 28, 2017*, August 28, 2017.

99. M. Taylor Fravel, “Why India Did Not ‘Win’ the Standoff with China,” *War on the Rocks*, September 1, 2017; Rory Medcalf, “Doklam: Who Won?” *Interpreter*, August 31, 2017.

100. Dinakar Peri, “China Puts More Boots at Doklam,” *Hindu*, October 5, 2017.

101. Vishnu Som, “With 500 Soldiers on Guard, China Expands Road in Doklam,” NDTV, October 5, 2017.

102. BBC, “Bhutan and India Sign New Treaty,” February 8, 2007.

103. Jeff Smith, “High Noon in the Himalayas: Behind the China-India Standoff at Doka La,” *War on the Rocks*, July 13, 2017.

104. Ajai Shukla, “Doklam Faceoff: Motives, Stakes, and What Lies Ahead,” *Business Standard*, July 18, 2017; Jeff Smith, “High Noon in the Himalayas: Behind the China-India Standoff at Doka La,” *War on the Rocks*, July 13, 2017; Abhijnan Rej, “Why Doklam and Bhutan Matter: India Can’t be Seen to Abandon Its Allies,” *Hindustan Times*, July 4, 2017.

105. Jeff Smith, “High Noon in the Himalayas: Behind the China-India Standoff at Doka La,” *War on the Rocks*, July 13, 2017.

106. Jeff Smith, “High Noon in the Himalayas: Behind the China-India Standoff at Doka La,” *War on the Rocks*, July 13, 2017.

107. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, i; Xinhua, “Central Military Commission’s Opinions on Deepening Reforms of National Defense and Armed Forces,” January 1, 2016. Translation; Wen Zhizhong, “Thoroughly Understanding the Major Theoretical Perspectives, Major Strategic Thinking, and Major Policy-Making Arrangements Put Forward by the Third Plenary Session of the 18th Central Committee,” *Guangzhou Zhanshi Bao*, November 26, 2013. Translation; Song Zhongping, “The Requirement for ‘Winning Battles’ Makes Military Reform a Pressing Concern,” *Guoji Xianqu Daobao*, November 25, 2013. Translation; Xinhua, “CPC Central Committee Decision on Deepening of Reforms,” November 12, 2013.

108. M. Taylor Fravel, “China’s Changing Approach to Military Strategy: The Science of Military Strategy from 2001 and 2013,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, 2016, 46; Xinhua, “Central Military Commission’s Opinions on Deepening Reforms of National Defense and Armed Forces,” January 1, 2016. Translation; Kevin McCauley, “PLA Transformation: Difficult Military Reforms Begin,” *China Brief*, September 18, 2015; James Mulvenon, “Rearranging the Deck Chairs on the Liaoning? The PLA Once Again Considers Reorganization,” *China Leadership Monitor* 43 (Fall 2015): 3; Wen Zhizhong, “Thoroughly Understanding the Major Theoretical Perspectives, Major Strategic Thinking, and Major Policy-Making Arrangements Put Forward by the Third Plenary Session of the 18th Central Committee,” *Guangzhou Zhanshi Bao*, November 26, 2013. Translation; Xinhua, “CPC Central Committee Decision on Deepening of Reforms,” November 15, 2013.

109. Xinhua, “China to Cut Troops by 300,000: Xi,” September 3, 2015.

110. David M. Finkelstein, “Get Ready for the Second Phase of China Military Reform,” *CNA*, January, 2017, 3–4; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 3; China’s State Council Information Office, *China’s Military Strategy*, May 2015.

111. Xinhua, “Central Military Commission Opinions on Deepening Reforms of National Defense and Armed Forces,” January 1, 2016. Translation.

112. China's Ministry of National Defense, *Official English Transcript of PRC National Defense Ministry's News Conference*, April 27, 2017.
113. Li Xiaoqiang, "The 77th Group Army of the PLA Army Strives for a Good Beginning of Work in Accordance with the Combat Power Standard by Achieving a Good Result of Military Training and Combat Readiness in the First Term of the New Unit's Leading Body," *PLA Daily*, May 11, 2017. Translation; Minnie Chan, "China to Disband over a Quarter of Its Army Corps, Sources Say," *South China Morning Post*, March 18, 2017.
114. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 3.
115. Mei Shixiong, Ding Fujiao, and Zhao Guotao, "Joint Training and Joint Exercises Focus on Training Commanders: A Look at the Central Theater's Joint Combat Operations Command Center," Xinhua, January 16, 2017. Translation; Zhao Lei, "PLA Restructures to Meet New Challenges," *China Daily*, January 11, 2017; Dennis J. Blasko, "The New PLA Joint Headquarters and Internal Assessments of PLA Capabilities," *China Brief*, June 21, 2016.
116. Dennis J. Blasko, "Walk, Don't Run: Chinese Military Reforms in 2017," *War on the Rocks*, January 9, 2017; Cheng Yongliang and Dai Feng, "Checking Faults and Weaknesses, Pivoting to Conversion of Achievements, the Eastern Theater Command's Joint Campaign Command Drills Adhere to the Direction of Tackling and Settling Problems," *PLA Daily*, December 10, 2016. Translation; Peter Wood, "China Hails Progress toward Military Reforms, Improved Jointness," *China Brief*, December 5, 2016; Qiu Yue, "Expert: Three Naval Fleets, Drill Tests China's Military Reform Results," China Military Online, August 4, 2016; China Military Online, "PLA Army Kicks off Firepower-2016 Qingtongxia Military Exercise," July 12, 2016.
117. Zhang Zebin, "Focus on One's Main Job for Winning," *PLA Daily*, November 26, 2016. Translation.
118. Zhao Lei, "PLA Restructures to Meet New Challenges," *China Daily*, January 11, 2017.
119. Cao Chuanbiao and Zhang Li, "How Many Things Need to Be Coordinated in the Relationship between Combat Operations and Force Building—The Practice and Thought of the Air Force of the Western Theater Command in Adapting to the New Leadership and Command System and Pushing Forward Realistic Military Training," *PLA Daily*, October 31, 2016. Translation.
120. Qiu Yue, "Expert: Three Naval Fleets' Drill Tests China's Military Reform Results," China Military Online, August 4, 2016.
121. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 272; Zhao Lei, "PLA Restructures to Meet New Challenges," *China Daily*, January 11, 2017.
122. Dennis J. Blasko, "Walk, Don't Run: Chinese Military Reforms in 2017," *War on the Rocks*, January 9, 2017; Kenneth Allen, Dennis J. Blasko, and John F. Corbett, "The PLA's New Organizational Structure: What Is Known, Unknown and Speculation (Part 1)," *China Brief*, February 4, 2016.
123. Dennis J. Blasko, "Walk, Don't Run: Chinese Military Reforms in 2017," *War on the Rocks*, January 9, 2017.
124. Dennis J. Blasko, "The New PLA Joint Headquarters and Internal Assessments of PLA Capabilities," *China Brief*, June 21, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 5.
125. Dennis J. Blasko, "The New PLA Joint Headquarters and Internal Assessments of PLA Capabilities," *China Brief*, June 21, 2016.
126. Choi Chi-yuk, "Admiral Named to Head PLA's New Southern Theatre Command," *South China Morning Post*, January 19, 2017.
127. Dennis J. Blasko, "Walk, Don't Run: Chinese Military Reforms in 2017," *War on the Rocks*, January 9, 2017.
128. China's State Council Information Office, *China's Military Strategy*, May 2015.
129. Christopher P. Carlson and Jack Bianchi, "Warfare Drivers: Mission Needs and the Impact on Ship Design" in Andrew S. Erickson, ed., *Chinese Naval Shipbuilding: An Ambitious and Uncertain Course*, Naval Institute Press, 2017, 24–25; Mathieu Duchâtel, Oliver Bräuner, and Zhou Hang, "Protecting China's Overseas Interests: The Shift Away from Non-Interference," *Stockholm International Peace Research Institute*, June 2014, 13–14.
130. China Military Online, "27th Chinese Naval Escort Taskforce Sets Sail from S. China's Sanya," August 3, 2017.
131. China Radio International, "Chinese Navy Finishes 1,000 Escort Missions at Gulf of Aden," December 23, 2016; Xinhua, "China Sends Escort Fleet to Gulf of Aden," December 17, 2016.

132. China Military Online, "China Hands over 3 Suspected Pirates to Somalia, May 11, 2017; Rahul Singh, "Indian, Chinese, Pak Warships Rescue Bulk Carrier from Pirates in Gulf of Aden," *Hindustan Times*, April 11, 2017; BBC, "Hijacked Ship's Crew Rescued from Pirates near Somalia," April 9, 2017.
133. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 19.
134. Tribune News Service, "Sino Submarine Spying on Indian Warships?" January 7, 2017.
135. China's Ministry of National Defense, *Ministry of National Defense Confirms Submarine Stopover in Malaysia*, January 9, 2017; Jeremy Page and Jake Maxwell Watts, "Chinese Submarine's Malaysian Port Call Signals Regional Power Shift," *Wall Street Journal*, January 6, 2017.
136. Reuters, "China Formally Opens First Overseas Military Base in Djibouti," August 1, 2017.
137. Joshua Berlinger, "Satellite Photos Reveal Underground Construction at Chinese Military Base," CNN, July 26, 2017.
138. Joshua Berlinger, "Satellite Photos Reveal Underground Construction at Chinese Military Base," CNN, July 26, 2017.
139. Erica Downs, Jeffrey Becker, and Patrick deGategno, "China's Military Support Facility in Djibouti: The Economic and Security Dimensions of China's First Overseas Base," *CNA*, July 2017, 26.
140. Stratfor, "Looking over China's Latest Great Wall," July 26, 2017.
141. Colin Clark, "China Base Sparks 'Very Significant Security Concerns,'" *Breaking Defense*, March 27, 2017; Andrew Jacobs and Jane Perlez, "U.S. Wary of Its New Neighbor in Djibouti: A Chinese Naval Base," *New York Times*, February 25, 2017.
142. Andrew Jacobs and Jane Perlez, "U.S. Wary of Its New Neighbor in Djibouti: A Chinese Naval Base," *New York Times*, February 25, 2017.
143. Andrew Jacobs and Jane Perlez, "U.S. Wary of Its New Neighbor in Djibouti: A Chinese Naval Base," *New York Times*, February 25, 2017.
144. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 5.
145. Minnie Chan, "Live-Fire Show of Force by Troops from China's First Overseas Military Base," *South China Morning Post*, September 25, 2017.
146. U.S. Senate Armed Services Committee, *United States Pacific Command and United States Forces Korea*, written testimony of Harry B. Harris, Jr., April 27, 2017.
147. Jane Perlez and Chris Buckley, "China Retools Its Military with a First Overseas Outpost in Djibouti," *New York Times*, November 25, 2015; European Commission, "European Union, Trade in Goods with China"; Minghao Zhao, "China's Arab March," *Project Syndicate*, June 18, 2014.
148. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 5.
149. *Maritime Executive*, "Pakistan Gives China a 40-Year Lease for Gwadar Port," April 27, 2017; *Indian Express*, "China to Expand Marine Corps for Deployment in Gwadar, Djibouti," March 13, 2017; *Economic Times*, "Satellite Imagery Reveals Presence of Chinese Nuclear Submarines in Karachi," January 9, 2017.
150. Ma Chi, "Chinese Peacekeepers Young and Eager to Break Language Barriers," *China Daily*, December 29, 2016.
151. United Nations, "Contributors to UN Peacekeeping Operations by Country and Post," August 31, 2017.
152. United Nations, "Financing Peacekeeping."
153. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 19.
154. China Military Online, "All Troops of China's First Peacekeeping Helicopter Detachment Arrive in Sudan," August 21, 2017; Xinhua, "China's First Peacekeeping Unit Arrives in Darfur," August 6, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 19.
155. China Military Online, "All Troops of China's First Peacekeeping Helicopter Detachment Arrive in Sudan," August 21, 2017; Xinhua, "China's Helicopter Unit Joins Peacekeeping Mission in Darfur," June 11, 2017; Gabriel Dominguez, "China to Deploy First Peacekeeping Helicopter Unit to Sudan," *IHS Jane's*, May 23, 2017.
156. Zhang Zhihao, "140 Chinese Peacekeepers Return from UN Mission in Liberia," *China Daily*, March 13, 2017; China Military Online, "Chinese Peacekeepers to Lebanon Awarded UN Peace Medal of Honor," March 9, 2017.
157. Zhang Zhihao, "140 Chinese Peacekeepers Return from UN Mission in Liberia," *China Daily*, March 13, 2017.

158. Dennis Blasko, "China's Contribution to Peacekeeping Operations: Understanding the Numbers," *China Brief*, December 5, 2016.
159. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 17.
160. Kenneth Allen, Phillip C. Saunders, and John Chen, *Chinese Military Diplomacy, 2003–2016: Trends and Implications*, National Defense University, July 2017, 11–15; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 17–21.
161. Kenneth Allen, Phillip C. Saunders, and John Chen, *Chinese Military Diplomacy, 2003–2016: Trends and Implications*, National Defense University, July 2017, 10–11; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 17.
162. China Military Online, "China, Myanmar Conduct Joint Maritime Exercise," May 22, 2017; *Himalayan Times*, "Nepal-China Joint Military Drill Kicks Off," April 16, 2017.
163. *Global Times*, "Advanced PLA Navy Ship to Join Joint Drill with Russia," June 18, 2017.
164. Magnus Nordenman, "China and Russia's Joint Sea 2017 Baltic Naval Exercise Highlight a New Normal for Europe," U.S. Naval Institute, July 5, 2017.
165. China Military Online, "Three Firsts in China-Russia Joint Maritime Exercise," August 20, 2015.
166. *China Daily*, "Navy Conducts Live-Fire Drill en Route to Baltic," July 12, 2017.
167. *Global Times*, "Missile Destroyer Hefei Opens Live Fire Drill in Baltic Sea," July 26, 2017; *PLA Daily*, "China-Russia 'Joint Sea-2017' Exercise Kicks Off," July 23, 2017. Translation; TASS, "Chinese Navy Warships Arrive in Russian Baltic Port for Joint Drills," July 21, 2017.
168. Richard Weitz, "Assessing the Sino-Russian Baltic Sea Drill," *China Brief*, September 20, 2017; Zhang Zhihao, "Navy Holds Drills with Russia," *China Daily*, July 24, 2017; *Global Times*, "Advanced PLA Navy Ship to Join Joint Drill with Russia," June 18, 2017.
169. Zhang Yingshu, "The China-Russia 'Joint Sea-2017' Exercise has Concluded," China Military Online, September 25, 2017. Translation; Zhang Yingshu, "China-Russia 'Joint Sea 2017' Military Exercise's Live-Fire Stage Enters Multi-Subject Training Drills," China Military Online, September 23, 2017. Translation.
170. Xinhua, "Chinese Naval Fleet Departs for Joint Drill in Russia," September 13, 2017.
171. Ethan Meick, "China-Russia Military-to-Military Relations: Moving toward a Higher Level of Cooperation," *U.S.-China Economic and Security Review Commission*, March 20, 2017, 8–10.
172. U.S.-China Economic and Security Review Commission, *2016 Report to Congress*, November 2016, 447–449; Laura Zhou, "China and Russia Criticize THAAD Missile Defense System as Destabilizing Region," *South China Morning Post*, July 9, 2016.
173. Interfax, "Russia, China Hold First Joint Missile Defense Exercise—Russian Defense Ministry," May 27, 2016.
174. *China Daily*, "China, Russia to Hold Second Anti-Missile Drill," October 11, 2016.
175. Huang Panyue, "Russia to Deliver 10 Su–35 Fighter Jets to China This Year," China Military Online, February 4, 2017; Mike Yeo, "China Receives First Advanced Su–35 Flankers from Russia," *Defense News*, January 9, 2017.
176. Jon Grevatt, "China and Russia to Collaborate on Aero-Engine R&D," *IHS Jane's Defense Industry*, January 26, 2017.
177. Russian Aviation Insider, "Russian Government Approves Russo-Chinese Helicopter Development," February 13, 2017; Rostec, "Russian Helicopters and Avicopter to Develop an Advanced Heavy Lift Rotorcraft," June 27, 2016.
178. Paul Schwartz, "Russia-China Defense Cooperation: New Developments," *Asan Forum*, February 9, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 71.
179. Ethan Meick, "China-Russia Military-to-Military Relations: Moving toward a Higher Level of Cooperation," *U.S.-China Economic and Security Review Commission*, March 20, 2017, 17–20.
180. DD Wu, "China and Russia Sign Military Cooperation Roadmap," *Diplomat*, June 30, 2017.
181. Scott Harold and Alireza Nader, "China and Iran: Economic, Political, and Military Relations," *RAND Corporation*, May 3, 2012, 6–9.

182. Andrew Scobell and Alireza Nader, "China in the Middle East: The Wary Dragon," *RAND Corporation*, December 5, 2016, 57–58.
183. Xinhua, "China, Iran Upgrade Ties to Carry Forward Millennia-Old Friendship," January 24, 2016.
184. Associated Press, "Iran and China Sign Military Cooperation Agreement," November 14, 2016.
185. Joel Wuthnow, "China-Iran Military Relations at a Crossroads," *China Brief*, February 4, 2015; Thomas Erdbrink and Chris Buckley, "China and Iran to Conduct Joint Naval Exercises in the Persian Gulf," *New York Times*, September 21, 2014.
186. Yan Guiwang, "Chinese Naval Fleet Wraps Up Visit to Iran," China Military Online, June 19, 2017.
187. *South China Morning Post*, "China to Help Iran Build High-Speed Rail as Part of 'One Belt, One Road' Strategy," January 24, 2016.
188. Xinhua, "China, Iran Agree to Promote Belt and Road Cooperation," April 24, 2017; China's Ministry of Foreign Affairs, *Wang Yi Holds Annual Meeting between Chinese and Iranian Foreign Ministers with Foreign Minister Mohammad Javad Zarif of Iran*, December 6, 2016.
189. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database."
190. Aude Fleurant et al., "Trends in International Arms Transfers, 2016," *Stockholm International Peace Research Institute*, February 2017, 4.
191. Aude Fleurant et al., "Trends in International Arms Transfers, 2016," *Stockholm International Peace Research Institute*, February 2017, 2, 4.
192. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database"; Aude Fleurant et al., "Trends in International Arms Transfers, 2016," *Stockholm International Peace Research Institute*, February 2017, 4.
193. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database."
194. *People's Daily*, "Thailand Purchases Chinese Submarine, the Country's First Since WWII," May 9, 2017.
195. Associated Press, "Thai Navy Seeks Approval to Buy First Submarines in 65 Years," July 1, 2016; Michael Green et al., "Asia-Pacific Rebalance 2025: Capabilities, Presence, and Partnerships," *Center for Strategic International Studies*, January 2016, 80–81; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 254–255; Adam Taylor, "If Thailand Is a Coup, Why Wasn't Egypt?" *Washington Post*, May 22, 2014.
196. Gabriel Dominguez, "Malaysia Signs Contract with China for Four Littoral Mission Ships," *IHS Jane's*, April 25, 2017; Prashanth Parameswaran, "Malaysia's New China Warship Deal: Promises and Prospects," *Diplomat*, February 4, 2017.
197. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2014*, April 24, 2014, 51.
198. Gabriel Dominguez, "Images Show Myanmar Air Force JF-17/FC-1 Conducting Flight Tests in China," June 14, 2017; Anthony Davis, "Myanmar in Advanced Negotiations to License-Build JF-17 Fighter," *IHS Jane's*, February 1, 2017.
199. Ankit Panda, "Revealed: Why Sri Lanka Backed off the Sino-Pakistani JF-17 Thunder," *Diplomat*, January 11, 2016.
200. Bilal Khan, "Official 2016 Nigerian Budget Confirms JF-17 Order," *Quwa*, January 4, 2017.
201. Jeremy Page and Paul Sonne, "Unable to Buy U.S. Military Drones, Allies Place Orders with China," *Wall Street Journal*, July 17, 2017.
202. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 228.
203. Jeremy Page and Paul Sonne, "Unable to Buy U.S. Military Drones, Allies Place Orders with China," *Wall Street Journal*, July 17, 2017; *People's Daily*, "Saudi Arabia Imports UAV Production Line from China: Reports," March 27, 2017.
204. Xinhua, "China Exclusive: China's Domestic Wing-Loong II UAS Conducts Maiden Flight," February 28, 2017; Jon Grevatt, "China Secures Its 'Biggest' Military Export Order for New UAV System," *IHS Jane's Defense Weekly*, February 28, 2017.
205. Jeffrey Lin and P.W. Singer, "The Dragon Muscles In: Growing Numbers of Victories in Chinese Arms Exports," *Popular Science*, June 9, 2016; China's State-Owned Assets Supervision and Administration Commission of the State Council, *Zhuhai Airshow: Advantages of Prominent Unmanned Aerial Vehicles*, November 19, 2014.
206. Richard A. Bitzinger, "China Is Suddenly a Leading Exporter of Armed Drones," *World Politics Review*, January 18, 2016; U.S. Air Force, *MQ-1B Predator*, September 13, 2015.

207. Franz-Stefan Gady, "China's New Killer Drone Ready for Mass Production," *Diplomat*, July 18, 2017; Stephen Chen, "China Unveils Its Answer to U.S. Reaper Drone: How Does It Compare?" *South China Morning Post*, July 17, 2017.

208. Franz-Stefan Gady, "China's New Killer Drone Ready for Mass Production," *Diplomat*, July 18, 2017; Stephen Chen, "China Unveils Its Answer to U.S. Reaper Drone: How Does it Compare?" *South China Morning Post*, July 17, 2017; Kelvin Wong, "AVIC Unveils Wing Loong II Armed Reconnaissance UAV," *IHS Jane's*, November 7, 2016; Richard A. Bitzinger, "China Is Suddenly a Leading Exporter of Armed Drones," *World Politics Review*, January 18, 2016; U.S. Air Force, *MQ-9 Reaper*, September 23, 2015; U.S. Air Force, *MQ-1B Predator*, September 13, 2015; Kimberly Hsu, "China's Military Unmanned Aerial Vehicle Industry," *U.S.-China Economic and Security Review Commission*, June 13, 2013, 9–10.

209. White House Office of the Press Secretary, *Briefing by Secretary Tillerson, Secretary Mnuchin, and Secretary Ross on President Trump's Meetings with President Xi of China*, April 7, 2017.

210. Teddy Ng, "Your Quick Guide to the Outcomes of Landmark Xi-Trump Summit," *South China Morning Post*, April 8, 2017; White House Office of the Press Secretary, *Briefing by Secretary Tillerson, Secretary Mnuchin, and Secretary Ross on President Trump's Meetings with President Xi of China*, April 7, 2017.

211. China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang's Regular Press Conference on June 30, 2017*, June 30, 2017; China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang's Regular Press Conference on April 12, 2017*, April 12, 2017.

212. U.S. Department of State, *Secretary of State Rex Tillerson and Secretary of Defense Jim Mattis at a Joint Press Availability*, June 21, 2017.

213. China's Ministry of Foreign Affairs, *First China-U.S. Diplomatic and Security Dialogue Held in Washington D.C. of the U.S.*, June 22, 2017.

214. Xinhua, "First China-US Social, People-to-People Dialogue Produces Sound Results," September 29, 2017; U.S. Department of State, *Summary of the U.S.-China Social and Cultural Dialogue*, September 28, 2017.

215. White House Office of the Press Secretary, *Statement from the Press Secretary on the United States-China Visit*, April 7, 2017.

216. White House Office of the Press Secretary, *Fact Sheet: President Xi Jinping's State Visit to the United States*, September 25, 2015.

217. White House Office of the Press Secretary, *Readout of President Donald J. Trump's Meeting with President Xi Jinping of China*, July 8, 2017.

218. White House Office of the Press Secretary, *Readout of President Donald J. Trump's Meeting with President Xi Jinping of China*, July 8, 2017.

219. White House Office of the Press Secretary, *Briefing by Secretary Tillerson, Secretary Mnuchin, and Secretary Ross on President Trump's Meetings with President Xi of China*, April 7, 2017.

220. White House Office of the Press Secretary, *Announcement of President Donald J. Trump's Upcoming Travel to Asia*, September 29, 2017.

221. U.S. Department of Defense, *Remarks by Secretary Mattis at Shangri-La Dialogue*, June 3, 2017.

222. U.S. Department of Defense, *Remarks by Secretary Mattis at Shangri-La Dialogue*, June 3, 2017.

223. Shannon Tiezzi, "Why Is China Downgrading Participation in the Shangri-La Dialogue?" *Diplomat*, June 2, 2017.

224. John Rutwitch, "China Upset at Mattis' 'Irresponsible Remarks' on South China Sea," Reuters, June 4, 2017.

225. Merriden Varrall, "What Chinese Media Thought of the Shangri-La Dialogue," *Interpreter*, July 10, 2017.

226. Sam LaGrone, "Guided Missile Destroyer USS Sterett Makes Chinese Port Visit," USNI News, June 12, 2017.

227. Raymond Yeung and Minnie Chan, "Thousands of U.S. Navy Officers Arrive in Hong Kong for USS Ronald Reagan Port of Call," *South China Morning Post*, October 2, 2017.

228. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 425.

229. Jim Garamone, "U.S., Chinese Military Leaders Sign Agreement to Increase Communication," *U.S. Department of Defense News*, August 15, 2017.

230. U.S. Department of Defense, *Dunford Arrives in China*, August 14, 2017.

231. Jim Garamone, "U.S., Chinese Military Leaders Sign Agreement to Increase Communication," *U.S. Department of Defense News*, August 15, 2017; Gordon Lubold and Jeremy Page, "U.S., China Militaries Set up Speed Dial to Avoid Inadvertent North Korea War," *Wall Street Journal*, August 15, 2017.

232. Jim Garamone, "Dunford Stresses Diplomacy, Sanctions for North Korea in Talks with Chinese," *U.S. Department of Defense News*, August 16, 2017; Gordon Lubold and Jeremy Page, "U.S., China Militaries Set up Speed Dial to Avoid Inadvertent North Korea War," *Wall Street Journal*, August 15, 2017.

233. Ben Blanchard, "Xi Says China Navy to Join U.S.-Led 2018 Pacific Rim Drill: Xinhua," Reuters, July 8, 2017.

234. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 225.

235. Gardiner Harris, "U.S., Hardening Line on China, Approves \$1 Billion Arms Sale to Taiwan," *New York Times*, June 29, 2017.

236. Ralph Jennings, "China Demands that U.S. Arms Deal with Taiwan Be Canceled," *Los Angeles Times*, June 30, 2017.

237. Ralph Jennings, "China Demands that U.S. Arms Deal with Taiwan Be Canceled," *Los Angeles Times*, June 30, 2017.

238. Ralph Jennings, "China Demands that U.S. Arms Deal with Taiwan Be Canceled," *Los Angeles Times*, June 30, 2017.

239. Dennis J. Blasko, "What Is Known and Unknown about Changes to the PLA's Ground Combat Units," *China Brief*, May 11, 2017; Minnie Chan, "Why Xi Jinping Is Planning a Historic Move to Rename China's Army Corps," *South China Morning Post*, April 24, 2017.

240. *Express Tribune*, "Pak-China Exercise: 'Joint Experiences Improve Counter-Terror Skills,'" December 9, 2016; *Times of Islamabad*, "Warrior 4: COAS Witnesses Pak-China Joint Military Drill," December 8, 2016.

241. *PLA Daily*, "PLA and Saudi Special Forces Conduct Their First Joint Counterterrorism Training," October 27, 2016. Translation; *Asharq Al-Awsat*, "Saudi-Chinese Special Forces Conclude Their Joint Exercise," October 23, 2016.

242. China Military Online, "China, Pakistan Hold Joint Anti-Terrorism Training," October 25, 2016.

243. *China News*, "Combined Aid-2016 Sino-German Medical Real Combat Exercise: Real Troop Exercise Is Closer to Real Combat," October 24, 2016. Translation; China Military Online, "China, Germany Kick off Joint Medical Military Exercise," October 20, 2016.

244. *Indian Express*, "Sino-Indian Joint Military Exercise in Ladakh Not Aimed at 'Third Country': China," October 21, 2016.

245. Asia-Plus, "Tajikistan Sees Chinese Servicemen off with Flowers and Presents," October 24, 2016; *Dawn*, "Tajikistan, China Hold Military Exercise," October 21, 2016; Asia-Plus, "A Joint Anti-Terror Drill for Tajik and Chinese Servicemen Starts in Gorno Badakhshan Tomorrow," October 19, 2016.

246. Singapore Ministry of Defense, *RSN Participates in Maritime Security Exercise to Strengthen ADMM-Plus Cooperation*, November 17, 2016; China Military Online, "China Sends Frigate to ADMM-Plus Maritime Security Exercise," November 15, 2016.

247. Franz-Stefan Gady, "China, India Hold Joint Military Drill," *Diplomat*, November 17, 2016.

248. Wang Xiaodong, "Sino-Malaysian Military Drills Get Underway," *China Daily*, November 23, 2016; Tony Cheung, "Officers from Hong Kong's PLA Garrison Take Part in First International Drill," *South China Morning Post*, November 22, 2016.

249. Xinhua, "Cambodian-Chinese Joint Drill Concludes Successfully," December 23, 2016; Joey Chua Xue Ting and Vong Sokheng, "Cambodia, China to Hold Exercises," *Phnom Penh Post*, December 15, 2016.

250. China Military Online, "Chinese Naval Taskforce on Homebound Voyage after 'Aman-17' Exercise," February 26, 2017; *Hindustan Times*, "Naval Drill Aman-17 with 37 Nations Begins in Karachi," February 10, 2017.

251. *Himalayan Times*, "Nepal-China Joint Military Drill Kicks Off," April 16, 2017.

252. China Military Online, "China, Myanmar Conduct Joint Maritime Exercise," May 22, 2017.

253. *Global Times*, "Missile Destroyer Hefei Opens Live Fire Drill in Baltic Sea," July 26, 2017; *PLA Daily*, "China-Russia 'Joint Sea-2017' Exercise Kicks Off," July 23, 2017. Translation; TASS, "Chinese Navy Warships Arrive in Russian Baltic Port for Joint Drills," July 21, 2017.

254. Xinhua, "China-Thailand Air Forces Hold 'Eagle Strike-2017' Joint Training Exercise," August 17, 2017. Translation.

255. *PLA Daily*, "Three Highlights Appear from China-Pakistan Air Forces' Joint Training," September 22, 2017. Translation; Naveed Siddiqui, "Pak-China Shaheen-VI Joint Air Exercise Underway at China's Korla Air Base," *Dawn*, September 14, 2017; Xinhua, "China, Pakistan Air Forces Launch Joint Training Exercise," September 8, 2017.

256. Zhang Yingshu, "The China-Russia "Joint Sea-2017" Exercise has Concluded," China Military Online, September 25, 2017. Translation; Xinhua, "China, Russia Start Joint Naval Drills," September 18, 2017; TASS, "Second Stage of Russian-Chinese Naval Exercise to Involve 11 Ships, 2 Submarines," September 17, 2017.

## SECTION 2: CHINA'S MILITARY MODERNIZATION IN 2017

### Key Findings

- China's military modernization program seeks to advance Beijing's security interests, prevent other countries from challenging those interests, and defend China's sovereignty claims to disputed areas along its border and maritime periphery. The weapons and systems under development and those that are being fielded by China's military—such as intermediate-range ballistic missiles, bombers with long-range precision strike capabilities, and guided missile nuclear attack submarines—are intended to provide China the capability to strike targets further from shore, such as Guam, and potentially complicate U.S. responses to crises involving China in the Indo-Pacific.
- China will continue to modernize strategic air and sea lift capabilities, which will enable China's military to conduct expeditionary operations. The continued production of the Chinese navy's amphibious lift ships and the air force's heavy lift transport aircraft will increase China's ability to deliver troops abroad and to conduct expeditionary operations beyond the first island chain, humanitarian assistance operations, and noncombatant evacuation operations.
- China's increasingly accurate and advanced missile forces are intended to erode the ability of the United States to operate freely in the region in the event of a conflict and are capable of holding U.S. forces in the region at risk.
- China's continued focus on developing counterspace capabilities indicates Beijing seeks to hold U.S. intelligence, surveillance, and reconnaissance satellites at risk in the event of conflict.
- The consolidation of space, cyber, electronic warfare, signals, and potentially human intelligence capabilities under the Strategic Support Force provides China a centralized all-source intelligence apparatus to support national-level decision makers. Furthermore, this development could strengthen the Chinese military's ability to conduct integrated joint operations by providing a wide range of collection capabilities including intelligence, surveillance, and reconnaissance support to commanders responsible for operational forces under the military's five theater commands.

### Recommendations

The Commission recommends:

- Congress authorize U.S. defense spending at levels sufficient to address the growing challenge to U.S. interests posed by Chi-

na's ongoing military modernization program and to ensure the United States will have the capacity to maintain readiness and presence in the Asia Pacific.

### Introduction

China is pursuing military modernization efforts to improve its warfighting, force projection, and nuclear deterrence capabilities, in addition to developing capabilities to conduct operations in space and cyberspace. According to the U.S. Department of Defense (DOD), China also continues to develop its antiaccess/area denial (A2/AD) capabilities "to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains."\* The forces under development also provide China the capability to conduct military operations beyond its land borders, as well as into disputed waters along its maritime periphery in the East and South China seas. (See Chapter 2, Section 3, "Hotspots along China's Maritime Periphery," for a detailed discussion of how a military conflict with China in these areas might unfold.) China's ongoing military modernization disrupts stability in East and Southeast Asia and creates challenges for U.S. freedom of action in the region.

This section examines the latest modernization efforts associated with the People's Liberation Army (PLA) ground, naval, air, and missile forces, as well as the new Strategic Support Force. It concludes with a discussion of the implications of China's military modernization for the United States. This section is based on several hearings and briefings the Commission conducted during 2017, the Commission's March 2017 trip to U.S. Pacific Command and May 2017 trip to Asia, unclassified statements by U.S. officials, and open source research and analysis.

### China's 2017 Defense and Security Budget

In March 2017, China announced a 2017 military budget of 1.02 trillion renminbi (\$151.1 billion)<sup>†</sup> in central government expenditures,<sup>‡</sup> an increase of 7.2 percent over the announced 2016 budget, but the lowest rate of growth in seven years.<sup>1</sup> This figure represents approximately 10.7 percent of China's total central government out-

\*According to DOD, "antiaccess" actions are intended to slow the deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

<sup>†</sup>Unless noted otherwise, this section uses the following exchange rate throughout: \$1 = RMB 6.77.

<sup>‡</sup>China omitted defense and public security expenditure figures from its National People's Congress budget documents in 2017 for the first time since 1980, later announcing its military budget publicly instead. Unlike in previous years, China also announced total military spending of 1.04 trillion renminbi (\$154.3 billion), which likely includes expenditures by provincial governments. To allow comparison with figures from previous years, the figure for central government expenditures is used here. Xinhua, "China's 2017 Defense Budget to Grow 7 Pct: Finance Official," March 6, 2017; David Tweed and Keith Zhai, "China's Defense-Spending Confusion Highlights Strategic Worries," Bloomberg, March 5, 2017; Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.

lays budgeted for 2017\* and approximately 1.3 percent of projected gross domestic product (GDP).<sup>2</sup> Observers offer varying estimates of China's defense budget, having long noted the impossibility of accepting China's official figures at face value.<sup>3</sup> DOD estimates have added roughly 25 percent to China's reported budget in each of the past five years,<sup>4</sup> projecting it exceeded \$180 billion in 2016.<sup>5</sup> The Stockholm International Peace Research Institute typically estimates China's military budget to be around 50 percent higher than reported.<sup>6</sup> The International Institute for Strategic Studies, another source of independent estimates, added around 40 percent to Beijing's reported budget from 2008 to 2015.<sup>7</sup>

Although China's reported nominal military budget increases have outpaced its GDP growth for six years in a row,<sup>8</sup> when adjusted for inflation they have generally aligned with its GDP growth.<sup>9</sup> DOD stated in 2017 that "China's official military budget grew at an average of 8.5 percent per year in inflation-adjusted terms" from 2007 to 2016,<sup>10</sup> close to its average real GDP growth rate of 9.3 percent during this time.<sup>11</sup> DOD also reported China still has the "fiscal strength and political will to sustain increased defense spending," and can do so "for the foreseeable future."<sup>12</sup>

### Overview of Guidance for Military Modernization

China's military modernization is tied to Beijing's national security objectives and intended to prepare forces to meet the "state's core security needs," build the capability to win "informationized wars," and "[accomplish] diversified military tasks."<sup>†</sup><sup>13</sup> At the national level, the Central Military Commission's (CMC) Equipment Development Department<sup>‡</sup> plays a central role in military modernization by overseeing weapons development across the entirety of the PLA. The department determines priorities, coordinates across the military services (and ensures service modernization initiatives align with overall national efforts), and eliminates redundancies.<sup>14</sup>

At the service level, modernization requirements are driven by service strategy, which is shaped by national-level military strategy.<sup>15</sup> Each service has an "equipment department" responsible for developing acquisition plans and managing the acquisition process.<sup>16</sup> Within the PLA Army and Air Force, service modernization efforts also are being shaped by "new-type Army"<sup>§</sup> and "strategic

\*China's central government general public budget includes "central government expenditures, tax rebates for local governments, general transfer payments to local governments, special transfer payments to local governments, and payments to central government reserve funds." If only the central government expenditures category is counted, China's 2017 defense budget represents 34 percent of projected central government spending. China's National People's Congress, *Full Text: Report on China's Central, Local Budgets (2017)*, March 5, 2017.

†The concept of "diversified military tasks"—which emphasizes the need for the PLA to prepare not only for traditional military missions, but also nontraditional military operations such as military operations other than war—was introduced in China's 2006 defense white paper and further discussed in white papers published by China's State Council Information Office through 2015. China's State Council Information Office, *China's Military Strategy*, May 2015; China's State Council Information Office, *Diversified Employment of China's Armed Forces*, April 2013; China's State Council Information Office, *China's National Defense in 2010*, March 2010; China's State Council Information Office, *China's National Defense in 2008*, January 2009; China's State Council Information Office, *China's National Defense in 2006*, December 2006.

‡The Equipment Development Department replaced the General Armament Department in 2016 as part of the ongoing reform and reorganization of the PLA.

§The "new-type Army" concept is described in the 2013 edition of *The Science of Military Strategy* as transitioning the ground force from a mechanized force focused on "zone" defense to a

Air Force”\* concepts, respectively, while PLA Navy modernization is being shaped by “‘offshore waters defense’ with ‘open seas protection’”† missions.<sup>17</sup> The following sections provide an overview of service modernization efforts pursued during 2017 (for a summary of these developments, see addenda I–III, “PLA Theater Commands,”<sup>18</sup> “PLA Order of Battle,”<sup>19</sup> and “PLA Organization of Theater Forces”<sup>20</sup>).

### PLA Army

Although the PLA Army is undergoing significant restructuring following Chinese President and General Secretary of the Chinese Communist Party Xi Jinping’s call for a reduction of 300,000 troops,<sup>21</sup> the ground forces remain relevant to many PLA missions, such as defending China’s land borders and responding to a Taiwan crisis.‡ PLA Army modernization efforts associated with a smaller and more mobile force reflect the “new-type Army” concept. Phillip C. Saunders and John Chen of the National Defense University note the PLA Army’s “chief modernization priority has been in developing ‘new type forces’ better suited for offensive operations. These include special operations, helicopter, electronic warfare, light mechanized, and long-range artillery units that may have more applicability to maritime and overseas missions.”<sup>22</sup>

- *Army aviation:* The PLA Army continues to improve the capabilities of its attack and transport helicopters for conducting mobile, offensive, and defensive air operations.<sup>23</sup> According to DOD, the PLA Army is arming attack helicopters “with precision-guided munitions (including dedicated air-to-air missiles for helicopter-to-helicopter aerial combat).”<sup>24</sup> The Z–10 and Z–19 attack helicopters, for example, are armed with advanced air-to-air missiles.<sup>25</sup> Furthermore, the army appears to be upgrading

lighter, more maneuverable force capable of “full-zone maneuver.” In July 2016, Chinese President Xi Jinping indicated the PLA Army should develop “new-type Army” capabilities to conduct three-dimensional assault, rapid reaction, and long distance mobility operations. Li Xuanliang and Li Huaqing, “Xi Jinping Inspects Headquarters of PLA Army on Eve of Army Day,” Xinhua, July 27, 2016. Translation; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 201. Translation.

\*The 2013 edition of *The Science of Military Strategy* indicates the “objective of the Air Force’s future development is to build a modern Air Force suited to China’s international position, adapted to safeguarding national security and development interests, capable of comprehensively carrying out strategic and campaign missions, and having ‘air and space integration, with both attack and defense [capability].” Christina Garafola, a project associate-China specialist at RAND Corporation, indicates this PLA Air Force objective “has been referred to in official state media and other sources as constituting a ‘strategic air force.’” Christina L. Garafola, “The Evolution of PLAAF Missions, Roles, and Requirements,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, April 2016, 83; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 221. Translation.

†China’s 2015 defense white paper, *China’s Military Strategy*, indicated the PLA Navy “will gradually shift its focus from ‘offshore waters defense’ to the combination of ‘offshore waters defense’ with ‘open seas protection,’ and build a combined, multi-functional and efficient marine combat force structure.” The 2013 edition of *The Science of Military Strategy* discusses this transition, indicating that the PLA Navy is “extend[ing] the strategic forward edge from offshore to blue waters which involve the state’s survival and development interests.” Both documents make a case for the PLA Navy needing to enhance its strategic deterrence and counterattack, maritime maneuver, joint operations, and operational support capabilities. China’s State Council Information Office, *China’s Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 209. Translation.

‡The 2013 edition of *The Science of Military Strategy* states the PLA Army has an “irreplaceable [role] in ensuring China’s land border security, in maintaining social stability, in deterring ... opponents, in containing ... crises, and ... supporting the expansion of the state’s interests.” Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 198–199. Translation.

helicopters with improved sensors, data links, and electronic warfare equipment for conducting operations under “informationized” conditions.<sup>26</sup> These improved sensors and electronic warfare equipment are likely being incorporated in both attack and transport helicopters.

- *Armored vehicles and artillery:* One objective of ground force modernization is to continue to develop equipment that is capable of being rapidly deployed.<sup>27</sup> DOD indicates the PLA Army is improving “tracked and wheeled artillery systems, self-propelled anti-tank guns, ... wheeled and tracked armored vehicles, and air defense systems with advanced target-acquisition capabilities.”<sup>28</sup> Furthermore, the PLA Army’s “improved networks provide real-time data transmissions within and between units, enabling better [command and control] during operations,” according to DOD.<sup>29</sup> A mobile and easily deployable force with the ability to share data should contribute to the PLA’s efforts to conduct long-range operations while increasing the effectiveness of its firepower.<sup>30</sup>
- *Special operations force:* PLA special operations force\* units conduct antiterrorism operations, reconnaissance, and direct action missions (raids).<sup>31</sup> The PLA Army is focusing on developing its special operations force’s capability to build a more flexible and deployable force† for supporting operations at home and abroad.<sup>32</sup>

Developing a more mobile ground force capable of being rapidly deployed will enhance the PLA’s ability to conduct expeditionary operations beyond China’s territorial boundaries.

### PLA Navy

China’s 2015 defense white paper, *China’s Military Strategy*, elevated the maritime domain in China’s strategic thinking, asserting that “the traditional mentality that land outweighs sea must be abandoned.”<sup>33</sup> It noted China will increasingly shift from focusing exclusively on its near seas to a “combination of ‘offshore waters defense’ with ‘open seas protection.’”<sup>34</sup> To this end, DOD notes the PLA Navy is “conducting operational tasks outside the ... ‘first island chain’ [see Figure 1] with multi-mission, long-range, sustainable naval [ships] that have robust self-defense capabilities.”<sup>35</sup> This has led the PLA Navy to focus on investment in aircraft carriers and carrier aviation, development of large amphibious ships suited for expeditionary operations, construction of multi-mission surface combatants and corvette class ships, and modernization of the submarine force.<sup>36</sup>

\*Dennis Blasko, former military attaché in China, notes PLA special operations forces are more “highly trained light infantry or commando units than elite multi-purpose counter-terrorist organizations found in many other countries (though some of the most elite members of special operations force units can perform those specialized functions).” Dennis J. Blasko, “SOF a Priority in China,” *Cipher Brief*, March 15, 2017.

†Focusing on expanding special operations force capabilities will result in an increase in the overall size of this force with the creation of brigades for all the group armies. Dennis J. Blasko, “Recent Developments in the Chinese Army’s Helicopter Force,” *China Brief*, June 9, 2017.

**Figure 1: First and Second Island Chains**

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012*, May, 2012, 40.

- **Aircraft carriers:** The PLA Navy continues to make progress integrating its first aircraft carrier, the refurbished KUZNETSOV-class *Liaoning* (CV-16), into the fleet as its first indigenous carrier, CV-17, moves closer to entering service. CV-17 will have a ski-jump design similar to *Liaoning*, which will limit the carrier to air defense and possibly antisubmarine warfare operations.<sup>37</sup> Future carriers are likely to be flat-deck ships with catapults, like U.S. aircraft carriers, which would enable the PLA Navy to launch aircraft armed with heavier munitions for maritime strike or land attack missions.<sup>38</sup> According to DOD, China could build several aircraft carriers in the next 15 years.<sup>39</sup> China may ultimately build five ships—for a total of six carriers—for the PLA Navy.<sup>40</sup>
  - *Liaoning* (CV-16, Type 001): Imported from Ukraine and refurbished, *Liaoning* is making progress in carrier aviation operations.<sup>41</sup> For the first time, *Liaoning* visited Hong Kong (by transiting the Taiwan Strait) and sailed through the East China Sea and Western Pacific.<sup>42</sup> In December 2016, *Liaoning* conducted a live-fire drill in the Bohai Sea<sup>43</sup> and carrier-task group integration training in the South China Sea.<sup>44</sup> It may eventually embark a total of 36 aircraft: 24 J-15 fighters, 6 antisubmarine warfare helicopters, 4 airborne early warning helicopters, and 2 rescue helicopters.<sup>45</sup>

- CV-17 (Type 001A): In April 2017, China launched its second aircraft carrier, CV-17—its first indigenously designed and constructed carrier. Although CV-17 shares similar characteristics with *Liaoning*, such as the ski-jump flight deck and conventional steam-driven turbines, it is slightly larger, with a displacement between 65,000 and 70,000 tons compared to *Liaoning*'s 60,000.<sup>46</sup> CV-17 is expected to accommodate up to 8 more aircraft than *Liaoning*'s 36.<sup>47</sup> According to DOD, the carrier will probably be operational by 2020.<sup>48</sup>
- *Amphibious lift*: The PLA Navy operates amphibious transport docks, tank landing ships, and medium landing ships, which provide the PLA Navy a range of capabilities, from delivering troops to conducting amphibious and humanitarian assistance operations and providing logistical support. Furthermore, the PLA Navy's amphibious transport docks are well suited to supporting humanitarian assistance and disaster relief operations, noncombatant evacuation operations, and antipiracy operations abroad.<sup>49</sup>
- Amphibious transport dock (LPD): In June 2017, the PLA Navy launched its fifth Type 071 (YUZHAO-class) LPD, which likely will enter service in 2018.<sup>50</sup> More will follow.<sup>51</sup> The YUZHAO LPD can carry up to four air cushion landing craft, four helicopters, armored vehicles, and troops for long-distance deployments.<sup>52</sup> The ship will help improve the PLA's amphibious assault capabilities and expeditionary operations.<sup>53</sup> DOD assesses the PLA Navy likely will continue construction of YUZHAO LPDs as it pursues a new class of amphibious assault ship.<sup>54</sup>
- Landing helicopter dock: Media reports indicate the Type 075 landing helicopter dock is currently under construction. Potentially entering service as early as 2020, the ship would be larger than the YUZHAO and reportedly will have a greater capacity to carry helicopters.<sup>55</sup>
- Tank landing ship (LST): According to DOD, several new Type 072 II (YUTING II-class) LSTs were built in 2016 to replace older Type 072 (YUKAN-class) LSTs.<sup>56</sup> The new LSTs reportedly will be used for supporting logistics operations, primarily in the South China Sea.<sup>57</sup>
- *Surface combatants*: The PLA Navy continues to commission new surface combatants, including destroyers, frigates, and corvettes. The addition of these ships is aimed at improving the PLA Navy's capabilities in air defense, antisurface warfare, antisubmarine warfare, and combat close to China's shores.<sup>58</sup>
- Guided missile destroyer: In January 2017, the PLA Navy commissioned its fifth Type 052D (LUYANG III-class) destroyer, the first of its most advanced destroyers assigned to the North Sea Fleet.<sup>59</sup> The ships will improve the North Sea Fleet's air defense and antisubmarine warfare capabilities for an East China Sea contingency. China's first next-generation

“destroyer,”\* the Type 055, was launched in June 2017, and is expected to enter service in 2019. Reports indicate it is equipped with phased array radars and a multipurpose vertical launch system for surface-to-air, antiship cruise missiles, and antisubmarine missiles.<sup>60</sup>

- Guided missile frigate: Since December 2016, the PLA Navy has commissioned three Type 054A (JIANGKAI II-class) frigates, bringing the total number of frigates in this class to 25.<sup>61</sup> Comprising the largest number of China’s modern surface ships,† the JIANGKAI II is designed for fleet and littoral defense missions.<sup>62</sup>
- Corvette: Since December 2016, the PLA Navy has commissioned four Type 056A (JIANGDAO-class) corvettes.<sup>63</sup> DOD assesses the latest ships put in service are antisubmarine warfare variants. According to DOD, “China may build more than 60 of this class, ultimately replacing older ... destroyers and frigates,” nearly doubling the number of corvettes currently in service.<sup>64</sup> The U.S. Office of Naval Intelligence assesses the ship is best equipped for patrolling waters within the first island chain, which includes both the East and South China seas.<sup>65</sup>
- *Submarines:* The PLA Navy operates a range of submarines, including diesel-powered attack, nuclear-powered attack, and nuclear-powered ballistic missile submarines. The fleet consists primarily of conventional submarines equipped with antiship cruise missiles, which are increasing in range.<sup>66</sup> According to DOD, China’s total submarine fleet “will likely grow to between 69 and 78” by 2020, compared to 66 in 2017.<sup>67</sup>
  - Diesel attack submarine: DOD assesses the PLA Navy commissioned one diesel attack submarine in 2016, which likely is a Type 039 (YUAN-class) diesel attack submarine—China’s most advanced conventional submarine and only conventional submarine in production.<sup>68</sup> DOD projects China will build three more YUANs by 2020, for a total of 20.<sup>69</sup>
  - Nuclear attack submarine: As of January 2017, China built four Type 093A (SHANG II-class) nuclear attack submarines, an improved variant of the SHANG-class (of which it has two), but they have not entered service, according to DOD.<sup>70</sup> The Office of Naval Intelligence assesses these four new SHANG IIs will replace the three aging HAN-class nuclear attack submarines remaining in service.<sup>71</sup> DOD projects that over the next decade China will build a new variant of the SHANG, the Type 093B guided missile nuclear attack submarine.<sup>72</sup>
  - Nuclear-powered ballistic missile submarine: Complementing China’s four JIN-class nuclear-powered ballistic missile submarines, which represent China’s sea-based second-strike

\*According to DOD, the ship is classified as a RENHAI-class cruiser, though the PLA Navy calls it a destroyer. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 25.

†Modern surface ships are defined as multi-mission platforms with significant capabilities in at least two warfare areas. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2010*, August, 2010, 45.

nuclear capability, will be the Type 096. This submarine may be armed with the JL-3 submarine-launched ballistic missile, which is capable of striking the continental United States.<sup>73</sup> According to DOD, construction on this next-generation submarine is likely to start in the early 2020s.<sup>74</sup>

- *Naval aviation developments*: China's modernization of its naval aviation forces contributes to its broader effort to build its capability to conduct air operations far from China's shores.<sup>75</sup> These developments will strengthen the PLA's ability to support contingency operations along China's maritime periphery. The PLA Navy operates a variety of fighter aircraft; fighter bombers; H-6 bombers; and an array of special mission aircraft, KJ-200 airborne early warning and control aircraft, and SH-5 seaplanes.<sup>76</sup>
  - J-15: China's first operational regiment of carrier-based J-15 fighters continues to train on *Liaoning*.<sup>77</sup> From December 2016 to January 2017, *Liaoning*-based J-15s conducted exercises in the South China Sea, Bohai Sea, Yellow Sea, and in the Western Pacific.<sup>78</sup> China reportedly will deploy J-15s on its new CV-17 aircraft carrier.<sup>79</sup>
  - AG-600 seaplane: In May 2017, China conducted the first flight of the AG-600, the world's largest seaplane.<sup>80</sup> The plane reportedly has a maximum payload of 60 tons and will increase China's ability to resupply the land features it controls in the South China Sea.<sup>81</sup> It could also be used for surveillance, antisubmarine warfare, search and rescue, and humanitarian assistance and disaster relief operations.<sup>82</sup>

The PLA Navy's continuing development, acquisition, and deployment of multi-mission ships is increasing its capability to operate at greater distances from China and project force into the Western Pacific.

### PLA Air Force

According to the 2013 edition of *The Science of Military Strategy*,\* an authoritative book published by the PLA's Academy of Military Science, the objective of PLA Air Force modernization is to "build a modern Air Force suited to China's international position, adapted to safeguarding national security and development interests, capable of ... carrying out strategic and campaign missions, and having ... both attack and defense [capabilities]."<sup>83</sup> These requirements have been further shaped by the PLA Air Force's interest in pursuing the "strategic air force" concept.<sup>84</sup> Michael S. Chase, senior political scientist at the RAND Corporation, and Christina Garafola, project associate-China specialist at RAND, note the PLA Air Force

\**The Science of Military Strategy* is published by the Military Strategy Studies Department of the PLA's Academy of Military Science. *The Science of Military Strategy* is part of a body of PLA military publications, to include *The Science of Campaigns*, which provides insight into how the PLA thinks about preparing for conflict at the strategic and campaign levels of warfare. The Academy of Military Science first published *The Science of Military Strategy* in 1987; two additional editions were published in 2001 and 2013. The 2001 edition of *The Science of Military Strategy* was translated into English by the Academy of Military Science in 2005. For a comparison of the 2001 and 2013 editions of *The Science of Military Strategy*, see M. Taylor Fravel, "China's Changing Approach to Military Strategy: The Science of Military Strategy from 2001 and 2013," in Joe McReynolds, ed., *China's Evolving Military Strategy*, Jamestown Foundation, April 2016, 46-75.

*has undergone an impressive transformation over the past two decades, emerging as one of the world's premier air forces. As it continues to modernize, it is focused on becoming a 'strategic air force.' [PLA Air Force] strategists suggest this means the air force should play a decisive role in protecting Chinese national interests, field modern capabilities commensurate with China's standing as a major power and enjoy the institutional status befitting its role as a 'strategic service,' an important consideration given the historical dominance of ground forces in China's military.<sup>85</sup>*

Thus, the PLA Air Force's efforts are focused on developing long-range strike, fifth-generation fighter, airborne early warning and control, aerial refueling, strategic lift, air defense, as well as intelligence, surveillance, and reconnaissance (ISR) aircraft.<sup>86</sup>

- *Fighters*: The PLA Air Force continues to further its capabilities to conduct offensive and defensive air operations by importing fighters or developing and producing indigenous fighters with advanced stealth, radar, avionics, and electronic countermeasure features, among other capabilities.<sup>87</sup> The PLA Air Force operates fourth-generation and older fighter aircraft and is developing two fifth-generation fighters, the J-31 and J-20.
  - Su-35: In December 2016, China received its first delivery of four Su-35 fighters ordered from Russia in 2015.<sup>88</sup> The Su-35, with its advanced avionics and targeting and passive electronically scanned array radar systems, will improve China's counter-air and strike capabilities.<sup>89</sup> Moreover, the aircraft's range (reportedly approximately 2,200 miles [mi] and 2,800 mi with fuel tanks) will enhance the PLA's ability to conduct operations in the South China Sea and Western Pacific.<sup>90</sup> China will receive a total of 24 Su-35s by the end of 2018.<sup>91</sup>
  - J-31: China has conducted frequent flight tests of its indigenous fifth-generation J-31 since its first flight in December 2016.<sup>92</sup> According to DOD, the J-31 will feature "high-maneuverability, low-observability, and an internal weapons bay. ... [as well as] modern avionics and sensors that offer more timely situational awareness for operations in network-centric combat environments; radars with advanced tracking and targeting capabilities; protection against enemy electronic countermeasures; and integrated [electronic warfare] systems."<sup>93</sup> The J-31's suite of advanced capabilities could rival those of the U.S. F-35 fighter and challenge U.S. aircraft in the Western Pacific. The J-31 could enter service as early as 2018.<sup>94</sup>
  - J-20: In November 2016, China conducted the first public flight of the indigenous fifth-generation J-20,<sup>95</sup> thought to be modeled on the U.S. F-22 and F-35.<sup>96</sup> According to a broadcast on the state-run television, in March 2017 the PLA Air Force accepted its first batch of J-20s.<sup>97</sup> In September 2017, a Ministry of National Defense spokesperson confirmed the J-20 has been officially commissioned into service.<sup>98</sup> The

J-20 is expected to be similar to the J-31 in terms of its capabilities and role in air operations.<sup>99</sup>

- *Strike*: China is pursuing greater strike\* capabilities, which will improve its ability to support firepower strike† and ground operations. The PLA Air Force’s strike aircraft include JH-7 fighter bombers, several variants of the H-6 bomber, and unmanned combat aerial vehicles with strike capabilities.
  - H-6K bomber: According to DOD, the latest variant of the H-6, the H-6K, has “turbofan engines to extend range and the capability to carry six land-attack cruise missiles, giving the PLA a long-range standoff precision strike capability that can [target] Guam.”<sup>100</sup> In December 2016, images emerged in Chinese media of an H-6K long-range bomber capable of carrying larger payloads.<sup>101</sup>
  - H-20 bomber: China is developing a long-range stealth bomber, the H-20. According to DOD, “These new Chinese bombers will have additional capabilities with full-spectrum upgrades over the current bomber fleet, and will employ many fifth-generation technologies in their design.”<sup>102</sup> The H-20 could add a new component to China’s nuclear deterrent and increase its ability to conduct air operations far from China’s shores.<sup>103</sup> The H-20 reportedly will have a range of at least 5,000 mi, far enough to strike Hawaii.<sup>104</sup>
- *Aerial refueling*: China is developing more capable air refueling aircraft to upgrade its aging and outdated fleet. These aircraft will improve China’s ability to support air operations into the Western Pacific and farther into the South China Sea. The PLA Air Force operates approximately 12 aging H-6U refueling tankers, refitted versions of the H-6 bomber.<sup>105</sup> In the past four years, China has acquired three Ukrainian IL-78 MIDAS tankers, which outrange the H-6U by nearly 2,000 mi and can carry seven times the fuel for refueling.<sup>106</sup> China’s indigenous Y-20 aircraft could be adapted for use as a refueling tanker, and likely would be more capable than the IL-78.<sup>107</sup>
- *Strategic lift*: China’s growing fleet of strategic lift aircraft will enhance the PLA’s limited ability to rapidly move cargo, troops, and heavy equipment across long distances to support integrated joint operations.<sup>108</sup> China’s fleet of strategic lift aircraft comprises a small number of IL-76 aircraft.<sup>109</sup> According to DOD, China’s new strategic lift aircraft are “intended to support airborne [command and control], logistics, paradrop, aerial refueling, and strategic reconnaissance operations, as well as [humanitarian assistance and disaster relief] missions.”<sup>110</sup>

\*DOD defines “strike” as an “attack to damage or destroy an objective or a capability.” An air strike is “an attack on a specific objective by fighter, bomber, or attack aircraft on an offensive mission.” Joint Chiefs of Staff, *JP-3-0 Joint Operation*, January 17, 2017, GL-15; U.S. Department of Defense, *Dictionary of Military Terms*, Greenhill Books, 1995, 28.

†Firepower strikes are conventional missile strikes against enemy targets. A “joint firepower strike campaign” is a PLA campaign led by the PLA Rocket force and supported by the PLA Air Force and Navy. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 89; Hu Limin and Ying Fucheng, *Study on Joint Firepower Warfare Theory*, National Defense University Press, 2004, 42–50. Translation.

- Y-20: The first Y-20 strategic lift aircraft entered service in June 2016.<sup>111</sup> The Y-20 is a heavy lift aircraft in the same category as the Russian IL-76 or the U.S. C-17.<sup>112</sup> The Y-20 reportedly has a maximum payload of roughly 66 tons.<sup>113</sup> The Y-20 reportedly will achieve initial operational capability in 2017 and full operational capability in the next several years.<sup>114</sup>
- An-225: In 2016, the Aerospace Industry Corporation of China, a state-owned corporation, agreed with Antonov State Company, a Ukrainian aircraft manufacturer, to restart production of the Soviet-built An-225 strategic lift aircraft.\*<sup>115</sup> The An-225 is the largest transport aircraft in the world and has a maximum payload of approximately 280 tons.<sup>116</sup> China might conduct first flights of newly produced An-225s in 2019.<sup>117</sup>
- *Air defense*: China has a large force of long-range surface-to-air missile (SAM) systems, including Russian-built SA-20 and indigenous HQ-9 systems.<sup>118</sup> China is developing and acquiring more SAM systems with greater capabilities and longer ranges. These systems will increase China's ability to challenge an adversary's attempt to control airspace or conduct strike operations on China's periphery.
  - S-400: In 2017, Russia reportedly will deliver the first S-400 SAM units that it agreed to sell to China in 2015.<sup>119</sup> The deal reportedly is worth \$3 billion.<sup>120</sup> With a 250-mi range, S-400s based in mainland China could cover all of Taiwan and much of the East China Sea. The S-400 could also greatly improve China's monitoring and air defense capabilities in the South China Sea if deployed to Chinese-occupied land features in the area.† The S-400 might also be capable of intercepting ballistic missiles.<sup>121</sup>
  - *Special mission aircraft*: The PLA Air Force's command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) aircraft include airborne early warning and control aircraft such as the KJ-2000 MAINRING, KJ-200 MOTH, KJ-500, and Y-8J. According to DOD, these aircraft will increase the PLA's "capabilities to detect, track, and target threats in varying conditions, in larger volumes, and at greater distances."<sup>122</sup> The PLA also operates dedicated unmanned aerial vehicles (UAVs) and antisubmarine warfare aircraft with ISR capabilities.<sup>123</sup>
    - UAV: China is developing UAVs with advanced C4ISR capabilities and integrating them into its network of C4ISR assets. Many UAVs deployed by the PLA Air Force in the past

\*Only one An-225 was produced in 1985 and it first flew in 1988. Gareth Jennings, "China and Ukraine Agree to Restart An-225 Production," *IHS Jane's*, August 31, 2016.

†China deployed HQ-9s to Woody Island in the Paracel Islands in February 2016. China has not deployed SAM systems to the Spratly Islands, but in February AMTI published satellite imagery of facilities under construction at Fiery Cross, Mischief, and Subi reefs in the Spratly Islands that apparently would be capable of housing SAM launchers and shielding them from attack. Center for Strategic and International Studies Asia Maritime Transparency Initiative, "A Look at China's Sam Shelters in the Spratlys," February 23, 2017; Arshad Mohammed and J.R. Wu, "U.S. Expects 'Very Serious' Talks with China after Missile Reports," Reuters, February 16, 2017.

ten years—including the BZK-005 and Pterodactyl I (or Wing Loong) variants GJ-1 (similar in size to the U.S. MQ-1 Predator) and WJ-1—have advanced monitoring and targeting capabilities, as well as longer ranges, higher speeds, and greater payload capacities than older Chinese UAVs.<sup>124</sup> As the PLA deploys these and several more advanced UAVs in development, its C4ISR and integrated precision strike capabilities in China’s near seas will grow.<sup>125</sup>

The PLA Air Force’s continuing development, acquisition, and deployment of increasingly advanced aircraft is furthering its ability to project force into the Western Pacific and challenge “strong enemies,” such as the United States.\*

### **PLA Rocket Force**

The PLA Rocket Force provides China with land-based conventional and nuclear missile capabilities.<sup>126</sup> The Rocket Force continues to improve both its conventional and nuclear forces to enhance long-range strike and deterrence capabilities,<sup>127</sup> and its modernization program is specifically focused on improving and increasing the reliability and effectiveness of both conventional and nuclear missile systems.<sup>128</sup>

- *Conventional strike:* Since the early 1990s, the Rocket Force has rapidly added conventional strike capabilities to its arsenal, formerly composed entirely of nuclear ballistic missiles.<sup>129</sup> Today, the Rocket Force’s conventional arsenal includes solid-fueled, road-mobile intermediate-range ballistic missiles (IRBMs), medium-range ballistic missiles (MRBMs), short-range ballistic missiles, and antiship ballistic missiles. It also includes ground-launched land-attack cruise missiles (for a discussion on the drivers, progress, and implications of China’s development of antiship ballistic missiles, see Chapter 4, Section 2, “China’s Pursuit of Advanced Weapons”).<sup>130</sup> China continues to invest in extending the range and accuracy of its conventional missile force.
  - DF-16A MRBM: The U.S. National Air and Space Intelligence Center confirmed in 2017 that a variant of the DF-16 MRBM, the DF-16A, is in service with the Rocket Force.<sup>131</sup> A Chinese state-run media report stated the DF-16A features a maneuverable warhead and several additional fins. Its range exceeds 1,000 kilometers (km) (621 mi) and its accuracy is similar to that of a cruise missile.<sup>132</sup>
- *Nuclear strike:* China’s land-based nuclear missile arsenal includes silo-based, liquid-fueled intercontinental ballistic missiles (ICBMs) and newer road-mobile, solid-fueled ICBMs, IRBMs, and MRBMs.<sup>133</sup> China continues to develop and improve carriers and warheads for its land-based deterrent.
  - DF-41 ICBM: China continues its efforts to develop the DF-41, which will be its first multiple independently targetable

\*The PLA often uses the term “strong enemy” in military writings to refer to the United States. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

reentry vehicle-capable, road-mobile ICBM (China's enhanced silo-based DF-5B ICBM also has this capability).<sup>134</sup>

- DF-26 IRBM: In 2016, China began fielding the DF-26 IRBM, which reportedly is capable of nuclear and conventional strikes against ground targets, and conventional strikes against naval targets.<sup>135</sup> It has a stated maximum range of 4,000 km (2,500 mi) and could reach Guam.<sup>136</sup>
- Reentry vehicles and warheads: Rocket Force modernization efforts for delivery systems continue. China is focusing on reentry vehicles with penetration aids, multiple independently targetable reentry vehicles, and maneuverable vehicles across a range of nuclear and conventional missile systems to counter U.S. ballistic missile defense capabilities.<sup>137</sup> Furthermore, China is likely continuing nuclear research and development efforts and producing new nuclear warheads.<sup>138</sup>

China seeks to maintain nuclear forces capable of assured retaliation, ensuring its ability to inflict unacceptable damage in the event of a nuclear attack on China,<sup>139</sup> and to further extend the range of its conventional precision strike capabilities. Conventional developments could improve China's ability to hold adversary assets at risk—particularly fixed bases,<sup>140</sup> key nodes,<sup>141</sup> and large ships—at greater distances from China's coastline. The PLA's goal is to erode the United States' ability to operate freely in the Western Pacific freely in the event of a conflict.<sup>142</sup>

### **PLA Strategic Support Force**

The Strategic Support Force—which will have responsibility for cyber, electronic, information, and space operations—was established in December 2015<sup>143</sup> as part of China's military reform and reorganization when it absorbed signals collection capabilities from the former PLA General Staff Department's Third Department and electronic collection capabilities from the Fourth Department.<sup>144</sup> The Strategic Support Force also might include some elements from the Second Department, to include human intelligence collection capabilities.\*<sup>145</sup> Furthermore, this force also may develop and deploy cutting-edge capabilities such as directed-energy weapons.<sup>146</sup> Chinese media reporting indicates the force also will provide intelligence and reconnaissance to the rest of the PLA and enable integrated joint operations.<sup>147</sup> The Strategic Support Force appears to have incorporated signals intelligence capabilities, electronic warfare and electronic countermeasures, as well as aerospace reconnaissance capabilities.<sup>148</sup>

- *Cyber*: Chinese writings commonly refer to cyber warfare as “network warfare,” a concept that encompasses offensive, defensive, and reconnaissance activities in networked informa-

\*Before the PLA reform and reorganization effort dissolved the General Staff Department, the most prominent PLA organizations responsible for foreign intelligence collection were the second, third, and fourth departments of the General Staff Department. The Second Department was responsible for the collection and analysis of human intelligence, imagery intelligence, and tactical reconnaissance. The Third Department was responsible for collecting signals intelligence and conducting cyber operations. The Fourth Department was responsible for electronic warfare and electronic countermeasures. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 290.

tion space.<sup>149</sup> The Chinese government's *International Strategy of Cooperation on Cyberspace*, which it published in February 2017, states China will “expedite the development of a cyber force and enhance capabilities in terms of situational awareness [and] cyber defense.”<sup>150</sup>

- *Electronic warfare*: According to DOD, the PLA's electronic warfare doctrine “emphasizes using electromagnetic spectrum weapons to suppress or to deceive enemy electronic equipment. The PLA's strategy focuses on radio, radar, optical, infrared, and microwave frequencies, in addition to adversarial computer and information systems.”<sup>151</sup>
- *Space and counterspace*: According to a paper by two DOD analysts, the Strategic Support Force's military-related space missions probably can be divided into space support and offensive missions.<sup>152</sup> The PLA possesses and continues to develop space support capabilities such as space-based communication; position, navigation, and timing; space-based ISR; ballistic missile warning, space launch detection, and characterization; and environmental monitoring.<sup>153</sup> It possesses or is developing offensive systems such as direct-ascent antisatellite missiles, co-orbital systems,\* and ground-based directed energy weapons. (See Chapter 4, Section 2, “China's Pursuit of Advanced Weapons,” for further discussion of China's counterspace weapons.)
  - Space support capabilities: Among recent developments, in January 2017, the Chinese government announced that the Gaofen-3 satellite—China's first high-resolution synthetic aperture radar satellite—was operational.<sup>154</sup> Also, in June 2017, Beijing launched two remote-sensing satellites, the first in a constellation of such satellites it is building.<sup>155</sup> In 2015 and 2016, Beijing launched the Gaofen-4—China's first remote-sensing satellite in geosynchronous orbit,<sup>†</sup><sup>156</sup> as well as additional Yaogan and Shijian satellites.<sup>157</sup> All of these satellites could be used to improve the PLA's ISR capabilities. In 2016, China also launched the 23rd satellite in the Beidou Navigation Satellite System.<sup>158</sup> China plans to launch a total of 30 Beidou satellites from 2016 to 2020 in pursuit of its objective to complete a global satellite navigation system by 2020.<sup>159</sup> Moreover, state media reported that in 2016 China launched the world's first experimental quantum communications satellite, which later tested technology that could eventually enable secure digital communication using a virtually unbreakable encryption key.<sup>160</sup>
  - Offensive space capabilities: China has tested two direct-ascent antisatellite missiles: rocket and missile tests of the SC-19, one of which successfully destroyed a target in low Earth orbit; and a rocket test of the larger DN-2, which reached

\* Co-orbital systems involve a satellite already in orbit being deliberately maneuvered to collide with another satellite, dock with an uncooperative satellite, or detonate a small warhead in the vicinity of a satellite.

† Geosynchronous Earth orbit can be achieved at about 22,000–23,000 mi above the equator. The highest orbital band within geosynchronous Earth orbit in frequent use is known as “geostationary Earth orbit.” At this altitude, satellites move at the same speed as the Earth's rotation, enabling them to cover large geographic areas.

higher orbits where Global Positioning System and most U.S. intelligence satellites reside.<sup>161</sup> Concerning co-orbital systems, David D. Chen, an expert on China's space programs, testified to the Commission that China has launched six space missions involving "rendezvous and proximity operations"\* over the past decade.<sup>162</sup> Such operations could be applied to counterspace missions.<sup>163</sup> In the area of directed-energy weapons, DOD reported in 2006 that China was pursuing "at least one ... ground-based laser designed to damage or blind imaging satellites."<sup>164</sup> China also tested a laser against a U.S. satellite in 2006, temporarily degrading its functionality; it is unclear whether this was intended to determine the satellite's location or to test China's ability to "dazzle," or temporarily blind, the satellite.<sup>165</sup> Also, since the mid-2000s China has acquired a number of foreign and indigenous ground-based satellite jammers designed to disrupt an adversary's communications with a satellite by overpowering the signals being sent to or from it.<sup>166</sup>

The Strategic Support Force could strengthen the PLA's ability to conduct integrated joint operations by providing operational support to the other services through space-based ISR and cyberspace operations.<sup>167</sup>

### **Implications for the United States**

China's military modernization efforts continue to improve PLA A2/AD capabilities, which have significant implications for the United States' ability to operate military forces inside the ranges of China's A2/AD weapon systems. Furthermore, China is working to improve its capability to conduct expeditionary operations, respond to perceived challenges in the air and maritime domains, and enhance conventional and nuclear deterrence. Progress in these areas also has implications for the United States, regardless of whether PLA operations are conducted during peacetime, crisis, or conflict.

Since the early 2000s, China's A2/AD advancements have focused on developing forces to counter a "strong enemy," namely the United States.<sup>168</sup> China's efforts to develop these capabilities have focused on construction of modern multi-warfare capable ships capable of operations beyond the first island chain, aircraft capable of conducting long-range strikes against U.S. forces in the Asia Pacific, and medium- and intermediate-range missiles capable of striking ships at sea or U.S. troops based in Japan and Guam.<sup>169</sup> Dr. Chase indicates China's A2/AD modernization efforts "are intended to ensure that U.S. conventional forces will be unable to prevent China

---

\*In his written statement to the Commission, Mr. Chen indicated China in the last ten years has "launched half-a-dozen space missions ... with a suite of technologies for conducting what is known as 'rendezvous and proximity operations' (RPO)... . These include satellites which have been used to maneuver with and observe target spacecraft, such as Banfei Xiaoweixing-1 and -2, the first of which was launched by the Shenzhou-7 manned mission and infamously passed within 50 km of the International Space Station. These also include the Aolong-1, launched in June 2016, a satellite equipped with a robotic manipulator purportedly for de-orbiting space debris, but which even an expert at the Chinese Academy of Sciences says is an 'unrealistic' mission. And, in November 2016, the Shijian-17 satellite was launched, with a suspected inspection or signals intelligence mission, bringing Chinese RPO technologies into the geosynchronous belt for the first time." U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David Chen, February 23, 2017.

from achieving its military and political objectives in a regional conflict.<sup>170</sup>

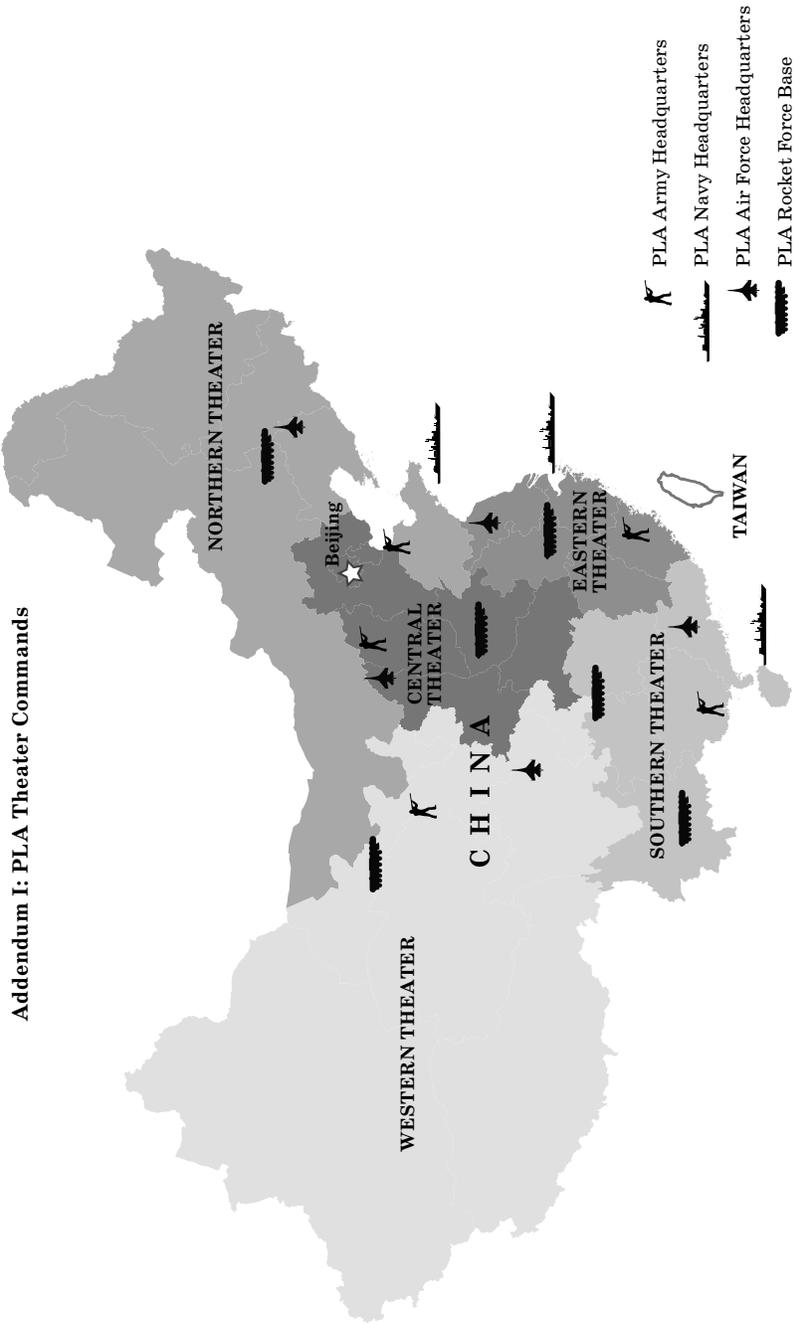
China's efforts to build a smaller and more mobile ground force reflect the PLA Army's goal of building a force that is better suited for offensive operations.<sup>171</sup> The Army's focus on developing special operations units, helicopters, and light mechanized units not only enables the PLA Army to conduct operations along China's land and maritime borders, but also to conduct counterterrorism, noncombatant evacuation, and disaster relief operations abroad.<sup>172</sup> Furthermore, China views the development of a "new-type Army" as necessary for enhancing long-distance strike capabilities.<sup>173</sup> The development of these types of forces will help China further develop expeditionary capabilities and expand Beijing's ability to respond to perceived threats along China's periphery and beyond to defend Chinese interests and citizens abroad.<sup>174</sup> This expanding capability could result in U.S. and Chinese forces conducting missions within the same operational space.<sup>175</sup>

China's naval modernization, driven by the shift from focusing on the "near seas" to "offshore waters defense with open seas protection," is enhancing the PLA Navy's capability to conduct operations beyond the first island chain with multi-mission, long-range, sustainable ships that have robust self-defense capabilities.<sup>176</sup> The PLA Navy's investment in aircraft carriers and carrier aviation, large amphibious ships, modern surface combatants, and the submarine force are intended to enhance China's ability to engage enemies further from its coast.<sup>177</sup> Furthermore, the PLA Navy's continued focus on the Type 096 ballistic missile submarine and the JL-3 submarine-launched ballistic missile indicates the navy is committed to enhancing China's nuclear deterrence capabilities.<sup>178</sup> This likely will result in Chinese ships conducting missions further from China and in closer proximity to U.S. forces operating in the Indo-Pacific. The U.S. Navy should anticipate a larger forward operational presence by the PLA Navy in the Indo-Pacific at the outset of conflict should a crisis between China and a U.S. ally escalate to hostilities. U.S. Navy Rear Admiral (Ret.) Michael A. McDevitt, a senior fellow with CNA Corporation, argues that "U.S. authorities can no longer assume unencumbered freedom to posture U.S. naval forces off Middle East and East African hotspots if Chinese interests are involved and differ from Washington's."<sup>179</sup>

The goal of PLA Air Force modernization—under the "strategic air force" concept—is to build a force capable of enhancing China's international position, safeguarding security interests, and enhancing offensive and defensive capabilities further from China's coast.<sup>180</sup> Recent air operations have included simulated strike training and patrols over waters between Japan and Taiwan (the Miyako Strait) and between Taiwan and the Philippines (the Bashi Channel), which are sensitive and strategic waters for U.S. allies, friends, and partners in the region.<sup>181</sup> The United States should expect these types of missions to continue to increase, and at greater distances from China's coastline. Furthermore, U.S. bases—from which forward-deployed U.S. forces operate—in the Asia-Pacific could be vulnerable to strikes by H-6K bombers armed with long-range land attack cruise missiles.<sup>182</sup>

The PLA Rocket Force is focusing on improving China's long-range strike and deterrence capabilities by increasing the reliability and effectiveness of both conventional and nuclear missile systems.<sup>183</sup> By modernizing PLA Rocket Force nuclear capabilities, China seeks to maintain a counterattack capability sufficient to deter a nuclear attack.<sup>184</sup> The 2013 edition of *The Science of Military Strategy* suggests this deterrent posture can be enhanced by increasing the "proportion" of deployed missiles with "intercontinental ranges" capable of "counterattack" against China's "primary strategic opponent."<sup>185</sup> Dr. Chase indicates this "can be seen as an implicit acknowledgment that preparing for the possibility of nuclear deterrence against the United States is a primary driver of PLA nuclear strategy."<sup>186</sup> Furthermore, the continued modernization of the conventional missile force could improve China's ability to hold U.S. forces at risk—particularly those at bases in the Asia Pacific and large ships at sea—at greater distances from China's coastline.<sup>187</sup> Furthermore, DOD indicates "China's [land-attack cruise missiles] and ballistic missiles have also become far more accurate and are now more capable against adversary air bases, logistic facilities, communications, and other ground-based infrastructure. PLA analysts have concluded that logistics and power projection are potential vulnerabilities in modern warfare...."<sup>188</sup>

China's creation of the PLA Strategic Support Force—which combines cyber, electronic, information, and space operations—is focused on developing and deploying cutting-edge capabilities and providing intelligence and reconnaissance support to the entirety of the PLA through its incorporated signals intelligence capabilities, electronic warfare and electronic countermeasures, as well as aerospace reconnaissance capabilities.<sup>189</sup> Furthermore, the Strategic Support Force—if it has assumed a human intelligence collection capability<sup>190</sup>—would be capable of providing all-source intelligence support to the Central Military Commission. As Dean Cheng, senior research fellow at the Heritage Foundation, testified before the U.S. House Committee on Foreign Affairs, the development of the PLA Strategic Support Force "reflects the ongoing Chinese effort at being able to establish 'information dominance,' which the PLA considers critical to fighting and winning future wars."<sup>191</sup> James E. Fanell, formerly the director of Intelligence and Information Operations for the U.S. Pacific Fleet and currently a government fellow with the Geneva Center for Security Policy, testified to the Commission that the Strategic Support Force "will provide precise situational awareness, target identification of opposing forces, network defenses, and real-time command and control" for PLA operations.<sup>192</sup> The United States must assume the force would contribute to A2/AD operations through cyber attacks against forward-deployed U.S. troops conducting operations in the region, as well as attacks against U.S. logistics nodes. Furthermore, the targeting support the Strategic Support Force is likely to provide PLA air and missile forces could enhance joint firepower strike operations conducted against U.S. forces and bases in the Indo-Pacific during a conflict.



**Addendum II: PLA Order of Battle**

**PLA Ground Forces**

- 850,000 Troops
- 13 Group Armies
- 78 Combined Arms Brigades
- 2 Infantry Brigades
- 4 Infantry Divisions
- 1 Mechanized Infantry Brigade
- 15 Air Defense Brigades
- 14 Army Aviation Brigades
- 15 Artillery Brigades
- 1 Airborne Corps
- 15 Special Operations Brigades
- 7,000 Tanks
- 8,000 Artillery Pieces

**PLA Navy**

- 1 Aircraft Carrier
- 26 Destroyers
- 55 Frigates
- 34 Corvettes
- 86 Coastal Patrol (Missile) Boats
- 27 Tank Landing Ships
- 4 Amphibious Transport Docks
- 21 Medium Landing Ships
- 57 Diesel Attack Submarines
- 5 Nuclear Attack Submarines
- 4 Nuclear Ballistic Missile Submarines

**PLA Air Force and Naval Aviation**

- 1,700 Fighter Aircraft
- 400 Bombers / Attack Aircraft
- 475 Transport Aircraft
- 115 Special Mission Aircraft

**PLA Rocket Force**

- 75-100 Intercontinental Ballistic Missiles
- 200-300 Medium-Range Ballistic Missiles
- 1,200 Short-Range Ballistic Missiles
- 200-300 Ground-Launched Cruise Missiles
- 200-300 Land-Attack Cruise Missiles

## Addendum III: PLA Organization of Theater Forces

<b>EASTERN THEATER COMMAND</b>	<b>SOUTHERN THEATER COMMAND</b>	<b>WESTERN THEATER COMMAND</b>
<b>PLA Army</b>	<b>PLA Army</b>	<b>PLA Army</b>
<b>71st Group Army*</b>	<b>74th Group Army</b>	<b>76th Group Army</b>
Up to 6 Combined Arms Brigades (Bdes) Artillery Bde† Air Defense Bde Special Operations Bde Army Aviation Bde	Up to 6 Combined Arms Bdes Artillery Bde† Air Defense Bde Special Operations Bde Army Aviation Bde	Up to 6 Combined Arms Bdes Artillery Bde Air Defense Bde Special Operations Bde Army Aviation Bde
<b>72nd Group Army</b>	<b>75th Group Army</b>	<b>77th Group Army</b>
Up to 6 Combined Arms Bdes Artillery Bde† Air Defense Bde Special Operations Bde Army Aviation Bde	Up to 6 Combined Arms Bdes Artillery Bde† Air Defense Bde Special Operations Bde Army Aviation Bde	Up to 6 Combined Arms Bde Artillery Bde Air Defense Bde Special Operations Bde Army Aviation Bde
<b>73rd Group Army</b>	<b>PLA Navy</b>	<b>Tibet Military District</b>
Up to 6 Combined Arms Bdes Artillery Bde† Air Defense Bde Special Operations Bde Army Aviation Bde	<b>South Sea Fleet</b>	Mechanized Infantry Bde 2 Mountain Infantry Bdes Artillery Bde† Air Defense Bde Special Operations Bde 2 Army Aviation Detachments from 77th Group Army
<b>PLA Navy</b>	<b>8 Naval Aviation Bdes</b>	<b>Xinjiang Military District</b>
<b>East Sea Fleet</b>	<b>2 Frigate Squadrons</b>	4 Infantry Divs
7 Naval Aviation Bdes	<b>2 Destroyer Flotillas</b>	Artillery Bde†
3 Frigate Squadrons	<b>Fastboat Flotilla</b>	Air Defense Bde
2 Destroyer Flotillas	<b>2 Submarine Flotillas</b>	Special Operations Bde
Landing Ship Flotilla	<b>Landing Ship Flotilla</b>	Army Aviation Bde
2 Submarine Flotillas	<b>2 Marine Bdes</b>	<b>PLA Air Force</b>
Fastboat Flotilla	<b>PLA Air Force</b>	<b>Western Theater Air Force</b>
<b>PLA Air Force</b>	<b>Southern Theater Air Force</b>	Fighter Div
<b>Eastern Theater Air Force</b>	4 Fighter/Attack Air Bdes	5 Fighter/Attack Air Bdes
9 Fighter/Attack Bdes	3 Fighter Divs	Specialized Air Div
Bomber Division (Div)	Specialized Air Div	Transport Div
Specialized Air Div	Bomber Div	SAM Bde
Specialized Air Bde	Transport Div	<b>PLA Rocket Force</b>
3 Surface-to-Air Missile (SAM) Bdes	SAM Bde	<b>64 Base</b>
Surface-to-Surface Missile (SSM) Air Bde	<b>PLA Rocket Force</b>	4 Missile Bdes
<b>PLA Rocket Force‡</b>	<b>62 Base</b>	
<b>61 Base</b>	5 Missile Bdes	
7 Missile Bdes	<b>63 Base</b>	
	5 Missile Bdes	

**Addendum III: PLA Organization of Theater Forces—Continued****NORTHERN THEATER COMMAND****PLA Army****78th Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**79th Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**80th Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**PLA Navy****North Sea Fleet§¶**

7 Naval Aviation Bdes  
 Liaoning Carrier Formation w/  
 2 Air Bdes assigned  
 3 Destroyer Flotillas  
 Motorized Infantry Bde  
 2 Submarine Flotillas  
 Fastboat Flotilla  
 Special Operations Regiment (Rgt)

**PLA Air Force****Northern Theater Air Force**

4 Fighter Divs  
 9 Air Bdes  
 Ground Attack Air Div  
 Specialized Air Div  
 2 SAM Bdes

**PLA Rocket Force****65 Base**

3 Missile Bdes

**CENTRAL THEATER COMMAND****PLA Army\*\*****81 Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**82 Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**83 Group Army**

Up to 6 Combined Arms Bdes  
 Artillery Bde†  
 Air Defense Bde  
 Special Operations Bde  
 Army Aviation Bde

**PLA Air Force****Central Theater Air Force**

Fighter Div  
 8 Fighter/Attack Air Bdes  
 2 Bomber Divs  
 Specialized Air Rgt  
 Transport Div  
 SAM Div  
 4 SAM Bdes  
 PLA Air Force Airborne Corps

**PLA Rocket Force****66 Base**

4 Missile Bdes

*Note:* The order of battle and theater structure presented in addenda I through III reflect Commission assessments based on available open-source information. It is necessarily partial, due to several factors, including: incomplete reporting on China's military modernization developments; uncertainties surrounding China's military reform and reorganization, which is only partially complete; and the general opacity surrounding China's military modernization and reforms. The Commission will continue to track these developments and provide periodic updates.

**Addendum III: PLA Organization of Theater Forces—Continued**

\* In addition to the ground units identified for the theater group army, each group army also has an engineering and chemical defense brigade, and a service support brigade.

† Long-range multiple rocket launcher systems have been reported in at least six group army artillery brigades, the artillery brigades in Xinjiang and Tibet Military districts, and an Eastern Theater Command Coastal Defense Brigade.

‡ Nuclear forces are subordinate to the Central Military Commission, not theater commands. PLA Rocket Force conventional missile forces likely coordinate their operations with the theater commands.

§ The Liaoning aircraft carrier formation and its aviation force are subordinate to the Central Military Commission.

¶ Early in 2017, the former 77th Motorized Infantry Brigade of the former 26th Group Army, stationed in Shandong in the Northern Theater Command, was reported to have been transferred to the Marines, but this has not been confirmed by official Chinese sources.

\*\* The Central Theater Command has troops that are not assigned to group armies. The 112th Mechanized Infantry Division is assigned to the Central Theater Command Army Headquarters. There are also two infantry divisions subordinate to the Beijing Garrison: one combat infantry division (with infantry, armored, and artillery regiments) and one guard division responsible for providing installation security at military facilities and performing military police-type functions in the city.

## ENDNOTES FOR SECTION 2

1. China's Ministry of Finance, *2017 Annual Central Budget Expenditures Table*, March 2017. Translation; Jane Perlez, "China to Raise Military Spending, but Less Than in Recent Years," *New York Times*, March 4, 2017; Tian Shaohui, "China to Raise 2017 Defense Budget by Around 7 Pct: Spokesperson," Xinhua, March 4, 2017; Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.
2. International Monetary Fund DataMapper, "Nominal GDP"; China's National People's Congress, *Full Text: Report on China's Central, Local Budgets (2017)*, March 5, 2017; Tian Shaohui, "China to Raise 2017 Defense Budget by Around 7 Pct: Spokesperson," Xinhua, March 4, 2017.
3. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 66.
4. Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.
5. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 77.
6. Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.
7. Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.
8. International Monetary Fund, "World Economic Outlook Database," April 2017, 3; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 207–208; Andrew S. Erickson and Adam P. Liff, "China's Military Spending Swells Again Despite Domestic Headwinds," *Wall Street Journal*, March 5, 2015.
9. International Monetary Fund, "World Economic Outlook Database," April 2017, 19; Andrew S. Erickson and Adam P. Liff, "Demystifying China's Defense Spending: Less Mysterious in the Aggregate," *China Quarterly* 216 (March 25, 2013): 808.
10. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 65.
11. World DataBank, "GDP Growth (Annual %)."
12. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 65.
13. Timothy R. Heath, "An Overview of China's National Strategy," in Joe McReynolds, ed., *China's Evolving Military Strategy*, Jamestown Foundation, April 2016, 23, 28–29; China's State Council Information Office, *China's Military Strategy*, May 2015. Translation; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 15, 81. Translation.
14. Joel Wuthnow and Phillip C. Saunders, "Chinese Military Reforms in the Age of Xi Jinping: Drivers, Challenges, and Implications," *Institute for National Strategic Studies*, March 2017, 36.
15. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 198. Translation.
16. Li Yan and Wang Jinfa, *Military-Civilian Fusion Grand Strategy*, National Defense University Press, October 2009, 244–296. Translation; Wei Fenghe, "Our Mission Is Weightier than Tai Shan, Our Struggle Achieves Excellence," in *Glorious Era: Looking Back on Second Artillery's Development and Advances in the Period of Reform and Opening*, Zhongyang Wenxian Press, 2008, 493–500. Translation; U.S. Office of Naval Intelligence, *China's Navy 2007*, August 2007, 9.
17. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 328; Phillip C. Saunders and John Chen, "Is the Chinese Army the Real Winner in PLA Reforms?" *Joint Force Quarterly*, October 1, 2016, 46; Liao Keduo, "Push Forward the Effective Endeavor of the PLA Army's Force Transformation Building," *PLA Daily*, August 23, 2016. Translation; Wang Xueping, "Where Should We Devote Efforts to in Our Endeavor to Build New-Type Army," *PLA Daily*, April 12, 2016. Translation; Michael S. Chase and Christina Garafola, "China's Search for a 'Strategic Air Force,'" *China Brief*, October 2, 2015; China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 209, 223. Translation.
18. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 23, 27, 30, 79, 80; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 2, 8, 9, 32; U.S. Department of Defense, *Directory of PRC Military Personalities*, March 2016, 168–178.

19. Dennis J. Blasko, "PLA Army Group Reorganization: An Initial Analysis," Ash-tree Analytics, October 2017; *China Navy*, "Wuhu Warship Enters PLA Navy's Order of Battle," June 29, 2017. Translation; Andrew Tate, "Another Jiangkai II-Class Frigate Enters Service with the Chinese Navy," *IHS Jane's Defense Weekly*, June 26, 2017; Dennis J. Blasko, "Recent Developments in the Chinese Army's Helicopter Force," *China Brief*, June 9, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 93–95; *China Military*, "PLA Navy's New Frigate Liupanshui Joins Nanhai Fleet," April 1, 2017; Zhang Gang and Li Hao, "New-Type Guided Missile Destroyer Formally Enters Navy Order of Battle," *China's Ministry of Defense*, January 22, 2017. Translation; *China Navy*, "New-Type Guided-Missile Frigate Ezhou Enters Order of Battle," January 19, 2017. Translation; *China Military*, "China Commissions New Guided-Missile Frigate Binzhou," December 30, 2016; *China Military*, "China Commissions a New Guided-Missile Frigate," December 30, 2016; *China Military*, "East China Sea Fleet Welcomes Two New Frigates," December 12, 2016.

20. Dennis J. Blasko, "PLA Army Group Reorganization: An Initial Analysis," Ash-tree Analytics, October 2017; Mark Stokes, "The PLA Rocket Force: Joint Missile Operations in the Western Pacific," Jamestown Foundation Seventh Annual China Defense & Security Conference, Washington, DC, October 11, 2017; Dennis Blasko, former military attaché in China, interview with Commission staff, September 22, 2017; Lawrence S. Trevethan, independent consultant with extensive knowledge of China's aerospace capabilities, interview with Commission staff, September 22, 2017; Kenneth W. Allen, Research Director, China Aerospace Studies Institute, interview with Commission staff, September 1, 2017; Dennis J. Blasko, "Recent Developments in the Chinese Army's Helicopter Force," *China Brief*, June 9, 2017; U.S. Department of Defense, *Directory of PRC Military Personalities*, March 2016, 43–50, 67–75, 115–121, 168–178.

21. Xinhua, "Central Military Commission's Opinions on Deepening Reforms of National Defense and Armed Forces," January 1, 2016. Translation.

22. Phillip C. Saunders and John Chen, "Is the Chinese Army the Real Winner in PLA Reforms?" *Joint Force Quarterly*, October 1, 2016, 46; Liao Keduo, "Push Forward the Effective Endeavor of the PLA Army's Force Transformation Building," *PLA Daily*, August 23, 2016. Translation; Qian Xiaohu and Hu Yu, "Aerial Cavalry Propels a New Leap in the Army's Strategic Transformation," *PLA Daily*, August 4, 2016. Translation; *Wen Wei Po*, "By Mightily Staying at Low Altitudes, Army Aviation Force Is a Powerful Weapon for In-Depth Mobile Operations," February 25, 2011. Translation.

23. Dennis J. Blasko, "Recent Developments in the Chinese Army's Helicopter Force," *China Brief*, June 9, 2017.

24. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 33.

25. Hou Jianzhi, "Z-19 Attack Helicopters Carry out Maritime Flight Training," *China Military Online*, July 14, 2017; Franz-Stefan Gady, "China's New Attack Helicopter Makes Maiden Flight," *Diplomat*, May 22, 2017; Gabriel Dominguez, "China's Military Says All Army Aviation Units Now Equipped with WZ-10 Attack Helicopters," *Jane's 360*, September 9, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 33.

26. Liu Peifeng et al., "Xinjiang Military District Army Aviation Brigade Conducts Joint Service Operations Training," *Renmin Wang*, June 28, 2017. Translation; Qian Xiaohu and Hu Yu, "Aerial Cavalry Propels a New Leap in the Army's Strategic Transformation," *People's Daily*, August 4, 2016. Translation; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 34.

27. Xinhua, "Xi Jinping Inspects Headquarters of PLA Army on Eve of Army Day," July 27, 2016. Translation; Yang Dexin and Wang Chao, "Build an Armament System That Meets the Needs of the New-Type Army," *China Military Online*, March 29, 2016. Translation.

28. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 22.

29. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 81.

30. Qian Xiaohu and Li Dayong, "China's Digitized Units Display Their Ability for the First Time," *PLA Daily*, May 21, 2017. Translation.

31. Dennis J. Blasko, "SOF a Priority in China," *Cipher Brief*, March 15, 2017.

32. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 60; U.S.

- Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 2.
33. China's State Council Information Office, *China's Military Strategy*, May 2015.
34. China's State Council Information Office, *China's Military Strategy*, May 2015.
35. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 25–26.
36. House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, *Hearing on Checking China's Maritime Push*, written testimony of Dean Cheng, February 28, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 25–28.
37. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 265; Koh Swee Lean Colin, "China's Aircraft Carrier Ambitions," *Diplomat*, January 18, 2016.
38. Koh Swee Lean Colin, "China's Aircraft Carrier Ambitions," *Diplomat*, January 18, 2016.
39. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 7, 2015, 11.
40. *Economist*, "China's First Aircraft-Carrier Bares Its Teeth," January 19, 2017; Kyle Mizokami, "China Wants Aircraft Carrier Battle Groups to Defend Its Maritime Turf," *Popular Mechanics*, March 3, 2016; Andrew Scobell, Michael McMahon, and Cortez A. Cooper III, "China's Aircraft Carrier Program: Drivers, Developments, Implications," *Naval War College Review* 68:4 (Autumn 2015): 65–66; Daniel J. Kosteka, "From the Sea: PLA Doctrine and the Employment of Sea-Based Airpower," *U.S. Naval War College Review* 64:3 (Summer 2011): 11.
41. Feng, "Naval Aviation," *China Air and Naval Power*, January 7, 2017; Xinhua, "China Aircraft Carrier Conducts Drill in S. China Sea," January 3, 2017; Ankit Panda, "Power Plays across the First Island Chain: China's Lone Carrier Group Has a Busy December," *Diplomat*, December 27, 2016.
42. Ben Bland, "Chinese Aircraft Carrier Visits Hong Kong in Show of Force," *Financial Times*, July 6, 2017; *Japan Times*, "MSDF Spots China's First Aircraft Carrier Sailing into the Pacific," December 25, 2016.
43. Violet Law, "China's Liaoning Aircraft Carrier Conducts First Live-Fire Drill as Beijing Shows off Military Might," *South China Morning Post*, December 16, 2016.
44. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26.
45. Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," *Congressional Research Service*, September, 2017, 19; Wendell Minnick, "Chinese Carrier's Purported Air Wing Deemed Plausible but Limited," *Defense News*, September 7, 2014.
46. Center for Strategic and International Studies China Power, "What Do We Know (So Far) about China's Second Aircraft Carrier?" April 22, 2017; Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," *Congressional Research Service*, September 18, 2017, 19; Chris Buckley, "China, Sending a Signal, Launches a Home-Built Aircraft Carrier," *New York Times*, April 26, 2017.
47. China Global Television Network, "China's First Domestically-Built Aircraft Carrier Type 001A Hits the Water," *YouTube*, April 25, 2017; Center for Strategic and International Studies China Power, "What Do We Know (So Far) about China's Second Aircraft Carrier?" April 22, 2017.
48. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26.
49. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25–26.
50. Andrew Tate, "China Launches Fifth LPD for PLAN," *IHS Jane's Defense Weekly*, June 16, 2017.
51. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26.
52. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 7, 2015, 10.
53. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25–26.
54. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26.
55. Minnie Chan, "China Building Navy's Biggest Amphibious Assault Vessel, Sources Say," *South China Morning Post*, March 30, 2017.

56. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 15.
57. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 26.
58. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25.
59. Andrew Tate, "China's North Sea Fleet Receives First Type 052D Destroyer," *IHS Jane's Defense Weekly*, January 23, 2017.
60. Mike Yeo, "China Launches Its Most Advanced Homegrown Class of Guided-Missile Destroyers," *Defense News*, June 28, 2017; Jeffrey Lin and P.W. Singer, "China Launches Asia's Biggest Post-WWII Warship," *Eastern Arsenal*, June 28, 2017; Reuters, "China Launches New Class of Naval Destroyer," June 28, 2017.
61. Andrew Tate, "Chinese Navy Commissions 25th Jiangkai II-class Frigate," *IHS Jane's Defense Weekly*, June 30, 2017; China Navy Online, "Wuhu Warship Enters PLA Navy's Order of Battle," June 29, 2017. Translation; Andrew Tate, "Another Jiangkai II-Class Frigate Enters Service with the Chinese Navy," *IHS Jane's Defense Weekly*, June 26, 2017; China Military Online, "China Commissions New Guided-Missile Frigate Binzhou," December 30, 2016; Ridzwan Rahmat, "China Commissions 23rd Type 054A Frigate into East Sea Fleet," *IHS Jane's Navy International*, December 30, 2016.
62. Andrew Tate, "China's Liaoning Carrier Group Ventures into West Pacific for First Time," *IHS Jane's Defense Weekly*, December 30, 2016.
63. Franz-Stefan Gady, "Chinese Navy Commissions Sub Killer Stealth Warship for Service in South Sea Fleet," *Diplomat*, April 6, 2017; *China Daily*, "New Vessel Beefs up PLA Navy Fleet," January 22, 2017; China Military Online, "China Commissions a New Guided-Missile Frigate," December 30, 2016; China Military Online, "China Commissions New Guided-Missile Frigate Binzhou," December 30, 2016; Ridzwan Rahmat, "China Commissions 23rd Type 054A Frigate into East Sea Fleet," *IHS Jane's Navy International*, December 30, 2016; China Military Online, "East China Sea Fleet Welcomes Two New Frigates," December 12, 2016.
64. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25.
65. U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 17.
66. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24–25; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 16.
67. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24.
68. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, May 13, 2016, 26; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 15.
69. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24.
70. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24.
71. U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 19.
72. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24.
73. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24.
74. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 24; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 9, 2015, 19–20.
75. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28.
76. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28–29.

77. Xinhua, "China Aircraft Carrier Conducts Drill in South China Sea," January 4, 2017.
78. Xinhua, "China Aircraft Carrier Conducts Drill in South China Sea," January 4, 2017; Ankit Panda, "Power Plays across the First Island Chain: China's Lone Carrier Group Has a Busy December," *Diplomat*, December 27, 2016.
79. Jeffrey Lin and P.W. Singer, "China's New Aircraft Carrier Suggests a Powerful Navy in the Works," *Popular Science*, April 27, 2017.
80. Xinhua, "China-Made Large Amphibious Aircraft Finishes 1st Glide Test," April 29, 2017; Franz-Stefan Gady, "Maiden Flight of China-Built World's Largest Amphibious Aircraft Set for May," *Diplomat*, March 31, 2017.
81. Xinhua, "China-Made Large Amphibious Aircraft Finishes 1st Glide Test," April 29, 2017; Franz-Stefan Gady, "Will This Plane Let China Control the South China Sea?" *Diplomat*, April 7, 2015; Wendell Minnick, "Seaplane Could Advance Chinese SCS Claims," *Defense News*, March 28, 2015; Jeffrey Lin and P.W. Singer, "China Is Building the World's Largest Sea Plane," *Popular Science*, July 29, 2014.
82. Xinhua, "China-Made Large Amphibious Aircraft Finishes 1st Glide Test," April 29, 2017; Jeffrey Lin and P.W. Singer, "China Is Building the World's Largest Sea Plane," *Popular Science*, July 29, 2014.
83. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 222. Translation.
84. Christina L. Garafola, "The Evolution of PLAAF Missions, Roles, and Requirements," in Joe McReynolds, ed., *China's Evolving Military Strategy*, Jamestown Foundation, April 2016, 83; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 109. Translation.
85. Michael S. Chase and Christina Garafola, "China's Search for a 'Strategic Air Force,'" *China Brief*, October 2, 2015.
86. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 30; Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 16, 104, 110.
87. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 51–52, 71.
88. Mike Yeo, "China Receives First Advanced Su–35 Flankers from Russia," *Defense News*, January 9, 2017.
89. Jesse Sloman and Lauren Dickey, "Why China's Air Force Needs Russia's Su–35," *Diplomat*, June 1, 2015; Rostec, "Sukhoi Su–35S: Capabilities out of This World," *Defense-Aerospace.com*, October 30, 2014; Peter Wood, "Why China Wants the Su–35," *China Brief*, October 10, 2013.
90. Peter Wood, "Why China Wants the Su–35," *China Brief*, October 10, 2013.
91. Huang Panyue, "Russia to Deliver 10 Su–35 Fighter Jets to China This Year," *China Military Online*, February 4, 2017; Mike Yeo, "China Receives First Advanced Su–35 Flankers from Russia," *Defense News*, January 9, 2017.
92. Jeffrey Lin and P.W. Singer, "China's J–31 Stealth Fighter Gets an Improved Prototype—and a Potential Future on a Carrier," *Popular Science*, May 1, 2017.
93. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 51–52.
94. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 52.
95. Brad Lendon, "China's New J–20 Stealth Fighter Screams on to Scene," *CNN*, November 1, 2016.
96. Dave Majumdar, "America's F–22 Raptor vs. China's Stealth J–20: Who Wins?" *National Interest*, September 10, 2015.
97. Reuben F. Johnson, "Chengdu J–20 Has 'Entered Service', Claims Chinese Media," *IHS Jane's*, March 16, 2017.
98. China's Ministry of National Defense, *September 2017 Ministry of National Defense Regular Press Conference Transcript*, September 28, 2017. Translation.
99. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 51.
100. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28.
101. Richard D. Fisher, Jr., "China's H–6K Bomber Shows New Strike Capabilities," *IHS Jane's*, January 9, 2017.
102. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28.

103. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 61.
104. Feng, "Thoughts On the So-Called H-20 Bomber," *China Air and Naval Power*, September 12, 2016; Franz-Stefan Gady, "China Confirms Development of New Long-Range Bomber," *Diplomat*, September 7, 2016; *IHS Jane's*, "Sentinel Security Assessment: China and Northeast Asia, Procurement," December 16, 2015, 25; Zhao Lei, "Long-Range Bomber May Be in China's Plans," *China Daily*, July 7, 2015.
105. Michael Pilger, "First Modern Tanker Observed at Chinese Airbase," *U.S.-China Economic and Security Review Commission*, November 18, 2014, 1.
106. China Defense Today, "PLA's Aerial Refueling Tanker Fleet," January 7, 2017.
107. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 54; Jeffrey Lin and P.W. Singer, "The World's Largest Military Plane in Production Is China's Y-20," *Popular Science*, June 20, 2016.
108. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 312–313.
109. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 29.
110. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 29.
111. Jeffrey Lin and P.W. Singer, "The World's Largest Military Plane in Production Is China's Y-20," *Popular Science*, June 20, 2016.
112. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 266.
113. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 266; Yuan Can, "China's Y-20 to Be Put into Military Use in 2016, Experts Say," *People's Daily*, February 29, 2016; U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 312.
114. Wendell Minnick, "China Reports Y-20 Aircraft IOC in 2017," *Defense News*, March 1, 2016.
115. Jeffrey Lin and P.W. Singer, "China Will Resurrect the World's Largest Cargo Plane," *Popular Science*, September 7, 2016.
116. Gareth Jennings, "China and Ukraine Agree to Restart An-225 Production," *IHS Jane's*, August 31, 2016.
117. Gareth Jennings, "China and Ukraine Agree to Restart An-225 Production," *IHS Jane's*, August 31, 2016.
118. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 29.
119. Sergey Sukhankin, "Russia Sells S-400 Complexes to China: Smart Move or a Mixed Blessing?" *China Brief*, February 24, 2017.
120. Sergey Sukhankin, "Russia Sells S-400 Complexes to China: Smart Move or a Mixed Blessing?" *China Brief*, February 24, 2017; Jeffrey Lin and P.W. Singer, "China Signs Huge Arms Deal with Russia, Buys World's Best Missile," *Popular Science*, April 24, 2015.
121. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 50.
122. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28.
123. Zhang Tao, "Expert: KJ-500 Improves China's Overall Military Power," China Military Online, February 16, 2016; Franz-Stefan Gady, "Meet China's New Submarine Hunter Plane," *Diplomat*, June 30, 2015; U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 14, 2014, 313–314.
124. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 52; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa B. Kania, February 23, 2017; Jeffrey Lin and P.W. Singer, "A Closer Look at China's Divine Eagle Drone," *Popular Science*, July 10, 2015.
125. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 52.
126. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 228. Translation.
127. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 22, 25; Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the

Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 20.

128. China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 232–233. Translation.

129. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 348; Michael S. Chase and Andrew S. Erickson, "The Conventional Missile Capabilities of China's Second Artillery Force: Cornerstone of Deterrence and Warfighting," *Asian Security* 8:2 (July 12, 2012): 115.

130. U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31–32; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 353–357, 372–373.

131. Douglas Barrie and Tom Waldwyn, "National Air and Space Intelligence Center 2017 Report Suggests Service Entries, Missile Modifications and New Nomenclature," *International Institute for Strategic Studies*, June 28, 2017; U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, June 2017, 19, 21.

132. Zhao Lei, "PLA Drill Features Advanced Missile," *China Daily*, February 6, 2017.

133. U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31, 33; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 346–347, 372.

134. U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, 2017, 3, 27; U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31.

135. U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, 2017, 3, 23; U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31, 49, 55.

136. U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 49, 55.

137. U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, June 2017, 27; U.S. Department of Defense, *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31, 60.

138. U.S. Senate Armed Services Committee, *Hearing on Worldwide Threat Assessment*, testimony of Lt. Gen. Vincent R. Stewart, May 23, 2017.

139. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 341, 359–360; M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security* 35:2 (Fall 2010): 57–66.

140. Jordan Wilson, "China's Expanding Ability to Conduct Conventional Missile Strikes on Guam," *U.S.-China Economic and Security Review Commission*, May 10, 2016, 4–5, 7.

141. U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, June 2017, 22; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 338–339; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 34; U.S.-China Economic and Security Review Commission, *Hearing on China's Offensive Missile Forces*, written testimony of Mark Stokes, April 1, 2015; Mark A. Stokes, "The Chinese Joint Aerospace Campaign: Strategy, Doctrine, and Force Modernization," in James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army*, CNA, 2005, 244.

142. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 339; U.S.-China Economic and Security Review Commission, *Hearing on China's Offensive Missile Forces*, written testimony of Mark Stokes, April 1, 2015.

143. Xinhua, "Ceremony for Establishment of the Army Headquarters, Rocket Force, and Strategic Support Force Held in Beijing. Xi Jinping Presents Military Flags and Gives Orders to Chinese People's Liberation Army, Rocket Force, and Strategic Support Force," January 1, 2016. Translation.

144. Peter Mattis, "China Reorients Strategic Military Intelligence," *IHS Jane's*, March 3, 2017, 3; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 291.
145. Lincoln Davidson, "China's Strategic Support Force: The New Home of the PLA's Cyber Operations," *Council on Foreign Relations*, January 20, 2016.
146. John Costello, "The Strategic Support Force: Update and Overview," *China Brief*, December 21, 2016.
147. Zou Weirong and Zong Zhaodun, "Forge the New-Type Combat Forces into a Sharp Knife and an Iron Fist," *PLA Daily*, June 5, 2017; Ni Guanghui, "Revealing Secrets about Our Military's First Strategic Support Force," *People's Daily*, January 24, 2016. Translation; China Military Online, "Expert: PLA Strategic Support Force a Key Force to Win Wars," January 6, 2016.
148. John Costello, "The Strategic Support Force: Update and Overview," *China Brief*, December 21, 2016.
149. Dean Cheng, *Cyber Dragon: Inside China's Information Warfare and Cyber Operations*, Praeger, 2017, 99.
150. Cyberspace Administration of China and China's Ministry of Foreign Affairs, *International Strategy of Cooperation on Cyberspace*, March 1, 2017.
151. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 58–59.
152. Benjamin Frohman and Daniel Gearin, "China's Strategic Support Force: Seeking Dominance in the 'High' and 'New Frontiers' of National Security," National Bureau of Asian Research, Strategic Studies Institute of the U.S. Army War College, U.S. Pacific Command, and Department of the Army Conference on the PLA, Carlisle, Pennsylvania, October 21–23, 2016, 7. Conference draft. Forthcoming.
153. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 34; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 282–283.
154. Xinhua, "China's Hi-Res SAR Imaging Satellite Put into Use," January 23, 2017.
155. Xinhua, "China Launches Remote-Sensing Micro-Nano Satellites," June 15, 2017.
156. Xinhua, "China's First High Orbit Remote Sensing Satellite Put into Use," June 13, 2016.
157. Tomasz Nowakowski, "China Conducts Surprise Launch of Second Shijian-16 Satellite," *Spaceflight Insider*, June 30, 2016; Xinhua, "China Launches Yaogan-30 Remote Sensing Satellite," May 15, 2016.
158. Xinhua, "China Launches 23rd Beidou Navigation Satellite," June 13, 2016.
159. Xinhua, "China to Launch 30 Beidou Navigation Satellites in Next 5 Years," May 19, 2016.
160. BBC, "China Launches Quantum-Enabled Satellite Micius," August 16, 2016; Yu Dawei, "In China, Quantum Communications Comes of Age," *Caixin*, February 6, 2015; Stephen Chen, "China to Launch Hack-Proof Communication Network in 2016," *South China Morning Post*, November 4, 2014.
161. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 292–294.
162. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.
163. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
164. U.S. Department of Defense, *Annual Report to Congress on the Military Power of the People's Republic of China*, July 2005, 35.
165. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 298.
166. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 297; U.S. Department of Defense and U.S. Department of State, *Risk Assessment of United States Space Export Control Policy*, March 2012, section 4.3; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011*, 2011, 37; U.S. Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2007*, 2007, 21.
167. Elsa Kania, "PLA Strategic Support Force: The 'Information Umbrella' for China's Military," *Diplomat*, April 1, 2017; Elsa Kania and John Costello, "China's Quest for Informatization Drives PLA Reforms," *Diplomat*, March 4, 2017.
168. Zhang Zhanjun, "The New Trend of Maritime Informatized Local Warfare," *PLA Daily*, July 25, 2017; *PLA Daily*, "The Three Services Advance Exercises with Troops in Down-To-Earth Manner," September 12, 2012; Zhang Zhaoyin, "Make Ceaseless

Efforts to Strengthen Core Military Capacity Building—Important Experience from 30 Years of Reform, Opening Up,” *PLA Daily*, December 2, 2008. Translation; Chen Bingde, “Accelerate the Transformation of New Type Weapons and Equipment into Combat Power through Systematic Development and Scientific Guidance,” *Zhongguo Junshi Kexue*, February 20, 2001. Translation; Chen Jie and Jun Feng, “Modernization Represents a Choice that We Must Make,” *PLA Daily*, October 20, 2000. Translation.

169. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 49–52.

170. Michael S. Chase, Cristina L. Garafola, and Nathan Beauchamp-Mustafaga, “Chinese Perceptions of and Responses to US Conventional Military Power,” *Asian Security*, March 23, 2017, 8.

171. Phillip C. Saunders and John Chen, “Is the Chinese Army the Real Winner in PLA Reforms?” *Joint Force Quarterly*, October 1, 2016, 46; Liao Keduo, “Push Forward the Effective Endeavor of the PLA Army’s Force Transformation Building,” *PLA Daily*, August 23, 2016. Translation; Qian Xiaohu and Hu Yu, “Aerial Cavalry Propels a New Leap in the Army’s Strategic Transformation,” *PLA Daily*, August 4, 2016. Translation; *Wen Wei Po*, “By Mightily Staying at Low Altitudes, Army Aviation Force Is a Powerful Weapon for In-Depth Mobile Operations,” February 25, 2011. Translation.

172. Wang Xueping, “Where Should We Devote Efforts to in Our Endeavor to Build New-Type Army?” *PLA Daily*, April 12, 2016. Translation.

173. Wang Xueping, “Where Should We Devote Efforts to in Our Endeavor to Build New-Type Army?” *PLA Daily*, April 12, 2016. Translation.

174. Lu Zhisheng, “Make Giant Strides into the New Epoch of All-Areas Operations - Some Thoughts on the Transformation of the New-Type Army’s Military Operations,” *PLA Daily*, September 14, 2017. Translation; U.S.-China Economic and Security Review Commission, Chapter 2, Section 2, “Developments in China’s Military Expeditionary and Force Projection Capabilities,” in *2016 Annual Report to Congress*, November 2016, 275.

175. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 275.

176. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 24–26; China’s State Council Information Office, *China’s Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 212–213. Translation.

177. Zhang Zhanjun, “The New Trend of Maritime Informatized Local Warfare,” *PLA Daily*, July 25, 2017. Translation; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 24–28; House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, *Hearing on Checking China’s Maritime Push*, written testimony of Dean Cheng, February 28, 2017, 5–6; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 214. Translation.

178. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 214. Translation.

179. Michael McDevitt, “China’s Far Sea’s Navy: The Implications of the ‘Open Seas Protection’ Mission,” *CNA*, April 2016, 15.

180. Guo Hongbo, et al., “Description and Commentary on Air Force Units’ All-Out Effort in Strong Armed Forces Reform and Accelerating the Strategic Transformation,” *PLA Daily*, May 4, 2017. Translation.

181. Nathan Beauchamp-Mustafaga, Derek Grosseman, and Long Ma, “Chinese Bomber Flights Around Taiwan: For What Purpose?” *War on the Rocks*, September 13, 2017; Jesse Johnson, “Chinese Air Force Conducts ‘Several’ Long-range Drills near Japan as Military Tells Tokyo to ‘Get Used to It,’” *Japan Times*, July 16, 2017; Kyle Mizokami, “China’s Air Forces Are Venturing Further into the Pacific than Ever Before,” *Popular Mechanics*, September 16, 2016; Ankit Panda, “China’s Air Force Conducts Exercise between Taiwan and the Philippines,” *Diplomat*, March 31, 2015.

182. Michael S. Chase, Cristina L. Garafola, and Nathan Beauchamp-Mustafaga, “Chinese Perceptions of and Responses to US Conventional Military Power,” *Asian Security* (March 23, 2017): 8; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 54.

183. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 22–25; China’s State Council Information Office, *China’s Military Strategy*, May 2015. Translation; Michael S. Chase et al., “China’s Incomplete Military Transformation: Assessing the Weaknesses of the People’s Liberation Army (PLA),” *RAND Corpora-*

tion (prepared for the U.S.-China Economic and Security Review Commission), 2015, 20; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 232–233. Translation.

184. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 341, 359–360; M. Taylor Fravel and Evan S. Medeiros, “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure,” *International Security* 35:2 (Fall 2010): 57–66.

185. Michael S. Chase, “PLA Rocket Force: Executors of China’s Nuclear Strategy and Policy,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, April 2016, 152; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 233. Translation.

186. Michael S. Chase, “PLA Rocket Force: Executors of China’s Nuclear Strategy and Policy,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, April 2016, 152–153.

187. U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, June 2017, 22; Jordan Wilson, “China’s Expanding Ability to Conduct Conventional Missile Strikes on Guam,” *U.S.-China Economic and Security Review Commission*, May 10, 2016, 4–5, 7; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 338–339; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2015*, April 2015, 34; U.S.-China Economic and Security Review Commission, *Hearing on China’s Offensive Missile Forces*, written testimony of Mark Stokes, April 1, 2015; Mark A. Stokes, “The Chinese Joint Aerospace Campaign: Strategy, Doctrine, and Force Modernization,” in James Mulvenon and David Finkelstein, eds., “China’s Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People’s Liberation Army,” *CNA*, 2005, 244.

188. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2014*, April 24, 2014, 31.

189. John Costello, “The Strategic Support Force: Update and Overview,” *China Brief*, December 21, 2016; Ni Guanghui, “Revealing Secrets about Our Military’s First Strategic Support Force,” *People’s Daily*, January 24, 2016. Translation; China Military Online, “Expert: PLA Strategic Support Force a Key Force to Win Wars,” January 6, 2016; Zou Weirong and Zong Zhaodun, “Forge the New-Type Combat Forces into a Sharp Knife and an Iron Fist,” *PLA Daily*, June 5, 2017.

190. Peter Mattis, “China Reorients Strategic Military Intelligence,” *IHS Jane’s*, March 3, 2017, 3; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 291; Lincoln Davidson, “China’s Strategic Support Force: The New Home of the PLA’s Cyber Operations,” *Council on Foreign Relations*, January 20, 2016.

191. House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, *Hearing on Checking China’s Maritime Push*, written testimony of Dean Cheng, February 28, 2017, 5.

192. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, oral testimony of James E. Fanell, April 13, 2017.

### **SECTION 3: HOTSPOTS ALONG CHINA'S MARITIME PERIPHERY**

#### **Key Findings**

- U.S. presence and alliance commitments have helped maintain regional stability in Asia. China's aggressive actions in the East China Sea, South China Sea, and Taiwan Strait threaten principles such as freedom of navigation, the use of international law to settle disputes, and free trade. If Beijing continues to increase its control over the East and South China seas, the United States could receive requests for additional assistance by allies, friends, and partners to improve their capabilities to defend themselves, along with calls for the United States to remain engaged in the region to maintain security and stability.
- With China actively preparing contingency plans for operations against U.S. allies, friends, and partners along China's maritime periphery, the United States and China could quickly become involved in a conflict if Beijing escalates. This risk becomes greater depending on the level of tensions associated with any of the following flashpoints: the Korean Peninsula, the South China Sea, the East China Sea, and cross-Strait relations.
- Chinese leaders are cautious about letting a crisis escalate into conflict, and Chinese military thinkers study "war control" as a method for limiting the scope of a conflict to minimize negative consequences and achieve a victory at minimal cost. However, if Beijing believes the risk of a response to Chinese action is low, China may be tempted to risk brinkmanship to achieve its national objectives. Furthermore, if Beijing is unable to avoid escalation, any crises involving the use of the People's Liberation Army (PLA) create opportunities to widen a crisis into a conflict that results in the use of force.
- China has emphasized building a military capable of responding to situations in multiple regions and has developed theater commands capable of planning and executing missions in their respective areas of responsibility. A key element of success in achieving operational objectives, however, will be managing resources across multiple theaters should China find itself challenged in multiple directions simultaneously. This could create an opportunity to dissuade Chinese aggression or potentially result in Beijing escalating or accelerating a conflict.

- The PLA presently lacks the amphibious lift to directly assault Taiwan, and would instead have to successfully seize ports and airfields for the flow of follow-on forces to conduct on-island operations. Likewise, sustaining a prolonged air and maritime blockade against Taiwan is likely to strain PLA logistical capabilities, potentially disrupt trade routes through East Asia, and inhibit freedom of navigation in the region. These are high-risk operations for China, and may be conducted only after other coercive options are exhausted.
- Military facilities currently under construction in the Spratly Islands are intended to improve the PLA's operational reach by strengthening logistical support, extending operational reach, and bolstering the military's capability to monitor potential adversaries. Once these outposts are completed, they will improve the PLA's ability to take action against Vietnamese or Filipino forces on adjacent features if so ordered. China's militarization of these features is therefore inherently destabilizing for its neighbors who have overlapping sovereignty claims.
- There are several U.S. alliances and other commitments that could be activated by a maritime hotspot conflict with Japan, the Philippines, or Taiwan. Depending on the scenario, the United States could be expected to become involved in a conflict, although China will seek to discourage this by many means, possibly to include ensuring conflict remains in the "grey zone" where U.S. defense commitments are uncertain and the onus of escalation is shifted to China's adversary.
- The forward presence of U.S. forces in East Asia, coupled with the treaty alliances and partnerships of the United States in the region, constitute the most important factor in deterring Chinese adventurism. Nevertheless, they also increase the likelihood, should deterrence fail, that the United States becomes involved in armed conflict. The Commission has documented in previous reports how the balance of military power in the region has shifted in China's direction. Should that shift continue without a change in U.S. policy, there is a danger that Chinese leaders will consider the United States an obstacle to their ambitions that must be removed. In that event, Beijing may decide to escalate a crisis when the circumstances seem favorable to the achievement of China's larger ambitions.

### **Recommendations**

The Commission recommends:

- Congress require the executive branch to develop a whole-of-government strategy for countering Chinese coercion activities in the Indo-Pacific coordinated through the National Security Council that utilizes diplomatic, informational, military, economic, financial, intelligence, and legal instruments of national power.

## Introduction

The East and South China seas are bordered by China and several U.S. allies,\* friends, and partners including the Philippines, Japan, Taiwan, and Vietnam. These waters contain many islands, rocks, and reefs, the ownership of which is disputed by these and other claimants. In the East China Sea, China views the Japan-administered Senkaku Islands as Chinese territory, and in the South China Sea, China insists the Spratly Islands—which contain features also claimed by Brunei, the Philippines, Malaysia, Taiwan, and Vietnam—and other island groups are Chinese territory as well. Although most of the land features in dispute are relatively small, some have the potential to generate large swaths of maritime sovereignty; some also have significant military and economic value. In the case of Taiwan, a U.S. security partner, China lays claim to the entire island in addition to smaller islands administered by the Taiwan government.

China considers these disputed areas “hotspots” for which the People’s Liberation Army (PLA) is actively preparing contingency† plans. As tensions over these hotspots escalate, the risk of an armed conflict between China and U.S. allies, friends, and partners in the Asia Pacific rises. Depending on the nature of a “hotspot” contingency, a military response by the United States could be warranted.

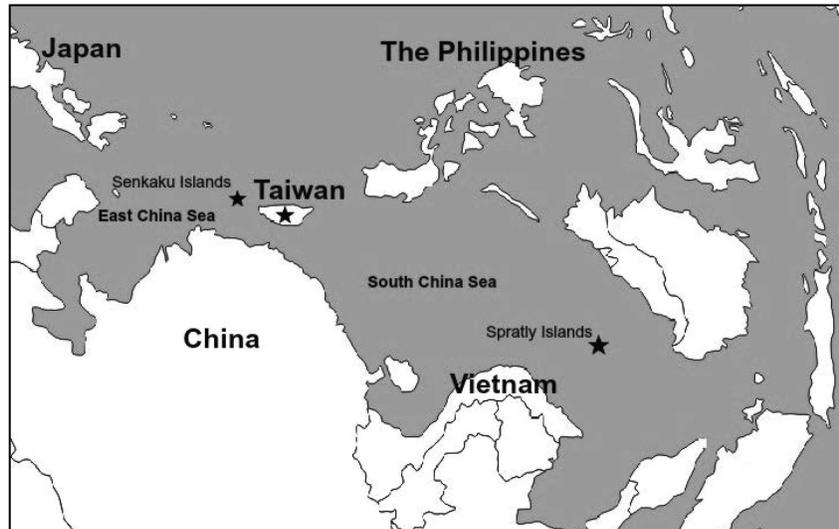
This section explores China’s threat perceptions related to its sovereignty claims in the East and South China seas and vis-à-vis Taiwan; how China plans to respond to perceived challenges to its claims; and the implications for the United States and U.S. allies, friends, and partners in the region should there be a conflict. It specifically discusses how the Chinese military thinks about conflict, crisis control, and military operations. This section is based on the Commission’s April 2017 hearing on the topic, the Commission’s May trip to Asia, unclassified statements by U.S. officials, and open source research and analysis.

---

\*The United States maintains five collective defense arrangements in the Asia Pacific, including the treaty agreement between the United States, Australia, and New Zealand; the mutual defense treaty with the Philippines; the treaty of mutual cooperation and security with Japan; the mutual defense treaty with the South Korea; and the Southeast Asia Treaty (also known as the Manila Pact), a collective defense arrangement encompassing Australia, France, New Zealand, the Philippines, Thailand, and the United Kingdom. Although the treaty’s founding organization, the Southeast Asia Treaty Organization, was dissolved in 1977, the collective defense arrangement remains in force. The treaty, along with the Thanat-Rusk communiqué of 1962 and the 2012 Joint Vision Statement for the Thai-U.S. Defense Alliance, constitutes the basis of U.S. security commitments to Thailand. In 2003, the United States designated Thailand a Major Non-NATO Ally. U.S. Department of State, “U.S. Collective Defense Arrangements”; U.S. Department of State, “U.S. Relations with Thailand”; U.S. Department of State Office of the Historian, “Southeast Asia Treaty Organization (SEATO), 1954.”

†The U.S. Department of Defense defines a contingency as “a situation that likely would involve military forces in response to natural and man-made disasters, terrorists, subversives, military operations by foreign powers, or other situations.” Joint Chiefs of Staff, *JP-5-0 Joint Operation Planning*, August 11, 2011.

Figure 1: Map of Hotspots along China's Maritime Periphery



Source: Adapted from D-maps.com. [http://www.d-maps.com/carte.php?num\\_car=13354&lang=en](http://www.d-maps.com/carte.php?num_car=13354&lang=en).

## Security Environment

### *China's Security Assessment of Its Maritime Periphery*

China's senior leadership believes the first two decades of the 21st century are a "period of strategic opportunity" that provides China a chance to expand national power and achieve the "China Dream."<sup>\*1</sup> China's leaders see unification with Taiwan and control of disputed territory along China's maritime periphery as an important part of achieving this "China Dream."<sup>†2</sup> Furthermore, challenges in these areas are viewed by Beijing as threats to China's "core interests" emanating from multiple "strategic directions,"<sup>‡</sup> driving China's po-

<sup>\*</sup>In 2012, Chinese President and General Secretary of the Chinese Communist Party Xi Jinping began discussing the "China Dream," a concept regarding the rejuvenation of the Chinese people, the realization of China as a prosperous and strong state, a strong military, comprehensive national development, and a content population. Furthermore, as Chairman of Central Military Commission, President Xi said "a strong military is needed for the great renewal of the Chinese nation." Xinhua, "Speech by Xi Jinping, President of the People's Republic of China, at the Moscow State Institute of International Relations: 'Adapting to the Forward Momentum of the Times, Promoting World Peace and Development,'" March 23, 2013. Translation; Xinhua, "Profile: Xi Jinping: Pursuing Dream for 1.3 Billion Chinese," March 16, 2013; Xinhua, "Xi Pledges 'Great Renewal of Chinese Nation,'" November 29, 2012.

<sup>†</sup>The PLA's first mission is to protect Chinese Communist Party rule as an army of the party. Timothy R. Heath, "An Overview of China's National Strategy," in Joe McReynolds ed., *China's Evolving Military Strategy*, Jamestown Foundation, April 2016, 18; China's State Council Information Office, *China's Military Strategy*, May 2015.

<sup>‡</sup>According to *The Science of Military Strategy*, an authoritative book published by the PLA's Academy of Military Science, strategic directions are determined by "the strategic objective ... to be accomplished, the degree and direction of threat to oneself, the strategic intentions of both sides, and the strategic situation and geographical conditions." China's 2015 defense white paper, which outlines China's national military strategy, calls for the PLA to prepare to respond to crises in multiple domains and geographic regions simultaneously, indicating there are multiple strategic directions that would be assigned to the PLA's theater commands. However, while theater commands are likely assigned primary and secondary strategic directions, Taiwan remains the primary strategic direction at the national level. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Luo Derong, "The Action Guideline for Armed Forces Building and Military Struggle Preparations - Several Points in the Understanding of the Military Strategic

litical and military leadership to plan for contingency operations for these hotspots.<sup>3</sup> These challenges are outlined in China's 2015 defense white paper, *China's Military Strategy*, which discusses threats to "national unification, territorial integrity," and disputed maritime claims in the South and East China seas.<sup>4</sup> Chinese leaders do not always accept the constraints of international law in defending their national objectives. For example, China frequently defines its "core interests" to include exercising sovereignty in parts of its maritime periphery which, under international law, other countries have legitimate competing or superior claims. For that reason, what China calls defense of its "core interests" is often a challenge to international norms or the rights of other countries. In addition to the use of deterrence to prevent challenges to Chinese interests, China employs coercion to prevent other countries from resisting Chinese encroachment, using its growing military and non-military power to intimidate countries so that they do not assert, or do not defend, their rights.

#### *Territorial Integrity and Unification*

According to the 2015 defense white paper, "The Taiwan issue bears on China's reunification and long-term development, and reunification is an inevitable trend in the course of national rejuvenation."<sup>5</sup> China's long-term unification strategy, as the U.S. Department of Defense (DOD) observes, "incorporate[s] elements of both persuasion and coercion to hinder the development of political attitudes in Taiwan favoring independence."<sup>6</sup> Beijing has relied on coercion through military modernization efforts, maintaining forces within striking distance of Taipei, and holding Taiwan-focused military exercises to shape Taipei's behavior.<sup>7</sup> For example, the PLA Rocket Force maintains approximately 1,200 short-range ballistic missiles along the Taiwan Strait to strike key military and leadership sites; the PLA Air Force stations advanced fighters and surface-to-air missile systems within range of Taiwan airfields to achieve air superiority over the island; the PLA Navy continues to build and deploy multi-mission surface combatants to conduct sea superiority operations within the first island chain; and the PLA Army exercises for a Taiwan invasion.<sup>8</sup> Furthermore, China has been investing in upgrading the sensors for a range of air-, ship-, and shore-launched missiles, which are improving the precision strike capability of China's air, missile, and naval forces within the first island chain.<sup>9</sup> (See Chapter 2, Section 2, "China's Military Modernization in 2017," for more information on developments in Chinese military modernization, and Chapter 3, Section 3, "China and Taiwan," for the latest developments in China's persuasion and coercion efforts toward Taiwan.)

With Taiwan's 2016 election of President Tsai Ing-wen of the Democratic Progressive Party (which advocates greater autonomy from

Guideline in the New Situation," *China Military Science*, January 1, 2017, 88–96. Translation; China's Ministry of National Defense, *Official English Transcript of PRC National Defense Ministry's News Conference*, February 25, 2016; Xinhua, "PLA Theater Command Party Committees: Fundamentally Follow President Xi's Instructions to Build a Joint Operations Command System," February 3, 2016. Translation; Wang Hongguang, "Wang Hongguang: Decisively Setting East China Sea as Our Primary Strategic Direction," *Sohu Junshi*, March 2, 2016. Translation; China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 117. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 168.

mainland China),\* Beijing is concerned Taiwan will pursue independence.†<sup>10</sup> In a departure from her predecessor, President Tsai has refused to endorse what is known as the “1992 Consensus” a tacit understanding reached at a meeting between representatives of Taiwan and China in 1992 that there is only “one China” but that each side may maintain its own interpretation of the meaning of “one China.”<sup>11</sup> Beijing has used President Tsai’s refusal as justification to pursue a pressure campaign against Taipei, to include severing official cross-Strait communication channels, issuing informal sanctions against Taiwan by restricting the flow of mainland tourists to the island, and “poaching” Taiwan’s diplomatic partners.<sup>12</sup> As a result of Beijing’s approach to the Tsai Administration, cross-Strait tensions have been unusually high. According to Robert G. Sutter, professor of practice of international affairs at George Washington University, “It’s more likely that [Beijing and Taipei] won’t reach an understanding and that this will make the situation less certain and perhaps less stable, and [the United States] should be ready for that.”<sup>13</sup>

#### *Disputed Claims in the South China Sea*

Protecting territory claimed by China in the South China Sea has become an increasingly important mission for the PLA.<sup>14</sup> Chinese military scholars at China’s National Defense University and the Academy of Military Science argue that while China does not seek a conflict with the United States, “the South China Sea and the East China Sea are ... issues that must be settled in the course of China’s rise.”<sup>15</sup> Although China has used force to resolve disputes in the

\*Cross-Strait relations have shifted between periods of instability and stability depending in part on China’s perceptions of the political party in power in Taipei. In 1995–1996, China conducted a series of missile tests off the coast of Taiwan to intimidate Taiwan voters in the run-up to the island’s first presidential election. This event became known as the “1995–1996 Taiwan Strait Crisis.” In 2000, the Democratic Progressive Party (DPP) victory of Chen Shui-bian over the Kuomintang (KMT/Nationalist) candidate resulted in an eight-year period of tension across the Taiwan Strait, with Beijing fearing the DPP would pursue independence. This period resulted in increased PLA exercises focused on a Taiwan contingency, and Beijing’s passage of the Anti-Secession Law after President Chen won a second term. China-Taiwan political relations improved after the KMT’s victory over the DPP in Taiwan’s 2008 presidential election and under Taiwan President Ma Ying-jeou’s Administration. However, with the 2016 DPP victory and inauguration of President Tsai, Beijing is again concerned that Taiwan will pursue independence activities. Beijing’s perception that Taiwan politicians will encourage nationalism that will result in opposition to China’s unification remains a key driver of China’s military modernization efforts, which are intended in part to provide Beijing a tool to deter “separatism” or punish Taiwan if deterrence fails. Richard C. Bush, “Taiwan’s Security Policy,” *Brookings Institution*, August 3, 2016, 9; Michael McDevitt, “Becoming a Great Maritime Power: A Chinese Dream,” *CNA*, June 2016; Michael S. Chase et al., “China’s Incomplete Military Transformation: Assessing the Weaknesses of the People’s Liberation Army (PLA),” *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 24, 32; Lee Teng-hui, “Always in My Heart,” Cornell University Alumni Reunion, June 9, 1995.

†According to a declassified National Intelligence Estimate produced by the U.S. National Foreign Intelligence Board in 1999, China has four “red lines” concerning Taiwan that could result in the use of force to compel unification: (1) Taiwan’s declaration of formal independence or a referendum modifying its Constitution to establish independence; (2) foreign support for Taiwan’s independence forces; (3) Taiwan’s development of nuclear weapons and a means to deliver them to the Mainland; and (4) widespread instability or unrest in Taiwan. The first “red line” was codified in Beijing’s 2005 “Anti-Secession Law,” which intended to prevent Taiwan’s separation from and ultimately promote unification with the Mainland. The law also authorizes the use of force if “independence forces” succeed in separating Taiwan from the Mainland, a major event occurs that would lead to separation from the Mainland, or the loss of all possibility for peaceful unification occurs. These “red lines” likely have not changed in recent years. Anti-Secession Law (China), 2006; U.S. National Foreign Intelligence Board, *National Intelligence Estimate China-Taiwan: Prospects for Cross-Strait Relations*, September 13, 1999.

South China Sea in the past,\* it has managed its South China Sea claims in recent years with a mix of naval presence, harassment, and hostilities from maritime law enforcement agencies and maritime militia,† and a massive reclamation and fortification campaign of the features it occupies within its claimed “nine-dash line.”<sup>16</sup> Furthermore, in 2012, China Coast Guard ships wrested control of the disputed Scarborough Reef from the Philippines.<sup>17</sup> In 2016, a UN tribunal specifically ruled that China’s nine-dash line, recent land reclamation activities, and other activities in Philippine waters were unlawful.‡<sup>18</sup> The ruling, which has no inherent enforcement mechanism, has not deterred further Chinese assertiveness in the South China Sea. This assertiveness has increased tensions with other claimants in the South China Sea, particularly the Philippines and Vietnam, giving rise to instability in the region.

#### *Disputed Claims in the East China Sea*

China and Japan both claim the Senkaku Islands§ in the East China Sea.<sup>19</sup> China views Japan’s administrative control¶ of the islands as an occupation of Chinese territory.<sup>20</sup> While tensions have fluctuated between China and Japan over the islands, they increased significantly in 2012 following the Government of Japan’s purchase of the islands from a private Japanese owner, effectively nationalizing the islands.<sup>21</sup> Since the purchase, China has sought to erode Japan’s claims by challenging Tokyo’s administrative authority and attempting to establish China’s authority over the islands via China Coast Guard and PLA Navy patrols.\*\*<sup>22</sup> Likewise, the PLA

\*These incidents include the seizure of South Vietnamese-held islands in the Paracels in 1974, Fiery Cross Reef from Vietnam in 1988, and Mischief Reef from the Philippines in 1994. Ian E. Rinehart, “The Chinese Military: Overview and Issues for Congress,” *Congressional Research Service*, March 24, 2016, 26.

†China’s maritime militia, a quasi-military force of fishermen that are tasked by and report to the PLA, has a key role in China’s South China Sea strategy. They are trained to participate in a variety of missions, including search and rescue, reconnaissance, deception operations, law enforcement, and “rights protection,” which often entails activities like harassing foreign vessels in China’s claimed waters. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 56; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 197; Andrew Erickson and Conor M. Kennedy, “China’s Fishing Militia Is a Military Force in All but Name,” *War Is Boring*, July 9, 2016.

‡For a summary of the arbitration ruling, see Caitlin Campbell and Nargiza Salidjanova, “South China Sea Arbitration Ruling: What Happened and What’s Next?” *U.S.-China Economic and Security Review Commission*, July 12, 2016.

§The Senkaku Islands are known as the Diaoyutai in Taiwan and Diaoyu in China.

¶In September 2012, the Government of Japan purchased three of the five islands from their private owner. Japanese officials said this was intended to prevent their planned development by a third party, which they feared would heighten tensions with China. Nevertheless, Japan’s nationalization of the islands angered China and sparked an increase in tensions. Regardless of ownership, all five islands and three sets of rocks that constitute the Senkakus were under Japan’s administrative control before the purchase. According to Japan’s Ministry of Foreign Affairs, the “Senkaku Islands were not included in the territory which Japan renounced under Article 2 of the San Francisco Peace Treaty of 1951 that legally defined the territory of Japan after World War II. Under Article 3 of the treaty, the islands were placed under the administration of the United States as part of the Nansei Shoto Islands. The Senkaku Islands are included in the areas whose administrative rights were reverted to Japan in accordance with the Agreement between Japan and the United States of America Concerning the Ryukyu Islands and the Daito Islands that entered into force in 1972.” Mark E. Manyin, “The Senkakus (Diaoyu/Diaoyutai) Dispute: U.S. Treaty Obligations,” *Congressional Research Service*, October 14, 2016, 1; Ministry of Foreign Affairs of Japan, *Senkaku Islands*, April 13, 2016; Jane Perlez, “China Accuses Japan of Stealing after Purchase of Group of Disputed Islands,” *New York Times*, September 11, 2012; Chico Harlan, “Japan’s Ambassador to China Returns for Talks amid New Row over Islands,” *Washington Post*, July 15, 2012.

\*\*During the Commission’s May 2017 trip to Japan, a Japanese defense official indicated that China conducts “checkbox incursions” into waters near the Senkaku Islands three times per

Air Force and Chinese maritime law enforcement agencies occasionally conduct air patrols near the islands, prompting the Japan Air Self-Defense Force to scramble in response to Chinese aircraft in the area.\*<sup>23</sup> The air patrols near the islands, regular PLA Navy presence patrols beyond the island's territorial seas,<sup>†</sup> and China Coast Guard incursions into these Japan-administered territorial waters create opportunities for miscalculation and conflict.

## Chinese Strategists' Thinking about Hotspots

### *Chinese Strategic Thought and Conflict*

Chinese military and security analysts understand that China's expanding international interests, desire to manage stability, and need to safeguard China's maritime sovereignty claims will create tensions between China and the United States, as well as with some of China's neighbors.<sup>24</sup> For example, Meng Xiangqing, deputy director of China's National Defense University Strategic Studies Institute, asserts risk and tension can create opportunities for China:

*On [Scarborough Reef], we have made a breakthrough, and now control the island. In the [Senkaku Islands] dispute, we now hold the initiative, breaking Japan's hundred years of so-called 'actual control.' Looking at it in this sense, a bad thing can be changed into a good thing, and a challenge ... [becomes] an opportunity.*<sup>25</sup>

China's foremost strategic writings seem to accept that China's pursuit of its territorial ambitions will invite risks of increased tensions and even conflict. The 2015 defense white paper says, "Hotspot issues, such as ... territorial disputes, are complex and volatile," and the 2013 edition of *The Science of Military Strategy*‡ acknowledges the potential for conflicts to arise from China's expanding interests.<sup>26</sup> Furthermore, in discussing the role the PLA should play in continuing to secure China's "period of strategic opportunity," in

month, for two hours at a time. Official, Japan Ministry of Defense, meeting with Commission, Tokyo, Japan, May 25, 2017.

\*According to Japan's Ministry of Defense, in 2016, Japan's Air Self-Defense Force "scrambled 851 times against Chinese aircraft, an increase of 280 times compared to the previous fiscal year." Likewise in 2016, the Japan Coast Guard responded to 121 China Coast Guard incursions into the 12-nautical-mile territorial seas around the Senkakus. Japan Ministry of Defense, *Japan Defense Focus*, May 2017; Japan Coast Guard, *Japan Coping with Trend of Chinese Boats in the Waters Surrounding the Senkaku Islands*, February 28, 2017. Translation.

†In its 12-nautical-mile territorial sea, a state has full sovereignty, subject to the right of innocent passage. In its contiguous zone, a state can enforce customs-related laws. Under the UN Convention on the Law of the Sea, foreign civilian and military ships may transit through a country's territorial sea according to the principle of innocent passage, which prohibits activities that are "prejudicial to the peace, good order, or security of the coastal State," such as military exercises, intelligence gathering, and "any other activity not having a direct bearing on passage." UN Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone."

‡*The Science of Military Strategy* is an authoritative book published by the Military Strategy Studies Department of the PLA's Academy of Military Science. *The Science of Military Strategy* is part of a body of PLA military publications, to include *The Science of Campaigns*, which provides insight into how the PLA thinks about preparing for conflict at the strategic and campaign levels of warfare. The Academy of Military Science first published *The Science of Military Strategy* in 1987; two additional editions were published in 2001 and 2013. The 2001 edition of *The Science of Military Strategy* was translated into English by the Academy of Military Science in 2005. For a comparison of the 2001 and 2013 editions of *The Science of Military Strategy*, see M. Taylor Fravel, "China's Changing Approach to Military Strategy: The Science of Military Strategy from 2001 and 2013," in Joe McReynolds ed., *China's Evolving Military Strategy*, Jamestown Foundation, April 2016, 46–75.

2011 Zhang Qinsheng, former Deputy Chief of the General Staff in the Central Military Commission, argued:

*Securing a period of opportunity in the coming decade or even longer will be a new challenge. Instability and uncertainty in the world's development is more obvious, and contradictions and conflicts are harder to avoid. Protecting and using ... this period of strategic opportunity is the basic focal point of strategic direction now and for some time to come. The armed forces shoulder a glorious mission and a sacred responsibility in protecting this period of strategic opportunity.*<sup>27</sup>

#### *PLA Thinking about Force Employment*

Timothy R. Heath, a senior international defense research analyst at the RAND Corporation, points out that Chinese military writings provide insights into how the PLA thinks about conflict, saying, "According to military writings, the articulation of ... political objectives stands as the starting point for military options.... Carefully crafted objectives that take into consideration the nation's ... strategic imperatives provide a clear sense of the acceptable limits of escalation and the proper parameters for military action."<sup>28</sup> Military thinkers in China write about achieving political objectives, limiting escalation, and managing military action through shaping operations, crisis management, and war control efforts:<sup>29</sup>

- *Shaping operations:* According to Chinese strategists, shaping operations are intended to create an environment that prevents conflicts from arising.<sup>30</sup> Should tensions develop in an area that runs counter to China's core interests, the PLA must be positioned to deter a challenger from escalating such tensions.<sup>31</sup> Shaping operations before a conflict not only allows Beijing the opportunity to deter a perceived challenge by an adversary; they also place China in a position to respond to an escalating challenge with force if required.
- *Crisis management and nonmilitary operations:* To protect China's interests in a pre-conflict environment, Chinese military thinkers have called for coordinated efforts between military and nonmilitary authorities. Mr. Heath asserts that "To minimize risk while maximizing potential gains, these thinkers have focused ... on potential peacetime and crisis applications, developing a menu of escalation options, and increasing the role of nonmilitary assets in defending [China's] interests."<sup>32</sup> For example, at the low end of the spectrum, the PLA Navy and China Coast Guard are pursuing what was called for in the 2013 defense white paper as enhanced cooperation between the PLA and maritime law enforcement agencies to defend maritime interests.<sup>33</sup> These types of operations are occurring between the PLA Navy and China Coast Guard in response to Beijing's perceptions that Chinese sovereignty is being challenged by its neighbors in the East and South China seas. An example of coordination between military and nonmilitary assets at the high end of the spectrum is the standoff that occurred between China and Vietnam in 2014 when China moved an oil rig to

waters also claimed by Vietnam.<sup>34</sup> China dispatched the PLA Navy and Air Force to support the China Coast Guard while the China Coast Guard was protecting the Haiyang Shiyou 981, an ultradeepwater oil rig operated by China National Petroleum Corporation, and to respond to what Beijing claimed was Vietnam's violation of China's sovereignty claims in the Paracel Islands.\*<sup>35</sup>

- *War control*: Chinese military thinkers discuss “war control,” or the controlled use of force, to achieve national objectives.<sup>36</sup> War control encompasses pre-conflict crisis control, operational control during a conflict, and post-conflict stability control.<sup>37</sup> The objective of war control is to limit the scope of a conflict, minimize negative consequences, and achieve a victory at minimal cost.<sup>38</sup>

### *Managing Contingencies*

Based on how Chinese military thinkers write about the pre-conflict use of force, China may seek to manage a Taiwan, South China Sea, or East China Sea crisis by seeking gains at the lowest possible cost, while balancing those gains against the risks that escalation could lead to conflict.<sup>39</sup> As a situation evolves from a crisis to a conflict, China may decide to use force to achieve its political objectives while still seeking to de-escalate, or prevent the further escalation of, the conflict. The 2001 edition of *The Science of Military Strategy* acknowledges that China's “crisis control” efforts may be ineffective and once a crisis transitions to conflict Beijing will need to act quickly to avoid continued escalation of a conflict.†<sup>40</sup> The Haiyang Shiyou 981 oil rig incident is an example of China escalating hostilities in order to advance a territorial objective and then de-escalating the crisis on Beijing's terms before a full-fledged military conflict breaks out.<sup>41</sup>

\*DOD reports that in May 2014, “China established three security cordons around the rig using a large number of China Coast Guard, fishing, and commercial ships, beginning a standoff with Vietnamese ships, which repeatedly attempted to breach the cordon. Both sides relied primarily on non-military maritime assets to assert their respective sovereignty claims near the rig. PLA Navy ships supported operations in an overwatch capacity and PLA fighters, helicopters, and reconnaissance aircraft patrolled overhead. Chinese paramilitary ships frequently resorted to ramming and use of water cannons to deter Vietnamese ships and enforce the security cordons around the rig. In mid-May, anti-Chinese protests over the rig's deployment erupted in Vietnam and resulted in at least two Chinese deaths and more than 100 injured, after which more than 3,000 Chinese nationals were evacuated from Vietnam. China also suspended some plans for bilateral diplomatic exchanges with Vietnam.” China withdrew the rig in July, one month earlier than planned. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April, 2015, 7.

†The 2001 edition of *The Science of Military Strategy* identifies three “fundamental principles of armed conflict control.” The three principles are taking preventive measures, seizing the initiative, and containing the conflict. These principles apply to managing a crisis or the transition from a crisis to a conflict. The first principle suggests China must be “alert” to the potential for a conflict to erupt and to take “preventive measures” by preparing a “strategic plan” for conflicts. Second, China must be prepared to make a “decision swiftly and strive for initiative.” This second principle argues that if a conflict occurs China must act quickly to seize the initiative to “compel the opponent to submit before he has time to react.” The third principle—“effective containment”—indicates that “when conflict occurs, it is necessary to regulate military actions ... on the basis of requirements of political and diplomatic struggles, and strive to win without fighting or to subdue the enemy with a small war. When the opponent intends to escalate the conflict and has not yet put it into effect, it is necessary to contain the enemy in advance. When the opponent starts to carry out escalation, a tit-for-tat struggle is essential for equivalent ... or superior escalation to frustrate the enemy's escalation deterrence.” Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 208.

### Crisis Management Framework

In written testimony to the Commission, Mr. Heath provided a peacetime, crisis, and conflict framework for thinking about how China might manage a Taiwan, South China Sea, or East China Sea crisis:

#### Taiwan

- *“Peacetime:* Chinese military modernization has complemented economic and political incentives to encourage cross-Strait integration, although to date the combined effect has done little to reverse the decline in Taiwan’s support for unification. The PLA supports Beijing’s drive for unification in part through intimidation. In January 2017, the *Liaoning* aircraft carrier carried out exercises in the Taiwan Strait. The PLA has also held highly publicized exercises designed to improve its ability to carry out amphibious combat operations against Taiwan. China can be expected to continue to use military coercion as part of a broader effort to drive the two sides towards unification.”
- *“Crisis:* A crisis could easily emerge if Beijing grows frustrated by declining prospects for peaceful unification. In a crisis, China could demand Taipei adopt at least symbolic gestures towards unification. Media reports that claim Beijing may revise the Anti-Secession Law or enact a National Unification Law could provide legal pretext for such an ultimatum. In a hypothetical scenario, Beijing could cite Taipei’s intransigence in the face of demands as a violation meriting some sort of punishment. Beijing could then provoke a clash involving Taiwan military airplanes, ships, or other assets. Alternatively, the PLA could launch missiles near the island or carry out cyberattacks. Any of these actions could spur a serious military crisis, and the risk of escalation would grow if casualties mounted. The instigation of military crisis to coerce concessions carries risks, however. Such actions could embolden Taiwan and harden sentiment against unification. Worse, they could lead the U.S. to deploy military forces into the theater, potentially escalating the crisis into a high stakes standoff. If mishandled, Beijing could find itself in an unwanted war or be forced to back down in a humiliating manner.”
- *“Conflict:* Large-scale war to compel unification remains a remote possibility. The most plausible pathway to war would be one in which Chinese brinkmanship backfired and the leadership found itself in a spiral of escalation. The trigger could be any of the conditions listed in the National Anti-Secession Law, or future legislation if passed. Three major options present themselves: a conventional missile attack, a joint blockade, or an invasion. A conventional missile attack campaign would consist principally of sal-

### **Crisis Management Framework—*Continued***

vos of ballistic and air-launched missiles against military targets with minimal warning. These could inflict great havoc, but missile attacks alone are unlikely to compel Taiwan's capitulation. On the contrary, mounting military and civilian casualties from missile bombardment would probably strengthen Taiwan's resolve. A 'joint blockade campaign' could aim to sever Taiwan's economic and military connections with the world through a combination of firepower strikes and the deployment of intercepting naval vessels. But a joint blockade similarly lacks a clear mechanism to compel Taiwan's capitulation. The effect would probably once again be a hardening of Taiwan sentiment against China. Worse, the open-ended timeline provides U.S. forces ample opportunity to marshal forces and attack the blockading naval platforms. An invasion of Taiwan provides the only sure way to replace the leadership with a more compliant authority and ensure unification. Despite gains in PLA capability, an opposed amphibious invasion remains a high-risk operation, especially given the PLA's limited amphibious assault capability and lack of experience. Moreover, a large-scale amphibious invasion would require considerable mobilization, offering ample warning to the United States and Taiwan. The demanding requirements and the risk of major war with the United States make this course of action among the riskiest available to China."

### **South China Sea**

- "*Peacetime*: The PLA has worked with civilian authorities to strengthen the country's administration of its maritime regions. The military coordinates closely with the Chinese Coast Guard to patrol and protect occupied features, while national leaders incentivize regional accommodation through diplomatic pressure and economic initiatives like the 'Maritime Silk Road.'"
- "*Crisis*: Festering and overlapping disputes make the South China Sea ripe for crisis. In the 2012 standoff over Scarborough Reef with the Philippines and the 2014 standoff over the oil rig Haiyang 981 with Vietnam, China demonstrated a growing tolerance for brinkmanship. In the latter incident, the PLA coordinated with fishing vessels; coast guard ships; and political, media, and diplomatic pressure to strong-arm Vietnamese vessels as China deployed the oil rig in its neighbor's exclusive economic zone. A Philippine or Vietnamese misstep in a similar crisis involving disputed reefs, fishing grounds, or drilling for resources could provide the PLA the pretext needed to act aggressively. In such a crisis, China would probably seek some favorable change in the status quo or demonstration of Chinese superiority before seeking

### **Crisis Management Framework—Continued**

to deescalate. Although neither side would necessarily have the motivation to escalate the conflict, the risk of miscalculation remains high.”

- “*Conflict*: Although crisis is possible, major conflict remains unlikely in the South China Sea. The most plausible path to war would be an escalation from the type of militarized crisis mentioned above. If China decided to exploit a crisis to seize a Vietnamese occupied feature, for example, Vietnam could retaliate by targeting the Chinese forces. Any Chinese troops on an occupied feature in the Spratlys or Paracels would be extremely vulnerable. China could escalate with forces stationed on the features, but these are limited in number and relatively vulnerable. If China suffered setbacks in the South China Sea, it might involve air and naval forces from the mainland or consider actions on the border with Vietnam. Beijing would probably respond with greater caution to any incident involving Philippine forces, however, due to Manila’s alliance with Washington.”

### **East China Sea**

- “[*Peacetime*:] As in the South China Sea, China has found the peacetime strategy of incremental administration effective. The PLA Navy can be expected to continue coordinating with the Chinese Coast Guard to administer the disputed waters near the Senkakus and deter their Japanese counterparts. In addition, the PLA announced an Air Defense Identification Zone in the East China Sea in 2013 to justify an increase in military aviation patrols over the islands.”
- “*Crisis*: The risk of crisis near the Senkakus ebbs and flows as tensions rise and relax between Beijing and Tokyo. The intensifying rivalry between the two Asian giants raises the risk that any incident near the Senkakus could rapidly escalate. The precipitating incident could involve a collision of fishing or maritime law enforcement vessels. An accident involving military platforms, such as aircraft, cannot be ruled out either. Because of the relative parity of conventional military power, escalation would be tempting for both sides seeking an advantage in any subsequent crisis. The most likely outcome would be stalemate, a deepening of frustration and hostility, and an increasing militarization of the problem. This would raise the likelihood of a reinforcing spiral of intensifying hostility, crisis, and potential conflict. The largest risk for China would be one of misjudgment. Nations seeking to exploit military crises have historically frequently miscalculated, resulting in a war that they did not actually want.”

### **Crisis Management Framework—Continued**

- *“Conflict:* Because of the political opprobrium of aggression and the risk of U.S. involvement, an unprovoked Chinese assault on Japanese forces or seizure of the Senkakus would offer little benefit and carry extremely high risks. A more plausible scenario would be an escalation or continuation of hostilities from the type of crisis outlined previously. A spiral of intensifying and protracted crises with little resolution and a deepening of suspicion and hostility would provide a powerful incentive for China to attempt a larger-scale military operation to assert its dominance and humble its foe. A military operation with limited objectives that could be achieved in a short amount of time and appeared largely punitive could demonstrate Chinese prowess, rally public support, and provide the satisfaction of humiliating Japan. Examples might be missile strikes against Japanese naval combatants or fighter aircraft near the Senkakus. This course of action would carry high risks, however. An attack on Japanese military platforms would trigger U.S. involvement, and China could not be sure of its ability to control subsequent events.”<sup>42</sup>

## **Contingency Planning**

### ***China’s Planning Process***

The 2001 and 2013 editions of *The Science of Military Strategy* provide an overview of the conflicts China anticipates it may face in the future.<sup>43</sup> In addition to a war fought to counter an invasion of the Mainland and a fight to unify with Taiwan, described in the 2013 edition as a “large-scale high-intensity anti-separatist war,” the 2013 edition also includes discussion of a “medium-scale, low- to medium-intensity self-defense and counterattack operation,” which applies to perceived threats along China’s maritime periphery, and a “small-scale, low-intensity anti-terrorist, stability maintenance” operation.<sup>44</sup> The likeliest threats China faces, according to the 2013 edition, come from the maritime periphery, with the most dangerous challenge being a conflict with Taiwan in the form of a “large-scale, relatively high-intensity local war in the sea direction against the backdrop of nuclear deterrence.”<sup>45</sup> At the national level, the assessments based on these threats provide the Central Military Commission (CMC) a starting point for directing the contingency planning process.<sup>46</sup>

### *National and Theater Planning Process*

At the national level, the CMC is responsible for providing strategic objectives and guidance to inform the overall PLA planning process.<sup>47</sup> The Joint Staff Department within the CMC is responsible for national-level operations planning, command and control, and operations command support.<sup>48</sup> Each of the five theater commands is then responsible for developing joint operational-level plans that align with threats emanating from their respective areas of responsibility.<sup>49</sup>

### Theater Command and Threat Directions

The PLA's theater command structure is intended to enable PLA forces to quickly meet the requirements of an anticipated regional war scenario by maintaining an operational structure poised to respond to a crisis.<sup>50</sup> The five Joint Theater Commands, established as a result of the ongoing military reforms, include the Eastern, Southern, Western, Northern, and Central Theater Commands. The operational focus of the theaters is as follows:

- The Eastern Theater Command is responsible for preventing Taiwan independence, compelling Taiwan unification, countering any foreign intervention during a Taiwan conflict, and defending maritime sovereignty claims in the East China Sea.<sup>51</sup>
- The Southern Theater Command's security challenges include defending maritime sovereignty claims and China's sea lines of control in the South China Sea, as well as defense along the border with Vietnam.<sup>52</sup>
- The Western Theater Command is focused on missions associated with combating domestic extremism and terrorism in Xinjiang Uyghur Autonomous Region and Tibet Autonomous Region, as well as addressing an Indian border dispute contingency.<sup>53</sup> This theater likewise will guard against infiltration by Central Asian extremist and terrorist groups.<sup>54</sup>
- The Northern Theater Command is responsible primarily for stabilizing the Korean Peninsula and conducting border stability operations associated with a North Korea contingency.<sup>55</sup> The theater may also share responsibility with the Eastern Theater for contingencies involving Japan, and likely is responsible for northern border contingencies involving Mongolia and Russia.<sup>56</sup>
- The Central Theater Command is responsible for conducting capital defense operations during any contingency involving another theater's area of responsibility.<sup>57</sup> This theater likely also has responsibilities for responding to domestic emergencies.

Theater plans are prepared by each theater command's chief of staff.<sup>58</sup> Theater plans provide a campaign goal, identify operational objectives, include a force laydown, discuss fighting methods, and lay out the phases of a campaign.<sup>59</sup> Mark R. Cozad, a senior international defense policy analyst at the RAND Corporation, summarizes the process by which planning occurs at each level:

*The planning process at the [national] level begins with the definition of strategic objectives and associated key missions.... Assigned strategic missions are prioritized and distinguished by phase and geographic necessity....\* Cam-*

\*Mr. Cozad states that "Combat systems are closely related to campaigns, but the organizing principle behind them is functional rather than organizational. Combat systems are characterized by advanced weapons systems being coordinated and integrated across domains and services."

*paigns provide a joint organizational construct that includes an operational-level command structure with service- and function-oriented operations groups. Campaigns are the building blocks of PLA wartime planning at the operational level.*<sup>60</sup>

### **Overview of Relevant PLA Campaigns for Hotspots along China's Maritime Periphery**

Campaigns are based on analysis of modern warfare and used to outline a specific type of military operation—such as an air or island blockade—and serve as a template for organizing operational forces along functional lines. The types of campaigns that apply to contingency planning for an incident along China's maritime periphery are discussed in the 2006 *The Science of Campaigns*, published by China's National Defense University:

- *Joint firepower strike campaign:* A joint firepower strike campaign would emphasize conventional missile strikes against enemy strategic leadership and military targets.<sup>61</sup> The PLA Rocket Force would be the lead service\* for this campaign. The PLA Air Force and Navy could contribute to this campaign if it were combined with blockade and anti-air raid operations.<sup>62</sup>
- *Joint blockade campaign:* A joint blockade campaign would be conducted over a long period and would seek to compel an enemy to submit to Beijing's objectives by punishing the enemy's economy and military capabilities.<sup>63</sup> The PLA Navy, Air Force, and Rocket Force would play a role in this campaign.<sup>64</sup>
- *Joint anti-air raid campaign:* A joint anti-air raid campaign would involve both offensive and defensive operations to defeat the offensive air capability of an enemy through strikes against land- and sea-based air operations.<sup>65</sup> A joint anti-air raid campaign would include the PLA Air Force, Navy, and Rocket Forces.<sup>66</sup>
- *Joint island landing campaign:* A joint island landing campaign would be executed to seize and occupy an island (such as Taiwan or another Taiwan-controlled island). This campaign would require all four services to conduct integrated joint operations during a series of linked campaigns—such as the campaigns identified here—that would result in the destruction of enemy forces, an amphibious operation, and occupation of the island.<sup>67</sup>

U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

\*During a PLA joint campaign, a service will be designated the "lead service" in charge of coordinating and executing a phase of a campaign. For example, during a joint blockade campaign, the PLA Air Force would be designated the lead service responsible for coordinating service contributions for "seizing and maintaining air dominance" under the unified command of the joint blockade command headquarters. Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 292–309. Translation.

**Overview of Relevant PLA Campaigns for Hotspots  
along China's Maritime Periphery—Continued**

- *Sea force group campaign:* A sea force group campaign would be conducted by the PLA Navy to destroy or degrade an opposing naval force at sea.<sup>68</sup>
- *Coral reef offensive campaign:* A coral reef offensive campaign would be undertaken by the PLA Navy to dislodge an enemy occupying a small island or reef (such as those in the South China Sea).<sup>69</sup> The campaign likely would be conducted by a small formation of multi-mission surface combatants, an amphibious landing ship, and naval helicopters.\*

*Planning Considerations*

China is preparing the PLA for a range of contingency operations for crises that could erupt along China's maritime periphery. Mr. Cozad suggests that ongoing developments in PLA joint training demonstrate China's commitment to preparing for multiple types of contingency operations:

*PLA joint exercises since 2010 have focused on developing a variety of key operational capabilities while centering on Taiwan or contingencies on China's borders. In many respects, these ... concepts reflect long-term thinking about two of China's most significant potential conflict scenarios: Taiwan-centered operations and "chain reactions" along ... [China's] periphery. The most significant feature of recent PLA discussion about preparing for military struggle is not which potential conflict scenario is designated as most likely or most dangerous; instead, it is the extent to which [China's] leaders are forcing the PLA to become more flexible and ready to deal with a much wider range of potential crises than in the past.<sup>70</sup>*

*Managing Requirements and Constraints*

The PLA is likely to conduct contingency operations that cross multiple theaters, requiring significant coordination of military resources. The CMC is responsible for the national-level management of resources, with the Joint Staff Department directing the command of operational capabilities, the Mobilization Department leading mobilization, and the Logistic Support Department coordinating logistic support.<sup>71</sup> These functions will be conducted at the national level by the CMC's Joint Operations Command Center, which will provide guidance and direction to the Theater Command Joint Operations Centers.<sup>72</sup>

One of the more pressing planning considerations at both the national and theater levels will be coordinating a PLA response to

\*The PLA Navy will occasionally conduct training that would be consistent with "coral reef offensive campaigns" during distant sea training deployments against PLA outposts when the deployed ships pass near Chinese-controlled features in the South China Sea. Zeng Tao, "Chinese Navy Conducts Ship-Aircraft Actual-Soldier Confrontation Training in Western Pacific Ocean," Xinhua, March 2, 2017. Translation; *PLA Daily*, "Offense and Defense Simultaneously Honed and Improved," December 9, 2016. Translation.

counter any intervention\* by a “strong enemy.”<sup>73</sup> The PLA often uses the term “strong enemy” in military writings to refer to the United States.<sup>74</sup> The PLA is particularly concerned about U.S. long-range precision strikes targeting important military sites in China and the need to defend these sites, which would draw resources away from offensive operations.<sup>75</sup> For any large contingency, each theater command would likely initiate counterattack plans if an enemy attempts to hold strategically important targets at risk, as well as guard against “chain reaction”† challenges to contested claims along China’s periphery while the PLA is conducting operations in what Chinese military planners refer to as the “main strategic direction.”<sup>76</sup>

These challenges will likely constrain PLA planning options concerning the forces that are available for an actual contingency operation if forces are held in reserve for homeland defense or long-range strikes against the operational forces of a “strong enemy.”

#### **Chinese Contingency Planning versus Real-World Conflict**

China’s publicly available writings on contingency planning and related training and exercise activities provide only partial insights into how China would actually fare in a real-world contingency or conflict scenario. Concerning PLA scenario-based training and contingency planning, Mr. Cozad notes that emphasis on defense mobilization, long-range mobility, intelligence support, and scenario-based training likely have improved the PLA’s ability to develop and coordinate contingency plans for a range of scenarios.<sup>77</sup> Nevertheless, given China’s lack of combat experience since 1979, along with a number of other factors, it is difficult to judge how well the PLA will be able to execute a plan associated with a Taiwan, East China Sea, or South China Sea contingency operation.

Some of the PLA’s recent non-combat operations do shed some light on how planning informs operations. For example, the PLA has studied and learned from U.S. military planning efforts associated with the Korean and Vietnam wars, as well as U.S. operations in Grenada, Kosovo, Afghanistan, and Iraq. Marcelyn L. Thompson, an Asia analyst for the U.S. Government, indicates the lessons the PLA is learning from U.S. operations include the importance of logistics, intelligence, and scenario-focused train-

\*China uses the term “counterintervention” to discuss the types of actions that are often discussed by DOD as “antiaccess/area denial” operations. “Antiaccess” actions are intended to slow the deployment of an adversary’s forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. “Area denial” actions affect maneuvers within a theater and are intended to impede an adversary’s operations within areas where friendly forces cannot prevent access. U.S. Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

†Chain reaction challenges arise when a conflict occurs in a theater’s main focus area (or strategic direction) and then another conflict occurs in another theater’s area of responsibility (or a secondary strategic direction). China is particularly concerned about a country along China’s land or maritime periphery with a border dispute taking advantage of China being focused on a conflict that involves another major power, namely the United States. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; China’s State Council Information Office, *China’s Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 117. Translation.

**Chinese Contingency Planning versus Real-World Conflict—  
Continued**

ing.<sup>78</sup> The PLA appears to have applied some of these lessons to the 2011 noncombatant contingency operation the PLA Navy and PLA Air Force conducted in Libya to successfully evacuate more than 35,000 people.<sup>79</sup> However, Ms. Thompson argues, “To the extent that China’s contingency planning for and use of its military in the Libya [noncombatant evacuation operation] mirrors any ... U.S.-style planning, it most closely approximates crisis action planning, similar to what the United States exercised in coordinating between Department of Defense, U.S. Agency for International Development, and Department of State entities located in the Asia Pacific in response to the 2004 [Indian Ocean] tsunami.”<sup>80</sup>

**Contingency Operations along China’s Maritime Periphery**  
**Taiwan Contingency Operation**

DOD assesses China currently lacks the capability to conduct a full-scale invasion of Taiwan.<sup>81</sup> Furthermore, it is unlikely the PLA would be able to conduct an invasion of Taiwan without Beijing risking a military response from the West.<sup>82</sup> The PLA, however, has been tasked with developing operational plans for just such a scenario,<sup>83</sup> and the PLA can currently conduct campaigns involving punitive missile strikes and operations to seize Taiwan’s islands and other Taiwan-controlled land features located along the Taiwan Strait and in the South China Sea, such as Itu Aba, Matsu, and Jinmen.<sup>84</sup>

*China’s Campaign Objectives*

The overall national-level objective is for Taiwan to capitulate and submit to Chinese Communist Party rule.<sup>85</sup> Christopher D. Yung, director of East Asian studies at the U.S. Marine Corps University, testified to the Commission that a large-scale joint PLA contingency operation against Taiwan

*will first attempt to isolate Taiwan physically from its most likely protector, the United States. Second, the PLA will have engaged in military actions designed to directly deter U.S. interference in the conflict. Third, failing to deter American involvement, PLA campaign objectives will be designed to keep direct American military interference to a minimum through so-called “counterintervention” operations. Fourth, anticipating U.S. involvement through air, subsurface, and surface combatant interference in PLA operations, the PLA will attempt to conduct a rapid assault on Taiwan, establish a beachhead, seize ports and air fields, and land ground forces on Taiwan within a short time period (the PLA planning assumption depends on the Chinese assessment of how long the PLA believes the Taiwan military can hold out). Fifth, in the likelihood that the PLA fails to achieve its military objectives on Taiwan prior to American build*

*up and direct intervention in the conflict, PLA campaign objectives are then likely to involve counterdeterrence operations, pre-emptive strikes on high value operational targets, operations designed to deny the U.S. military access to information and situational awareness, and operations designed to strike at the American logistical system and the U.S. military's ability to operate for a sustained period forward.*<sup>86</sup>

### *Counterintervention Planning Considerations*

The PLA has thoroughly considered the counterintervention requirements for pre- and post-initiation of hostilities against Taiwan.<sup>87</sup> The PLA will account for potential U.S. forces capable of responding to a Taiwan contingency and attempt to delay, deny, or deter a U.S. response.<sup>88</sup> It will likewise take into consideration the potential for U.S. allies to assist or support U.S. operations.<sup>89</sup> Lastly, the PLA will take into consideration the likely avenues of approach, operating areas, and bases of operation for these opposing forces.<sup>90</sup> Understanding the force posture for the United States and for U.S. allies such as Japan will allow the PLA to make judgments about the potential capability of these forces to intervene in a conflict and prepare counterintervention option plans using geography and advanced strike weapons to gain localized air and naval superiority during the initial stage of a conflict.<sup>91</sup> This could result in China impeding the flow of forces responding to a crisis by conducting cyber attacks on U.S. mobilization sites and systems, shipping points, embarkation areas, logistics, and the Time Phased Force Deployment Data\* systems and Joint Operations Planning and Execution Systems† on which U.S. forces depend.

### *Full-Scale Taiwan Amphibious and Airborne Assault*

Although the PLA Navy currently lacks the “amphibious lift to land sufficient forces to seize and hold” Taiwan, Dr. Yung argues China would have to seize ports and airfields, asserting, “It is possible that the PLA could launch a simultaneous airborne and amphibious assault ... allowing forces to flow in through these access points.”<sup>92</sup> For this type of operation, most of the forces would come from the Eastern Theater Command and likely be supported by forces from the Southern Theater Command.‡<sup>93</sup> PLA airborne forces, such as the Airborne Corps located in the Central Theater, would

\*Time Phased Force and Deployment Data is a computer-supported database portion of an operational plan. According to DOD, it “contains time-phased data for moving personnel, equipment, and materiel into a theater [and] ... reflects the requirements that strategic and intra theater lifts are assigned against to ensure that the full scope of deployment requirements are identified and satisfied.” Chairman of the Joint Chiefs of Staff, *Joint Publication 3-35 Deployment and Redeployment Operations*, May 7, 2007, III-17.

†According to DOD, the Joint Operation Planning and Execution System is a system of “applications that are used to monitor, plan, and execute mobilization, deployment, employment, sustainment, and redeployment activities associated with joint operations.” Chairman of the Joint Chiefs of Staff, *Joint Publication 3-35 Deployment and Redeployment Operations*, May 7, 2007, A-1.

‡Not all forces assigned to the Southern Theater Command will be available to support a joint island landing campaign to seize Taiwan, however. Dr. Yung notes that “Only the 123rd and 124th Infantry Divisions ... have been designated as Amphibious Mechanized Infantry Divisions ... and have received consistent amphibious assault training. Additionally, the ground forces located in Yunnan and Guangxi Provinces are not geographically situated to quickly participate in a Taiwan contingency. Similarly, not all PLA [Air Force] units ... in the [Southern Theater Command] ... are likely to be assigned to support a Taiwan contingency.... Given their geographic locations, those air force units assigned to Yunnan are more likely reserved for a Vietnam or India contingency.”

also play a role in a Taiwan contingency. Lastly, additional forces from other theaters will likely be drawn on to support follow-on on-island operations once the PLA has secured ports and airfields throughout Taiwan. For an overview of forces that would be available, see Addenda I and II.

#### *PLA Training for a Taiwan Conflict*

The PLA has conducted Taiwan-centered exercises going back to the 1990s and possibly earlier.<sup>94</sup> Dr. Yung testified that the PLA conducted at least “96 brigade or larger PLA training exercises between 1990 and 1995 or about 16 exercises per year. The Navy was identified as participating in 36 of these. It is therefore unquestionable that in terms of level of effort the PLA is attempting to improve its capability to conduct large scale military operations.”<sup>95</sup> Since the mid-2000s, China has conducted a series of joint long-range cross-region exercises, such as Stride (*Kuayue*) and Joint Action (*Lianhe Xingdong*),\* that are applicable for preparing the PLA for operations against Taiwan.<sup>96</sup> These types of exercises emphasize the movement of a large number of forces and are probably intended to simulate and practice the flow of follow-on forces into the war zone once a foothold is achieved during a Taiwan conflict.<sup>97</sup> The PLA also practices joint firepower strike operations during the Firepower (*Huoli*) series of exercises,<sup>98</sup> and the PLA Air Force and Navy conduct training regularly in the East and South China seas.<sup>99</sup>

#### *South China Sea Contingency Operation*

China’s military, law enforcement, and maritime militia activity in the South China Sea—particularly the ongoing construction of civil-military facilities on reclaimed features in the Spratly Islands—is intended to enhance China’s control over disputed areas in the region.<sup>100</sup> Should Beijing judge that China’s sovereignty claims over occupied features within the South China Sea are challenged by states with overlapping claims, the PLA has a range of campaigns that can be executed to maintain control of these features within the nine-dash line. These campaigns include the aforementioned joint firepower strike, joint blockade, sea force group, and coral reef offensive campaigns. China would certainly incorporate maritime law enforcement operations in conjunction with these campaigns, as well as in the run-up to one or more of these campaigns. This will have significant implications for a contingency in the South China Sea or East China Sea. As numerous analysts have noted, China’s unconventional practice of using its maritime law enforcement agencies and maritime militia to advance its territorial claims and harass neighboring countries’ vessels enables China to effectively assert military might in the “gray zone,” just below the threshold of conflict, putting the onus of escalation on the adversary.<sup>101</sup> This approach was on display in the case of the oil rig deployed to Vietnam-claimed waters, discussed earlier in this section: Chinese maritime law enforcement forces effectively waged a small maritime

U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.

\*For additional insight into the PLA training activities associated with long-range cross-region exercises, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 216–218.

battle against Vietnam, to the point that at least one Vietnamese vessel sank and several vessels on both sides incurred damage. But because only nonmilitary vessels were involved in the actual fighting, this conflict was characterized in international media as a “standoff,”<sup>102</sup> rather than a kinetic conflict initiated by China. This narrative, and the general downplaying of the role maritime law enforcement forces can play in a conflict, greatly benefits China.

Considering the massive expansion of the China Coast Guard’s size and capabilities in recent years, this trend is all the more troubling. The China Coast Guard has experienced a 73 percent increase in tonnage between 2010 and 2016 (from 110,000 to 190,000 tons).<sup>103</sup> In addition to increasing tonnage, China is building and deploying maritime law enforcement ships like the new China Coast Guard ship *Haijing 3901*, which is larger than the U.S. Navy’s Arleigh Burke-class destroyer.<sup>104</sup> Furthermore, China has decommissioned PLA Navy ships—which are armed with ship-mounted machine guns—and transferred them to the China Coast Guard after removing the ships’ missile systems; several China Coast Guard ships have reinforced hulls (which are ideal for ramming other vessels).<sup>105</sup>

#### *China’s Campaign Objectives*

If China initiates a contingency operation against Vietnam or the Philippines—the most likely adversaries in a South China Sea conflict—the PLA would likely seek to achieve its national objectives before the United States can respond.<sup>106</sup> The PLA would rely on a mix of campaigns to include firepower strike, joint blockade, and coral reef landing operations.<sup>107</sup> Any campaign conducted in the South China Sea would be run by the Southern Theater Command; however, other theater commands may support operations, particularly if it became necessary to counter third-party forces intervening on behalf of Vietnam or the Philippines.<sup>108</sup>

#### *Island Landing, Blockade, and Strike*

PLA island landing operations seek to achieve control over information, air, and sea domains at the outset of a conflict to gain the initiative.<sup>109</sup> This means the PLA is likely to initiate strikes against Vietnam- or Philippines-controlled islands or other land features with little warning to isolate opposing forces by severing communications networks and supply lines and suppressing defending forces.<sup>110</sup> The PLA Navy, Air Force, and maritime law enforcement agencies likely will conduct joint blockade operations to prevent any reinforcement efforts by the targeted forces.

#### *Amphibious Assault*

Once the defensive forces on the occupied features have been neutralized, the PLA Navy would plan to conduct landing operations to secure the island or reef.<sup>111</sup> In addition to naval gunfire support, the PLA has recently discussed the use of attack helicopters and air assault operations in support of island landing operations.<sup>112</sup> Landing operations would secure command and control centers, air defense sites, and artillery positions to hold the reef or island.<sup>113</sup>

*PLA Training for a South China Sea Conflict*

China conducts South China Sea-focused exercises that simulate assaults against reefs and small islands. These exercises, which have increased in frequency and sophistication in recent years, are intended to train forces for conducting a South China Sea contingency operation as well as intimidate or shape the behavior of China's neighbors with competing claims in the South China Sea.<sup>114</sup> In addition to the island assault training conducted by the PLA Navy, China has increased PLA Air Force training over the South China Sea, featuring strike aircraft, bombers, and reconnaissance aircraft conducting simulated strikes.<sup>115</sup>

***East China Sea (Senkaku Islands) Contingency Operation***

Although tensions between China and Japan have diminished somewhat from their peak in 2012, the increasing pressure China places on Japan with its continuous deployment of China Coast Guard ships to the waters around the Senkaku Islands, as well as naval and air activity near the islands, increases the risk of an incident.<sup>116</sup> Should an incident near the islands lead to a crisis and conflict, U.S. Navy Captain (Ret.) James E. Fanell—formerly the director of intelligence and information operations for the U.S. Pacific Fleet and currently a government fellow with the Geneva Center for Security Policy—testified to the Commission that “there are likely three Chinese vectors for a ‘short, sharp war’ against the Senkaku Islands: MLE [maritime law enforcement] scenario, PLA exercise scenario, and Taiwan[-style] island attack scenario.”<sup>117</sup>

- *Maritime law enforcement scenario*: This would involve China Coast Guard ships displacing the Japan Coast Guard and seizing control of the islands through a process similar to the one executed against the Philippines during the 2012 Scarborough Reef incident. If China is unsuccessful in achieving control through displacement, maritime law enforcement operations could trigger an incident at sea that is used to justify military operations that result in the capture of the islands.<sup>118</sup>
- *PLA exercise scenario*: After years of regular PLA exercises in the East China Sea—drills to which the U.S. and Japanese militaries have become accustomed—this operation would involve launching a force to seize quick control of the islands from a feigned military exercise in the area.<sup>119</sup>
- *Taiwan-style island attack scenario*: Similar to a traditional Taiwan-style island attack scenario, this would focus on mobilization of forces and the execution of a joint amphibious assault to capture and occupy the islands.<sup>120</sup>

These vectors can be viewed as a range of options Beijing may be considering, with law enforcement operations representing the low end and a joint island invasion operation representing the high end. The objective associated with these scenarios would be to occupy and then maintain control of the Senkaku Islands.<sup>121</sup>

*Maritime Law Enforcement Forces*

As noted earlier, Beijing deploys China Coast Guard and other maritime law enforcement ships—rather than just naval vessels—to advance its claims in disputed waters in both the South and East China seas. Should tensions escalate between Beijing and Tokyo over the Senkaku Islands, China may be tempted to seize control of the islands through a maritime law enforcement operation like the one it executed against the Philippines-controlled Scarborough Reef in 2012.<sup>122</sup> Such an operation could unfold by incrementally increasing pressure on Japan by operating maritime law enforcement ships closer to the islands with the PLA Navy combatants monitoring developments just over the horizon, anchoring, landing on the islands, and finally building on the islands until Japan has two options: surrender administrative control of the islands, or take defensive enforcement action.<sup>123</sup> China would undertake such a campaign using PLA air and naval forces operating in the background to intimidate Japan and attempt to control or prevent the escalation of the crisis into a wider conflict that draws in Japan's Self-Defense Force and triggers U.S. intervention under Article V of the U.S.-Japan Defense Treaty.\*<sup>124</sup>

- *Training activities and exercises:* Training sheds light on how China might seek to execute a joint PLA Navy-China Coast Guard operation in the East China Sea or South China Sea; it also highlights growing coordination and demonstrates efforts to improve command and control.<sup>125</sup> For example, in October 2012 China held an exercise, East China Sea Cooperation 2012, which involved vessels from the PLA Navy and maritime law enforcement ships focused on protecting Chinese fishing activities; during the exercise, the PLA Navy took up protective positions near maritime law enforcement ships and ran off the foreign ships.<sup>126</sup> A May 2013 exercise involving the PLA Navy and China Coast Guard ships near the Spratly Islands focused on command and control and joint patrolling.<sup>127</sup>
- *Aggressive employment of maritime law enforcement agencies:* Maritime law enforcement ships have operated in an aggressive manner in both the East and South China seas, to include operating ships in a way that has led to collisions.<sup>128</sup> Lyle J. Morris, a policy analyst at the RAND Corporation, states that in 2011, “Chinese vessels began to employ more aggressive actions, such as ramming and the use of water cannons inside the cabins of opposing vessels.”<sup>129</sup> Additional maritime law enforcement ships with increased capabilities will likely encourage more aggressive behavior in disputed waters.

\*Article V of the Japan-U.S. Security Treaty states, “Each Party recognizes that an armed attack against either Party in the territories under the administration of Japan would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional provisions and processes. Any such armed attack and all measures taken as a result thereof shall be immediately reported to the Security Council of the United Nations in accordance with the provisions of Article 51 of the Charter. Such measures shall be terminated when the Security Council has taken the measures necessary to restore and maintain international peace and security.” Ministry of Foreign Affairs of Japan, *Treaty of Mutual Cooperation and Security between Japan and the United States of America*, January 1960.

*Exercise Activities*

Should Beijing fail to wrest control of the Senkaku Islands from Tokyo through a maritime law enforcement-style campaign, China may engage in what Captain Fanell describes as a “short, sharp war” that begins under the premise of a routine exercise activity in the East China Sea and quickly transitions into an operation to gain control of the islands.<sup>130</sup> According to Captain Fanell:

*It is important to note that since 2014 the PLA has conducted several large-scale exercises that could very well be rehearsals for a Senkaku Islands campaign. Of greater concern, these exercises could also be intended as a deception campaign, designed to lure U.S. and Japanese audiences into complacency, so that when the actual ‘short, sharp’ Senkaku Islands campaign commences, it is mistaken for ‘just another exercise.’<sup>131</sup>*

*Amphibious Assault Operations*

Based upon the body of Chinese military writings focused on PLA planning and campaigns, the PLA may be planning for landing operations against small islands. The PLA Navy has sufficient amphibious lift to conduct small island-landing operations and the PLA Air Force has enough strategic lift to support airborne operations.<sup>132</sup> Lastly, the PLA Army has been focusing on improving air assault capabilities with helicopter operations, which could contribute to the campaign as well.<sup>133</sup>

**Regional Responses and Implications for the United States*****Implications of a Conflict in East Asia for U.S. Allies and Partners***

Any of the potential crises, contingencies, and military operations detailed previously could create significant challenges for the United States, including possibly inviting U.S. military intervention on behalf of an ally or partner. At the very least, any of these scenarios would have profound implications for regional stability, a key U.S. interest. In scenarios involving treaty allies or defense partners—Japan, the Philippines, and Taiwan—the United States likely would respond with efforts to counter Chinese aggression. An incident between China and Vietnam that escalated into a conflict could result in U.S. military involvement as well.

*Taiwan*

The PLA possesses both a quantitative and a qualitative military advantage over the Taiwan military and is capable of conducting a range of military campaigns against Taiwan.<sup>134</sup> To counter this threat, Taiwan has sought to enhance its military capabilities through indigenous production as well as procurement of military platforms and weapons systems from overseas, to include weapons systems produced in the United States or built under license in Taiwan.<sup>135</sup> Taiwan will continue to look to its friendship with the United States to deter Chinese aggression should cross-Strait relations significantly deteriorate.

- *Military modernization*: To counter the PLA's expanding capabilities, Taiwan has sought to enhance its own military capabilities by developing domestically produced weapons systems and importing other arms. Advanced antiship cruise missiles, air defense missiles, and fast attack patrol ships are among the newest platforms and weapons systems Taiwan has produced.<sup>136</sup> Taiwan likewise continues to move ahead on its program to build submarines to counter PLA Navy surface threats.<sup>137</sup> The objective of military modernization is to provide Taiwan enough capability to deter an attack, and should deterrence fail, provide Taiwan the capability to hold out long enough for the international community to intervene on Taiwan's behalf by countering a blockade or disrupting an amphibious assault.<sup>138</sup> (For additional information, see the discussion on arms sales, military-to-military contacts, and U.S.-Taiwan defense relations in Chapter 3, Section 3, "China and Taiwan.")
- *Military training and preparedness*: Taiwan conducts an annual defense exercise, Han Kuang, to test Taiwan military readiness to counter a potential Chinese attack on the island.<sup>139</sup> Han Kuang consists of a computer-assisted command post exercise typically held in the spring, and a live-fire exercise held in late summer or early fall.<sup>140</sup> The exercise regularly focuses on joint air defense, counter airborne and amphibious landing, joint antisubmarine warfare, and reserve mobilization.<sup>141</sup> During the Commission's May 2017 trip to Taiwan, Taiwan's Minister of Defense Feng Shih-kuan told the Commission that the 2017 exercise did not take U.S. or Japanese forces into account. The purpose of the exercise was to determine whether Taiwan's multi-domain deterrence capability would be sufficient to deter any Chinese threat.<sup>142</sup>
- *Maintaining friendships*: Taipei relies on the U.S.-Taiwan security partnership to enhance Taiwan's ability to deter an attack on the island by the Chinese military and diminish China's ability to use the threat of military force to coerce Taiwan into making political concessions.<sup>143</sup> Taiwan likewise maintains close relations with Japan, and both have worked together on a range of maritime issues, including resolving fishing disputes near the Senkaku Islands\* and coordinating between the Taiwan Coast Guard Administration and the Japan Coast Guard for maritime search and rescue operations.<sup>144</sup> Japan and Taiwan also have overlapping security concerns regarding China. Tokyo is concerned that continued Chinese encroachment in the East China Sea erodes Japan's security and threatens Japan's sea lines, and an attack on Taiwan would deepen Japan's concern that China seeks to dominate the region.<sup>145</sup> Should China attack Taiwan, Taipei would likely expect Japan to allow U.S. forces to operate from bases in Japan and possibly provide some logistical support to U.S. forces operating near Japan.

\*During the Commission's May 2017 trip to Taiwan, former Taiwan President Ma Ying-jeou said the 2013 Taiwan-Japan fishing agreement reduced the number of annual fishing clashes between Taiwan and Japan from 17 to zero. Ma Ying-jeou, Former President of Taiwan, meeting with Commission, Taipei, Taiwan, May 16, 2017.

*Japan*

Japan seeks to counter China's challenge to Japan's administrative control of the Senkaku Islands with a combination of political, military, and law enforcement efforts. On the political front, Japan has sought and received reassurance from multiple U.S. administrations that the U.S.-Japan security treaty applies to the Senkaku Islands.<sup>146</sup> The Japanese defense establishment has pursued modernization of its coast guard to counter China's actions to erode Japan's administrative control of the islands.<sup>147</sup> Japan likewise continues to improve the capabilities of its Ground, Maritime, and Air Self-Defense Forces to counter increasing pressure from China in the air and maritime domains.<sup>148</sup> Furthermore, in addition to legislation passed in 2015 that allowed the Self-Defense Force to conduct military operations overseas and participate in collective self-defense with allies,<sup>149</sup> Prime Minister Shinzo Abe seeks to amend Japan's constitution to allow for a formal military and the ability to deploy Japan's armed forces outside of strictly "self-defensive" circumstances.\*<sup>150</sup> In the context of increasing PLA Air Force activity near Japan's southwest islands—namely fighter and bomber flights through the Miyako Strait, intelligence collection flights along the airspace of Japan's southwest islands, and State Oceanic Administration aircraft flying near the Senkaku Islands†<sup>151</sup>—Japan has placed particular emphasis on developing capabilities to defend these islands‡ and working to improve the expeditionary capability of the Japanese Self-Defense Force to defend the islands from attack by China.<sup>152</sup>

- *Military modernization:* The Japan Self-Defense Force is modern and very capable. Modernization efforts are focused on improving intelligence, surveillance, and reconnaissance capabilities; lift capabilities; command, control, communication, and intelligence capabilities; and ballistic missile defense. To respond to sea and air threats, the Self-Defense Force is acquiring SH-60K patrol helicopters, F-35A fighter aircraft, V-22 tiltrotor aircraft, E-2D airborne early-warning aircraft, and armored amphibious vehicles; upgrading its Osumi-class landing ships; and continuing submarine construction.<sup>153</sup> To counter ballistic missile threats, Japan is building Aegis-equipped destroyers and devel-

\*Prime Minister Abe's revision is focused specifically on Article 9 in Chapter 2 of Japan's Constitution, which deals with the "renunciation of war" and states: "Aspiring sincerely to an international peace based on justice and order, the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes. In order to accomplish the aim of the preceding paragraph, land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognized." Prime Minister of Japan and His Cabinet, *The Constitution of Japan*, May 3, 1947.

†During the Commission's May 2017 trip to Japan, Lieutenant General Osamu Onoda, Japan Air Self-Defense Force (Ret.), referred to a May 18 incident in which a Chinese unmanned aerial vehicle flew above the territorial seas of one of the Senkaku Islands as a "very provocative action." Lieutenant General Osamu Onoda, Japan Air Self-Defense Force (Ret.), meeting with Commission, Tokyo, Japan, May 25, 2017. See also Yoko Wakatsuki and Junko Ogura, "Japan: China 'Escalating' Tensions over Disputed Islands," CNN, May 19, 2017.

‡Japan is focusing on bolstering its defense of its southwest islands located in the Ryukyu Island Chain to include the Senkakus. Japan has placed surface search radars on islands between Okinawa and Yonaguni, the Ground Self-Defense Force is increasing amphibious and coastal defense capabilities, and the Air Self-Defense Force has increased its F-15 fighter presence at Naha Air Base to increase Japan's capability to defend these islands from a Chinese attack. Hideaki Kaneda, adjunct fellow at the Japan Institute for International Affairs, meeting with Commission, Tokyo, Japan, May 24, 2017; Megan Eckstein, "Japan Shifting Amphibious, Coastal Defense Units Closer to China; Australia Boosts Its Own Capability," USNI News, April 5, 2016; Japan Ministry of Defense, *Defense of Japan*, July 1, 2015, 165.

oping advanced ballistic missile interceptors (SM-3 Block IIA) with the United States.<sup>154</sup> In addition to continued investment in Self-Defense Force capabilities, Tokyo continues to focus on increasing the capability of the Japan Coast Guard\* by expanding its fleet of patrol ships from 128 to 142 between 2016 and 2020.<sup>155</sup>

#### *Japan's Response to a Senkaku Island Contingency*

Japan's response to an East China Sea crisis would likely depend on the nature of Chinese aggression. An accidental collision, a blockade, or island seizure operations would pose different operational and strategic challenges for Tokyo.<sup>156</sup> Japan could respond to Chinese aggression in the East China Sea using three phases of operations, according to Michael J. Green, senior vice president for Asia and Japan chair at the Center for Strategic and International Studies:

*“Phase Zero” (under peacetime tensions) would entail the deployment of intelligence, surveillance, and reconnaissance assets near the Senkaku Islands.... “Phase One” (as Chinese forces act) would involve the deployment of a [Japan Ground Self-Defense Force] “rapid-deployment” regiment consisting of infantry, mortar, and mechanized companies equipped with amphibious vehicles.... “Phase Two” would see the activation of such units in the event that the islands were seized by an enemy.*<sup>157</sup>

If China escalates a crisis to the point of conflict, Tokyo likely would look to Washington for support.<sup>158</sup> Japan would certainly expect a large U.S. force posture in the region and vocal support from Washington noting that Article V of the U.S.-Japan Defense Treaty† continues to extend to the Senkaku Islands to deter aggression.<sup>159</sup> However, should China initiate hostilities against the Japan Self-Defense Force and Japan Coast Guard while those forces were defending the islands, Tokyo would expect Article V to be honored.

#### *Japan's Potential Role in a Taiwan Contingency*

In July 2015, Prime Minister Abe asserted Japan has the right of collective self-defense under Article VI of the U.S.-Japan Security Treaty in cases where Japan itself was not directly under attack.<sup>160</sup> Dr. Green testified to the Commission that “Abe’s commitment to help defend U.S. forces under the collective self-defense right might

\*The Japan Coast Guard does not have a military mission and only conducts maritime law enforcement operations. Furthermore, Japan does not convert Maritime Self-Defense ships into Coast Guard ships. The Japan Coast Guard considers all China Coast Guard ships (even converted PLA Navy ships) to be law enforcement ships, and engages with them as such. Official, Japanese law enforcement, meeting with Commission, Tokyo, Japan, May 24, 2017.

†There is an instance where the invocation of Article V of the U.S.-Japan Defense Treaty may be delayed. Dr. Green argues that “Japanese officials would be ... aware that [the perception of] unilateral escalation by Japan would put at risk American support and potentially allow China to force an unfavorable outcome through U.S. pressure on Japan. An internationalization of the dispute in which Japan was forced by its closest ally to de-escalate and relinquish de facto control of the Senkaku Islands would be devastating for the Japanese government and the long-term credibility of the U.S.-Japan alliance—not to mention other U.S. security commitments in the region. The [Japan Self Defense Force] would also be well-aware that escalation beyond the tactical level around the Senkaku Islands would require capabilities only the U.S. military has.” U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.

be considered the quid offered in exchange for the quo of a stronger U.S. commitment to defend Japan against an expanding China.”<sup>161</sup> Dr. Green argues:

*The new interpretation of what is allowed under collective self-defense opens the first real possibility of joint planning and exercises related to contingencies in the Taiwan area, at least in theory. To be clear, Japan has no treaty or political obligation to assist with the defense of Taiwan. Even the United States policy is now guided not by a formal treaty with Taipei, but instead by the Taiwan Relations Act of 1979, which states that: ‘It is the policy of the United States to maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan.’ Moreover, longstanding U.S. declaratory policy regarding contingencies in the Taiwan Strait has been to assert tactical clarity regarding the U.S. ability to defend Taiwan and our interests in the Western Pacific, but strategic ambiguity regarding the exact circumstances under which the United States would use military force to come to Taiwan’s aid.*<sup>162</sup>

There are at least three areas where Japan may support U.S. efforts to defend Taiwan if Taiwan is attacked by China. These areas of support would probably be logistics, ballistic missile defense, and contributions to operations to maintain control of sea lanes and down through the Ryukyu Islands.<sup>163</sup>

#### *Vietnam*

Hanoi has sought to address Vietnam’s security needs by upgrading its military capabilities while seeking to stabilize its relationship with Beijing and also maintain good relations with the United States, Australia, India, Japan, and others.<sup>164</sup> Vietnam is also pursuing a military modernization program that is intended to enhance its sea denial\* capabilities to counter the significant advantage Beijing holds over Hanoi concerning air, maritime strike, and force projection capabilities into the South China Sea.<sup>165</sup> Vietnam’s military modernization program appears intended to deny the PLA the ability to operate freely at sea and challenge Vietnam’s maritime claims without costs.<sup>166</sup>

- *Military modernization:* In recent years, Hanoi has more urgently pursued foreign military sales from Russia and assistance from Japan and India to upgrade Vietnam’s military capabilities. From Russia, Vietnam has purchased 36 Su-30MKK attack aircraft, 6 KILo-class attack submarines, and 2 S-300 PMU-1 surface-to-air missile systems.<sup>167</sup> Additionally, Vietnam has entered talks to procure additional surface-to-air missiles from India, and Vietnam’s Coast Guard will receive patrol boats from Japan.<sup>168</sup>

\*Sea denial refers to the prevention or disturbance of an enemy’s use of the sea, particularly in areas adjacent to the defender’s coast. Milan Vego, *Operational Warfare at Sea: Theory and Practice*, Routledge, 2017, 27–28; Joint Chiefs of Staff, *JP-3-32 Command and Control for Joint Maritime Operations*, August 7, 2013.

- *Reef improvements:* Vietnam has been improving its outposts in the South China Sea by dredging on Ladd Reef, extending a runway on Spratly Island to support larger aircraft, and deploying mobile rocket launchers capable of hitting Chinese bases to some outposts.<sup>169</sup>

While Vietnam continues to improve the defensive capabilities of its Spratly Island outposts, Mira Rapp-Hooper—then senior fellow at the Center for a New American Security—testified to the Commission that “outright conflict between Vietnam and China seems unlikely, unless China attempts to seize Vietnam-held features.... Hanoi and Beijing could find themselves in a destabilizing cycle of arming their Spratly outposts.”<sup>170</sup>

### *The Philippines*

Despite recently cooling relations between the United States and the Philippines and warming ties between Beijing and Manila, the Philippine-U.S. defense treaty remains intact.<sup>171</sup> Furthermore, the Philippines continues to foster a good relationship with Japan and is the recipient of Japanese support to its coast guard concerning equipment and training.<sup>172</sup> Nevertheless, without assistance from the United States, the Armed Forces of the Philippines (AFP) is unprepared to counter China’s use of force to seize and hold Philippine-claimed features in the South China Sea. The longtime priority for the AFP has been counterinsurgency operations against terrorists and militants, which has led military modernization efforts to prioritize the ground forces at the expense of the navy and air force.<sup>173</sup> Currently, the AFP operates about 15 surface combatants (3 frigates and 12 corvettes) and 8–12 fighter aircraft.<sup>174</sup>

- *Military modernization:* Although AFP modernization under Philippine President Rodrigo Duterte remains focused on equipment that supports ground force and counterinsurgency operations, a 15-year military modernization program, which began in 2013 under the previous administration, is starting to take shape.<sup>175</sup> The air force modernization program seeks strike aircraft, multirole fighters, airborne early warning and control aircraft, and lift.<sup>176</sup> Thus far the Philippines has acquired 2 C-130 aircraft from the United States and 12 FA-50 multirole aircraft from South Korea.<sup>177</sup> Manila may seek an additional 12 FA-50 aircraft from Seoul.<sup>178</sup> Naval modernization efforts were focused on the acquisition of landing craft, resupply ships, and surface warfare ships.<sup>179</sup> The navy has taken possession of two strategic sealift vessels built by Indonesia.<sup>180</sup> The Philippines likewise has procured five landing craft from Australia.<sup>181</sup> The navy is also acquiring two frigates and an antisubmarine corvette from South Korea.<sup>182</sup>

Although the Philippines, under President Duterte’s leadership, seeks closer relations with Beijing, the Philippines and China are unlikely to resolve tensions over the South China Sea permanently.<sup>183</sup> The U.S.-Philippines Mutual Defense Treaty, which has been affirmed by several U.S. administrations, states:

*An armed attack in the Pacific Area on either of the Parties would be dangerous to its own peace and safety and declares*

*that it would act to meet the common dangers in accordance with its constitutional processes... An armed attack on either of the Parties is deemed to include an armed attack on the metropolitan territory of either of the Parties, or on the island territories under its jurisdiction in the Pacific or on its armed forces, public vessels, or aircraft in the Pacific.*<sup>184</sup>

Some Philippines-claimed features in the South China Sea could be interpreted to fall outside this definition, which introduces some ambiguity as to whether the United States would intervene in such a scenario.<sup>185</sup>

- After seizing control of Scarborough Reef from the Philippines in 2012, China has intermittently permitted Filipino fishermen to fish at the reef and has harassed some Filipino fishermen;<sup>186</sup> this dispute remains a flashpoint between the two countries.<sup>187</sup>
- In March 2017, China declared its intent to build an environmental monitoring station near Scarborough Reef.<sup>188</sup> The Philippines government has declared that any Chinese building at Scarborough would be a “red line.”<sup>189</sup> Should China seek to alter the reef through land reclamation or the deployment of PLA equipment such as surface search radars, this would certainly increase tension between the two countries.\*
- Second Thomas Shoal—where Filipino Marines man a make-shift outpost on the *Sierra Madre*, a grounded Philippine Navy amphibious ship—is another potential flashpoint.<sup>190</sup> China has often challenged the resupply of the grounded ship and threatened to destroy the outpost.<sup>†</sup><sup>191</sup>
- In April 2017, President Duterte declared the AFP would “occupy” all Philippines-claimed features in the Spratly Islands.<sup>192</sup> Although he later walked back the statement,<sup>193</sup> it illustrates the high level of tension that still pervades the China-Philippines relationship with regard to the South China Sea.

#### **Scarborough Reef Seizure and Calls for Clarification about the U.S.-Philippine Mutual Defense Treaty**

Since China’s seizure of Scarborough Reef, there have been calls from within the Philippines for clarification about whether the U.S.-Philippine Mutual Defense Treaty covers Philippine-controlled features such as Second Thomas Shoal.<sup>194</sup> Some subject matter experts—such as Zack Cooper, a fellow at the Center for Strategic and International Studies, and Dr. Rapp-Hooper— have raised questions about whether the United States should consider

\*In addition to the likelihood that land reclamation activity at Scarborough Reef would increase tensions between China and the Philippines, Andrew S. Erickson, a professor of strategy at the U.S. Naval War College, in his testimony to the Commission stated, “It’s important to ensure that Scarborough [Reef] is not dredged and developed into a key targeting node for China in the South China Sea, where it would, in effect, be the last big piece in the coverage puzzle.” U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, oral testimony of Andrew S. Erickson, February 23, 2017.

†China has previously threatened to pull the *Sierra Madre* from its current resting place, which would likely result in the hull sinking. Ben Bohane, “Out to Sea for the Philippines,” Australian Broadcasting Corporation, July 11, 2016; Anders Corr, “China Issues Threat after Philippine Activists Resupply the Sierra Madre in the South China Sea,” *Forbes*, July 6, 2016.

**Scarborough Reef Seizure and Calls for Clarification  
about the U.S.-Philippine Mutual Defense Treaty—  
*Continued***

clarifying the treaty as well.<sup>195</sup> CNA Corporation senior fellow Rear Admiral Michael McDevitt, U.S. Navy (Ret.) argues that while Philippine capabilities should be bolstered, clarification of the treaty could be counterproductive, stating that “The United States needs to be completely committed to a very long term, dedicated effort to improve the Armed Forces of Philippine’s maritime capabilities.... Washington should not, however, explicitly expand the scope of the Mutual Defense Treaty to cover the contested Philippine claims in the Spratlys.”<sup>196</sup> In February 2016, Admiral Harry Harris, Commander of U.S. Pacific Command, was asked by members of the U.S. Senate Committee on Armed Services whether the United States should make an explicit guarantee to respond to an attack on the Philippines military in disputed waters or territory under the Mutual Defense Treaty.<sup>197</sup> Admiral Harris responded by saying, “I think we should consider it, and we should have a discussion of it in the policy arena. Our obligations under the treaty with the Philippines are pretty clear. And whether we extend that to Second Thomas Shoal, which we do not hold as Philippines’ sovereign territory, because we do not take a position on sovereignty, we should have that discussion, I believe.”<sup>198</sup>

*The United States*

U.S. allies, friends, and partners face a China that seeks to shape the environment in the Asia Pacific to its advantage, particularly along its maritime periphery. China’s behavior around territorial disputes has created concern for Japan, Vietnam, the Philippines, and other South China Sea states.<sup>199</sup> Jacqueline N. Deal, president and chief executive officer of the Long Term Strategy Group, testified to the Commission:

*The U.S. alliance commitments that could be activated by maritime hotspot conflicts in East or Southeast Asia are strongest in the East China Sea. The United States has repeatedly clarified that the Senkaku Islands are covered by its mutual security treaty with Japan. With regard to the Taiwan Strait, the United States remains obligated by the 1979 Taiwan Relations Act to contribute to the maintenance of Taiwan’s capacity for self-defense. In the South China Sea, the Philippines case is most ambiguous insofar as we have not clarified whether our treaty commitment to the defense of that country applies to disputed offshore islands, though it has been suggested that the Sierra Madre is covered by virtue of its being a commissioned ship. Domestic political developments in the Philippines have also created uncertainty about the future trajectory of its relations with the United States.<sup>200</sup>*

U.S. alliance commitments have helped maintain an environment that encourages diplomatic exchanges between states while preventing another large state from destabilizing the region.<sup>201</sup> A conflict in the East China Sea, South China Sea, or Taiwan Strait would threaten principles such as ensuring seas remain free for navigation, international disputes are settled by legal means, and free trade flourishes.<sup>202</sup>

*U.S. Involvement in a Crisis*

If Beijing continues its incremental approach to increasing control over the East and South China seas, the United States could receive requests for additional assistance by allies, friends, and partners to improve their capabilities to defend themselves, along with calls for the United States to remain engaged in the region to maintain security and stability.<sup>203</sup> If the Chinese decide to use force to resolve a crisis, the United States must be prepared to counter Chinese counterintervention capabilities.<sup>204</sup> Furthermore, the PLA has studied carefully how the U.S. responds to crisis. Dr. Deal testified:

*For the better part of the last century, U.S. power projection has proceeded via a build-up of forces near the target on regional bases and aircraft carriers, followed by strikes on the target from predominantly short-range aircraft. ... In the face of North Korean and Chinese provocations in the mid-1990s, the United States repeatedly sent carriers to the East China Sea and Taiwan Strait to signal our displeasure and seriousness. Chinese defense scholars have also studied our adherence to the above pattern in the 1991 Gulf War and more recent conflicts in the Middle East and Central Asia. Perhaps a sense of confidence about both their grasp of this approach and their counters to it led them to describe it for the first time in the 2013 edition of The Science of Military Strategy: After the Cold War ended, the United States changed 'forward defense' into 'forward presence' and reduced its overseas garrisons, but it still ... maintained a certain number of forward garrisons.... At the same time, it treated its strategic nuclear forces and conventional forces deployed in the homeland as a backup, using the [former] ... to prevent nuclear attacks and large-scale conventional attacks against the United States and its allies, and treating the conventional active-duty and reserve units stationed in the homeland as central reserves, with an emphasis on strengthening the[ir] quick reaction capabilities ... to deal with regional crises and conflicts; these would rely on strategic means of air and sea transportation for quick deployment as needed, reinforcing units stationed along the front lines at any time to strengthen their capacity for sustained operations.<sup>205</sup>*

Chinese military thinkers' study of U.S. operations has influenced China's military modernization program, which is designed to oppose U.S. forces—including intelligence, surveillance, and reconnaissance assets—with ballistic and cruise missiles to strike targets entering the region and the bases on which the United States would depend.<sup>206</sup>

China also is pursuing coercion to erode long-term U.S. presence in the Asia Pacific.<sup>207</sup> These coercive options are intended to erode the United States' strategic position, freedom of action, and operational space in the region.<sup>208</sup> The 2001 edition of *The Science of Military Strategy* states "War is not just a competition of military forces, but an overall contest of political, economic, diplomatic, cultural and other forces. The competitions in the nonmilitary fields such as politics, economy, diplomatic and culture coordinate directly or indirectly with military operations ... [and] military operations cannot [achieve] ... victory without ... support of the ... nonmilitary field."<sup>209</sup> David Berteau and Michael Green of the Center for Strategic and International Studies note that "counterintervention [capabilities] ... also include diplomatic, information, and economic sources of leverage against the U.S. political system and particularly weaker ... states ... to complicate U.S. intervention in Taiwan, the South China Sea, or other regional crises that could involve China."<sup>210</sup> Mr. Berteau and Dr. Green likewise assert China's "aim ... [is] weakening U.S. alignment with other states in the region and involv[ing] instruments that range from trade agreements and diplomacy to bribery and individual coercion."<sup>211</sup> A 2016 Center for Strategic and International Studies report on the U.S. "Rebalance to Asia" strategy notes one of the methods China uses to counter U.S. military basing arrangements in the region is maintaining a PLA strike capability to make U.S. "allies targets instead of sanctuaries, complicating the calculation for host governments..."<sup>212</sup>

However, the United States may be able to reduce the vulnerability of U.S. forces to Chinese coercion efforts and PLA counterintervention forces by restoring deterrence.<sup>213</sup> Dr. Deal suggests "new concepts for the U.S. military range from options centered on destroying key targets on the Mainland to options revolving around a distant blockade."<sup>214</sup> PLA writings on island warfare published by both the Academy of Military Science and the National Defense University stress that island campaigns require lengthy planning, which creates an opportunity for an adversary to gain an understanding of how the PLA may conduct contingency operations and ultimately disrupt a contingency operation.<sup>215</sup> Modern amphibious operations are complex and require extensive preparation to execute. This means the PLA must conduct significant pre-conflict planning and preparation to ensure logistical and sustainment requirements are met in order to sustain operations at a distance from the Mainland.<sup>216</sup> Dr. Deal argues that under these conditions and with sufficient warning, the United States "could disrupt a planned operation through ... unexpected visits to or rotations through non-typical access points (e.g., civilian airfields and ports), snap exercises in the region, and/or unexpected displays of new capabilities. Such capacity revelation, in turn, could be accomplished through a leak, a test, or the use of a new system in an observable exercise."<sup>217</sup>

#### *Options for De-escalation*

Although DOD planners may be seeking to build de-escalation into response options to a crisis, there is little evidence China can be dissuaded once deterrence has failed and Beijing has made a decision to use force to resolve a crisis along its periphery.<sup>218</sup> As pre-

viously discussed, concepts such as “war control” suggest that once a conflict occurs, China will seek to encourage or pressure the United States to yield early in a fight.<sup>219</sup> Any efforts to pursue “off-ramps” may be misinterpreted as weakness and reinforce Beijing’s decision to proceed with executing a contingency plan.<sup>220</sup> Washington may incorporate means to de-escalate in phase zero (pre-conflict) shaping operations to ensure the United States maintains the ability to immediately deter Chinese aggression at the outset of a conflict. This requires the United States to maintain the ability to gain warning of an impending PLA attack and respond to the warning in ways Beijing does not anticipate.

**Addendum I: Eastern Theater Command Force Structure**

<b>Ground Forces</b>	<b>Naval Forces</b>	<b>Air Forces</b>	<b>Rocket Forces</b>
First Group Army	East Sea Fleet		Base 52, Huangshan
1st Amphibious Mechanized Inf Div	Naval Aviation, Ningbo	3rd Fighter Div	807th Launch Bde
178 Mechanized Inf Bde	4th Air Div, Taizhou	14th Fighter Div	819th Bde
3rd Motorized Inf Bde	6th Air Div, Shanghai	29th Fighter Div	811th Launch Bde
10th Armored Bde	1st Flying Panther Rgt	28th Attack Div	820th Bde
Artillery Bde, Wuxi	8th Frigate Squadron	10th Bomber Div	Launch Bde, Shaoguan, Guangdong
Long-distance Artillery Bde, Wuxi	6th & 8th Destroyer Flotilla	SAM Bde, Quanzhou	817th Launch Bde
5th Army Aviation Bde	5th Landing Ship, Flotilla	Unmanned Aerial Vehicle Bde, Liancheng	
Air Defense Bde, Zhenjiang, Jiangsu	42nd Submarine Flotilla	85th Air Bde	
12th Group Army	22nd Submarine Flotilla	3rd Surface to Air Missile Bde	
34th Mechanized Inf Div	21st Fastboat Flotilla	8th Anti-Aircraft Artillery Bde	
35th Mechanized Inf Bde	2nd Combat Support Ship Flotilla		
179th Motorized Inf Bde			
Artillery Bde, Xuzhou, Jiangsu			
Air Defense Bde, Hua'an			
Special Operations Bde, Jiangsu			
31st Group Army			
86th Motorized Inf Div			
91st Motorized Inf Div			
92nd Motorized Inf Bde			
3rd Artillery Bde			
13th Air Defense Bde			
Amphibious Armored Bde			
Special Operations Bde			
10th Army Aviation Rgt			

*Note:* This order of battle reflects the PLA Army structure before April 18, 2017, when China announced the armed forces would reorganize into 84 corps-level units resulting in the reduction group armies from 18 to 13.

Source: U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.

**Addendum II: Southern Theater Command Force Structure**

<b>Ground Forces</b>	<b>Naval Forces</b>	<b>Air Forces</b>	<b>Rocket Forces</b>
14th Group Army	South Sea Fleet		N/A
1st Infantry Bde, Yunnan	2nd Destroyer Flotilla	2nd Fighter Div, Guangdong	
40th Infantry Bde, Yunnan	9th Destroyer Flotilla	9th Fighter Div, Guangdong	
42nd Infantry Bde, Yunnan	11th Fast Boat Flotilla	18th Fighter Div, Hunan	
Artillery Bde, Yunnan	Fast Boat Flotilla	44th Fighter Div, Yunnan	
Armored Bde, Yunnan	Operations Support Vessel Flotilla	8th Bomber Div, Hunan	
Air Defense Bde, Yunnan	6th Landing Ship Flotilla	4th Transport Div, Guizhou	
Infantry Bde, Yunnan	1st Marine Bde		
41st Group Army	164th Marine Bde		
121st Mountain Inf Bde, Guangxi	8th Naval Aviation Div, Hainan		
122nd Infantry Bde, Guangxi	22nd Naval Aviation Reg		
123rd Mechanized Inf Bde, Guangxi	23rd Air Reg		
Artillery Bde, Guangxi	9th Naval Aviation Div		
Armored Bde, Guangxi	25th Air Reg		
42nd Group Army	28th Air Reg		
132nd Infantry Bde, Hainan	27th Air Reg		
Artillery Div, Guangdong			
12th Amphibious Mechanized Inf Div, Guangdong			
163rd Infantry Div, Guangdong			
Special Operations Bde, Guangdong			
Long Range Artillery Bde, Guangdong			
Air Defense Bde, Guangdong			
Army Aviation Bde, Guangdong			
9th Armored Bde, Guangdong			

*Note:* This order of battle reflects the PLA Army structure before April 18, 2017, when China announced the armed forces would reorganize into 84 corps-level units resulting in the reduction group armies from 18 to 13.

Source: U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.

## ENDNOTES FOR SECTION 3

1. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 41.
2. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, i; China's State Council Information Office, *China's Military Strategy*, May 2015.
3. Mark Cozad, "The PLA and Contingency Planning," in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 16–17; Thomas Woodrow, "The PLA and Cross-Border Contingencies in North Korea and Burma," in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 206.
4. China's State Council Information Office, *China's Military Strategy*, May 2015.
5. China's State Council Information Office, *China's Military Strategy*, May 2015.
6. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 87.
7. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 87–90.
8. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25, 67, 72; David Helvey, "Remarks to the U.S.-Taiwan Business Council Defense Industry Conference," U.S.-Taiwan Business Council, Williamsburg, Virginia, October 3, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 90–91.
9. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 72–73; Andrew S. Erickson and Michael Chase, "China's Strategic Rocket Force: Sharpening the Sword," *Jamestown Foundation*, July 3, 2014; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015, 13–22; U.S.-China Economic and Security Review Commission, *Hearing on China's Military Modernization and Its Implications for the United States*, written testimony of Lee Fuell, January 30, 2014.
10. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 360; Kristian McGuire, "Diplomat Interview: Robert Sutter," *Diplomat*, May 4, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 88.
11. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 359; Alan D. Romberg, "The '1992 Consensus'—Adapting to the Future?" *Hoover Institution*, March 2016, 2, 5.
12. Kevin Ponniah, "Taiwan: How China Is Poaching the Island's Diplomatic Allies," BBC, June 14, 2017; Chang Hsiao-yueh, Taiwan Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017; Javier C. Hernandez, "China Suspends Diplomatic Contact with Taiwan," *New York Times*, June 25, 2016; Ben Blanchard and J.R. Wu, "With Gambia Move, China Ends Diplomatic Truce with Taiwan," Reuters, March 17, 2016.
13. Kristian McGuire, "Diplomat Interview: Robert Sutter," *Diplomat*, May 4, 2016.
14. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016.
15. Guo Yuandan et al., "Military Strategy White Paper Lets the World Know China's Bottom Line," *Global Times*, May 27, 2015. Translation.
16. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 7.
17. Ronald O'Rourke, "Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress," *Congressional Research Service*, May 31, 2016, 26.
18. PCA Case No. 2013–19 in the Matter of the South China Sea Arbitration before an Arbitral Tribunal Constituted under Annex VII to the 1982 United Nations Convention on the Law of the Sea between the Republic of the Philippines and the People's Republic of China, *Award*, July 12, 2016.

19. Ronald O'Rourke, "Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress," *Congressional Research Service*, May 31, 2016, 9.
20. Tadashi Ikeda, "Getting Senkaku History Right," *Diplomat*, November 26, 2013.
21. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 11; Mark E. Manyin, "Senkaku (Diaoyu/Diaoyutai) Islands Dispute: U.S. Treaty Obligations," *Congressional Research Service*, January 22, 2013, 1.
22. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, i, 11.
23. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, i, 10; Japan's Ministry of Defense, *Defense of Japan 2016*, 2016, 55–56.
24. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
25. Huang Yingying, "Meng Xiangqing: China Has Had Great Breakthroughs on Regional Crisis Management," *International Herald Leader*, November 6, 2012.
26. China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 104. Translation.
27. Zhang Qinsheng, "The Strategy of Active Defense Is An Ideology Which Will Shine Forever: A Tribute on the Birthday of the Glorious Communist Party of China," *Study Times*, July 18, 2011. Translation.
28. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
29. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 9. Translation; Yuan Zhengling, "An Active Defense Strategy to Protect National Interests," *National Defense*, December 24, 2002. Translation.
30. Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 205.
31. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
32. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
33. China's State Council Information Office, *The Diversified Employment of China's Armed Forces*, April 16, 2013.
34. Ryan Martinson, "The Militarization of China's Coast Guard," *Diplomat*, November 21, 2014.
35. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 7.
36. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017; Lonnie Henley, "War Control and Escalation Management," in Michael Swaine, Andrew Yang, and Evan Medeiros, eds., *Assessing the Threat: The Chinese Military and Taiwan's Security*, Carnegie Endowment for International Peace, 2007, 85–110; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 202–211.
37. Timothy R. Heath, Kristen Gunness, and Cortez A. Cooper, *The PLA and China's Rejuvenation: National Security and Military Strategies, Deterrence Concepts, and Combat Capabilities*, RAND Corporation, 2016, 17; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 197.
38. Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 197.
39. Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 205.
40. Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 206.
41. Paul J. Leaf, "Learning from China's Oil Rig Standoff with Vietnam," *Diplomat*, August 30, 2014.

42. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
43. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 98–100. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 448.
44. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 98–100. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 448.
45. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 100. Translation.
46. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 164–166.
47. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 190.
48. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Zhang Zebin, Liang Pengfei, and Zhang Zexing, "Focus on One's Main Job for Winning," *PLA Daily*, November 26, 2016.
49. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; China's Ministry of National Defense, *Official English Transcript of PRC National Defense Ministry's News Conference*, February 25, 2016.
50. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 205–206; Wang Xiaohui, "What Strategic Preparations Should the Chinese Armed Forces Make," *Nanfang Zhoumo*, September 11, 2015. Translation.
51. Phillip C. Saunders and Joel Wuthnow, "China's Goldwater-Nichols? Assessing PLA Organizational Reforms," *Institute for National Strategic Studies*, April 20, 2016, 3; Liang Pengfei, "Joint Operations and Joint Training: The Only Way to Victory in War—Interviews with PLA Deputies to the National People's Congress on Joint Operations," *PLA Daily*, March 10, 2016. Translation; Guo Yuandan, Ren Zhong, and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, With the Southeast Coastal Front Being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation.
52. Ma Haoliang, "The Chain of Belonging of the 18 Group Armies Has Been Confirmed," *Ta Kung Pao*, February 23, 2016. Translation; Guo Yuandan, Ren Zhong, and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, with the Southeast Coastal Front Being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation.
53. Ma Haoliang, "The Chain of Belonging of the 18 Group Armies Has Been Confirmed," *Ta Kung Pao*, February 23, 2016. Translation; Guo Yuandan, Ren Zhong, and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, with the Southeast Coastal Front Being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation.
54. June Teufel Dreyer, "China's Military Reorganization—and America's Window of Opportunity," *Foreign Policy Research Institute*, March 14, 2016.
55. Ma Haoliang, "The Chain of Belonging of the 18 Group Armies Has Been Confirmed," *Ta Kung Pao*, February 23, 2016. Translation; Guo Yuandan, Ren Zhong, and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, with the Southeast Coastal Front being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation.
56. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 205–206; June Teufel Dreyer, "China's Military Reorganization—and America's Window of Opportunity," *Foreign Policy Research Institute*, March 14, 2016; Guo Yuandan, Ren Zhong, and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, With the Southeast Coastal Front Being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation.
57. Ma Haoliang, "The Chain of Belonging of the 18 Group Armies Has Been Confirmed," *Ta Kung Pao*, February 23, 2016. Translation; and Guo Yuandan, Ren Zhong,

and Lan Yage, "Experts: The Five PLA Theater Commands Have Clear Goals, with the Southeast Coastal Front Being the Key Link of Future Military Operations," *Huanqiu Shibao*, February 2, 2016. Translation; *Kanwa Defense Review*, "PLA Studies on Redefining China's Military Commands," May 1, 2015.

58. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 107. Translation.

59. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 99. Translation.

60. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

61. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 89; Hu Limin and Ying Fucheng, *Study on Joint Firepower Warfare Theory*, National Defense University Press, 2004, 42–50. Translation.

62. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 89; Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 33; Li Yousheng, *Lectures on the Science of Joint Campaigns*, Military Science Press, 2012, 124, 223. Translation.

63. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 88; Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 33; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 292. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 285.

64. Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 292. Translation.

65. Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 33; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 331. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 285.

66. Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 331. Translation.

67. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 89; Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 33; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 310. Translation.

68. Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 35.

69. Michael S. Chase et al., "China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)," *RAND Corporation* (prepared for the U.S.-China Economic and Security Review Commission), 2015, 35; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 535. Translation.

70. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

71. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

72. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.
73. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.
74. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.
75. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 109. Translation; Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy in the 21st Century," translated by Andrew S. Erickson and Lyle J. Goldstein, *Naval War College Review* (Autumn 2006): 61.
76. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017; China's Ministry of National Defense, *Official English Transcript of PRC National Defense Ministry's News Conference*, February 25, 2016; China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 101, 117. Translation.
77. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.
78. Marcelyn L. Thompson, "PLA Observations of U.S. Contingency Planning: What Has It Learned?" in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 46–47.
79. Marcelyn L. Thompson, "PLA Observations of U.S. Contingency Planning: What Has It Learned?" in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 37.
80. Marcelyn L. Thompson, "PLA Observations of U.S. Contingency Planning: What Has It Learned?" in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 37.
81. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 77.
82. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
83. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
84. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 88–90.
85. China's State Council Information Office, *China's Military Strategy*, May 2015.
86. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
87. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 99, 101, 128. Translation.
88. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
89. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 73–74. Translation.
90. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Sciences Press, 2013, 104. Translation.
91. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; Eric Heginbotham et al., "U.S.-China Military Scorecard," *RAND Corporation*, 2015, 342.

92. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
93. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
94. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 216; U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Military Force Projection and Expeditionary Capabilities*, written testimony of Mark R. Cozad, January 21, 2016.
95. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
96. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 216–218; U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Military Force Projection and Expeditionary Capabilities*, written testimony of Mark R. Cozad, January 21, 2016.
97. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Military Force Projection and Expeditionary Capabilities*, written testimony of Mark R. Cozad, January 21, 2016.
98. Gao Wu and Wang Hu, "During the 'Firepower-2016' Exercise, Critical Scenarios Occur Continually in Air Defense Brigades' Confrontation Drills; With Scenarios Being Improvised, Training Is Drawn Closer to Actual Operations," *PLA Daily*, July 18, 2016; Wu Kaibo and Qian Xiaohu, "Curtain Opens on Exercise 'Firepower-2016 Qingtongxia,'" *PLA Daily*, July 12, 2016.
99. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 3; J.R. Wu, "Taiwan Navy, Air Force to Train in Disputed South China Sea," Reuters, March 2, 2017; Ben Blanchard, "China Drills Again Near Taiwan as Island Warns of Threat," Reuters, March 2, 2017; China's Ministry of National Defense, *Official English Transcript of PRC National Defense Ministry's News Conference*, December 29, 2016.
100. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 7.
101. Lyle J. Morris, "The New 'Normal' in the East China Sea," *Diplomat*, February 24, 2017; Andrew S. Erickson and Conor M. Kennedy, "Countering China's Third Sea Force: Unmask Maritime Militia before They're Used Again," *National Interest*, July 6, 2016; Alexander Chieh-cheng Huang, "The PLA and Near Seas Maritime Sovereignty Disputes," in Andrew Scobell et al., eds., *The People's Liberation Army and Contingency Planning in China*, National Defense University Press, 2015, 290–291.
102. Paul J. Leaf, "Learning from China's Oil Rig Standoff with Vietnam," *Diplomat*, August 30, 2014; Hilary Whiteman, "How an Oil Rig Sparked Anti-China Riots in Vietnam," CNN, May, 19, 2014.
103. Lyle J. Morris, "Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia," *Naval War College Review* 70:2 (Spring 2017): 78.
104. Lyle J. Morris, "Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia," *Naval War College Review* 70:2 (Spring 2017): 78; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 201; Ryan Martinson, "East Asian Security in the Age of the Chinese Mega-Cutter," *Center for International Maritime Security*, July 3, 2015; Center for Strategic and International Studies, Asia Maritime Transparency Initiative, "East China Sea Tensions: Approaching a Slow Boil," April 14, 2016.
105. Lyle J. Morris, "Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia," *Naval War College Review* 70:2 (Spring 2017): 86; Franz-Stefan Gady, "Is China's Coast Guard about to Field a Modified PLA Warship?" *Diplomat*, June 3, 2016; Jeffrey Lin and P.W. Singer, "China's Coast Guard Arms up with a New Warship," *Popular Science*, June 1, 2016; Ryan D. Martinson, "From Words to Actions: The Creation of the China Coast Guard," China as a "Maritime Power" Conference, Arlington, Virginia, July 28–29, 2015; Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," *Congressional Research Service*, March 21, 2013, 33.
106. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017.

107. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017.
108. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.
109. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 535–538. Translation.
110. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; Zhang Yuliang ed., *The Science of Campaigns*, National Defense University Press, 2007, 505–506. Translation.
111. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; Zhang Yuliang ed., *The Science of Campaigns*, National Defense University Press, 2007, 505–506. Translation.
112. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 535–538. Translation.
113. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Ian Easton, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 535–538. Translation.
114. Sam LaGrone, “Chinese Military South China Sea ‘No Sail’ Zone Not a New Move,” USNI News, July 7, 2016.
115. Nathan Beauchamp-Mustafaga et al., “China Signals Resolve with Bomber Flights over the South China Sea,” *War on the Rocks*, August 2, 2016.
116. Japanese defense official, Ministry of Defense, meeting with Commission, Tokyo, Japan, May 25, 2017; Center for Strategic and International Studies, Asia Maritime Transparency Initiative, “East China Sea Tensions: Approaching a Slow Boil,” April 14, 2016.
117. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
118. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
119. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
120. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
121. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
122. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
123. Official, Japanese law enforcement, meeting with Commission, Tokyo, Japan, May 24, 2017; U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.
124. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, i, 69.
125. Lyle J. Morris, “Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia,” *Naval War College Review* 70:2 (Spring 2017): 87.
126. Sun Li and Fang Lihua, “China Successfully Conducts ‘East China Sea Cooperation—2012’ Military-Civilian Joint Exercise at Sea for the Protection of Rights,” *China National Radio Online*, October 19, 2012.
127. Gao Yi, “PLAN South Sea Fleet Normalizes War Readiness Patrols of Nansha, Shapes Effective Interaction Mechanisms with the Fisheries Law Enforcement Command and the China Coast Guard,” *People's Navy*, May 17, 2013.
128. Lyle J. Morris, “Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia,” *Naval War College Review* 70:2 (Spring 2017): 87; BBC,

“Vietnam Boat Sinks after Collision with Chinese Vessel,” May 27, 2014; Gerry Mul-lany and David Barboza, “Vietnam Squares Off With China in Disputed Seas,” CNN, May 7, 2014.

129. Lyle J. Morris, “Blunt Defenders of Sovereignty: The Rise of Coast Guards in East and Southeast Asia,” *Naval War College Review* 70:2 (Spring 2017): 87.

130. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.

131. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China’s Maritime Periphery*, written testimony of James E. Fanell, April 13, 2017.

132. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 83; U.S.-China Economic and Security Review Commission, *Hearing on China’s Emergent Military Aerospace and Commercial Aviation Capabilities*, written testimony of Roger Cliff, May 20, 2010; Bernard D. Cole, “Right-Sizing the Navy: How Much Naval Force Will Beijing Deploy?” in Roy Kamphausen and Andrew Scobell, eds., *Right-sizing the People’s Liberation Army: Exploring the Contours of the Chinese Military*, Strategic Studies Institute, September 2007, 542–545.

133. Dennis J. Blasko, “Recent Developments in the Chinese Army’s Helicopter Force,” *Jamestown Foundation*, June 9, 2017.

134. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 375.

135. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 378; Lung-chu Chen, *The U.S.-Taiwan-China Relationship in International Law and Policy*, Oxford University Press, 2016, 173.

136. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 377.

137. *South China Morning Post*, “Taiwan Starts Designing Home-Built Attack Submarine,” July 7, 2016; Wendell Minnick, “Taiwan Establishes Submarine Development Center,” *Defense News*, August 3, 2016.

138. Taiwan’s Ministry of National Defense, *2017 Quadrennial Defense Review*, March 2017, 38; Ian Easton et al., “Transformation of Taiwan’s Reserve Force,” *RAND Corporation*, 2017, 37; Taiwan’s Ministry of National Defense, *2015 National Defense Report, the Republic of China*, November 2015, 84.

139. Lu Hsin-hui and Evelyn Kao, “Live-Fire Han Kuang Exercises Simulating Chinese Attack to Begin,” *Focus Taiwan*, May 14, 2017; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 380; Luo Tianbin, “There Is Hope That Recruiting Hackers to Participate in the Han Kuang Exercise Will Be a Regular Practice,” *Liberty Times*, August 27, 2016. Translation; Zhu Ming, “The Last Time in His Term to Participate in a Military Activity, Ma Ying-jeou Views Han Kuang War Games Today,” *Storm Media*, April 26, 2016. Translation; Zhu Ming, “The Ministry of National Defense Plans to Expand the Han Kuang Tri-Service Opposition Exercise, Will Let President Tsai Inspect,” *Storm Media*, March 8, 2016. Translation.

140. Lu Hsin-hui and Evelyn Kao, “Live-Fire Han Kuang Exercises Simulating Chinese Attack to Begin,” *Focus Taiwan*, May 14, 2017; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 380; Luo Tianbin, “There Is Hope That Recruiting Hackers to Participate in the Han Kuang Exercise Will Be a Regular Practice,” *Liberty Times*, August 27, 2016. Translation; Zhu Ming, “The Last Time in His Term to Participate in a Military Activity, Ma Ying-jeou Views Han Kuang War Games Today,” *Storm Media*, April 26, 2016. Translation; Zhu Ming, “The Ministry of National Defense Plans to Expand the Han Kuang Tri-Service Opposition Exercise, Will Let President Tsai Inspect,” *Storm Media*, March 8, 2016. Translation.

141. Zhu Ming, “The Ministry of National Defense Plans to Expand the Han Kuang Tri-Service Opposition Exercise, Will Let President Tsai Inspect,” *Storm Media*, March 8, 2016. Translation.

142. Feng Shih-kuan, Taiwan Minister of Defense, meeting with Commission, Taipei, Taiwan, May 16, 2017.

143. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 389.

144. *China Post*, “Taiwan-Japan Working Group on Fishery Cooperation Convenes in Tokyo,” April 10, 2017; Tinghui Lin, “The Strategic Significance of the Taiwan-Japan Maritime Affairs Cooperation Dialogue,” *Center for Strategic and International Studies*, December 21, 2016.

145. Joseph A. Bosco, "Watch out, China: Taiwan and Japan Are Teaming Up," *National Interest*, May 26, 2016; Japan's Ministry of Defense, *Press Conference by the Defense Minister Nakatani*, January 19, 2016.
146. Ronald O'Rourke, "Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress," *Congressional Research Service*, May 31, 2016, 42–43.
147. Stratfor, "Japan: Coast Guard Takes a Prominent Role in 2017 Budget," December 22, 2016.
148. Emma Chanlett-Avery and Ian E. Rinehart, "The U.S.-Japan Alliance," *Congressional Research Service*, February 9, 2016, 25–27; Tetsuo Kotani, "U.S.-Japan Allied Maritime Strategy: Balancing the Rise of Maritime China," *Center for Strategic and International Studies*, April 2014, 1–2.
149. Feliz Solomon, "Shinzo Abe Moves Closer to Changing Japan's Pacifist Constitution," *Time*, May 3, 2017; Jonathan Soble, "Japan's Parliament Approves Overseas Combat Role for Military," *New York Times*, September 18, 2015.
150. Yuki Tatsumi, "Abe's New Vision for Japan's Constitution," *Diplomat*, May 5, 2017.
151. Japan's Ministry of Defense, *Defense of Japan*, August 26, 2016, 56.
152. Kirk Spitzer, "U.S. and Japanese Forces Lock and Load with One Eye on China," *Time*, September 22, 2014.
153. Japan's Ministry of Defense, *Defense of Japan*, August 26, 2016.
154. Japan's Ministry of Defense, *Defense of Japan*, August 26, 2016.
155. *Japan Times*, "Japan Coast Guard to Spend 27% of Budget on Boosting Senkaku Surveillance in 2017," December 22, 2016; Japan Coast Guard, *Japan Coast Guard*. <http://www.kaiho.mlit.go.jp/e/pamphlet.pdf>.
156. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
157. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
158. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
159. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
160. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017; Scott W. Harold, "Don't Weaken the U.S.-Japan Alliance, Strengthen It," *National Interest*, August 12, 2016; Alec Jordan, "Weighing the Powers of War: Perspectives on the Self-Defense Bills," *Tokyo Weekender*, August 9, 2015.
161. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
162. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.
163. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017; Adam P. Liff, "PacNet #27—The 2015 US-Japan Guidelines for Defense Cooperation: toward 'A More Balanced and Effective Alliance,'" *Center for Strategic and International Studies*, April 23, 2015.
164. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017; Ralph Jennings, "Vietnam Taking Long-Term Hard Line toward China on Maritime Claims," *Voice of America*, November 28, 2016; Helen Clark, "Vietnam Draws Closer to US, but Not Too Close," *Interpreter*, June 5, 2015; Ankit Panda, "India and Vietnam Push Ahead with Strategic Security Cooperation," *Diplomat*, May 26, 2015.
165. Shang-su Wu, "The Development of Vietnam's Sea-Denial Strategy," *Naval War College Review* 70:1 (Winter 2017): 143; Carl Thayer, "The Tyranny of Geography: Vietnamese Strategies to Constrain China in the South China Sea," *Contemporary Southeast Asia* 33:3 (December 2011): 352.
166. Truong Minh Vu and Nguyen The Phuong, "The Modernization of the Vietnam People's Navy: Grand Goals and Limited Options," *Center for Strategic and International Studies*, April 6, 2017; Shang-su Wu, "The Development of Vietnam's Sea-denial Strategy," *Naval War College Review* 70:1 (Winter 2017): 143.

167. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017; Shang-su Wu, "The Development of Vietnam's Sea-denial Strategy," *Naval War College Review* 70:1 (Winter 2017): 150–151.
168. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017; Sanjeev Miglani, "India Says in Talks with Vietnam for First Missile Sale," Reuters, February 15, 2017; Ankit Panda, "Japan Pledges 6 New Patrol Boats for Vietnam Coast Guard," *Diplomat*, January 17, 2017; Zachary Abuza and Nguyen Nhat Anh, "Vietnam's Military Modernization," *Diplomat*, October 28, 2016.
169. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017; Lincoln Feast and Greg Torode, "Exclusive: Risking Beijing's Ire, Vietnam Begins Dredging on South China Sea Reef," Reuters, December 9, 2016; David Brunnstrom, "Vietnam Expanding South China Sea Runway: U.S. Think Tank," Reuters, November 18, 2016.
170. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
171. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017; U.S. Department of State, *U.S. Collective Defense Arrangements*.
172. *Philippine Star*, "Full Text: Joint Statement of the Philippines and Japan," October 27, 2016.
173. Prashanth Parameswaran, "What's Next for Philippine Military Modernization under Duterte?" *Diplomat*, March 17, 2017; Koh Swee Lean Collin, "The Philippine Navy's Long Struggle to Modernize," *National Interest*, May 31, 2016; Armando J. Heredia, "Opinion: The Philippines Military Modernization Severely Snagged," USNI News, September 21, 2015; Prashanth Parameswaran, "The Truth about Philippine Military Modernization and the 'China Threat,'" *Diplomat*, July 8, 2015.
174. *Philippine Star*, "Air Force Receives 2 More Fighter Jets from Korea," March 27, 2017; Jaime Laude, "Navy Deploys Warship to Patrol Benham," *Philippine Star*, March 25, 2017; Yusuke Saito, "China's Growing Maritime Role in the South and East China Seas," *Center for New American Security*, March 20, 2017; Robert Beckhusen, "The Philippines' Biggest South China Sea Problem: It Has Almost No Navy," *National Interest*, July 27, 2016; Marine Corps Intelligence Activity, *Philippines Country Handbook*, December 6, 2007, 129.
175. Prashanth Parameswaran, "What's Next for Philippine Military Modernization under Duterte?" *Diplomat*, March 17, 2017; Eleanor Albert, "The Now and Future US-Philippines Military Alliance," *Defense One*, June 29, 2016.
176. Gerg Cahiles, "Air Force Hopeful of Duterte's support," CNN, June 10, 2016; Philippines Department of National Defense, *Issuing the Implementing Guidelines, Rules and Regulations of the Revised Armed Forces of the Philippines Modernization Act*, April 11, 2013.
177. Gabriel Dominguez, "South Korea's KAI Completes Deliveries of FA-50PH Aircraft to Philippines," *IHS Jane's Defense Weekly*, June 1, 2017; Patricia Lourdes Viray, "US Turns over Second C-130 Plane to Philippine Air Force," *Philippine Star*, October 24, 2016.
178. Marhalim Abas, "Philippines Likely to Buy 12 More FA-50s," *Aerospace Daily & Defense Report*, June 7, 2017.
179. Philippines Department of National Defense, *Issuing the Implementing Guidelines, Rules and Regulations of the Revised Armed Forces of the Philippines Modernization Act*, April 11, 2013.
180. Prashanth Parameswaran, "Philippines Receives Second Indonesia-Built Warship," *Diplomat*, May 11, 2017; Patricia Lourdes Viray, "Navy's First Strategic Sealift Vessel Arrives in Manila," *Philippine Star*, May 14, 2016.
181. Jaime Laude, "Philippine Navy Gets 3 More Landing Ships from Australia," *Philippine Star*, March 29, 2016.
182. Manuel Mogato, "South Korea Gives Anti-Submarine Warship to Philippines, for \$100," Reuters, April 27, 2017; Ridzwan Rahmat, "Hyundai Wins USD337 Million Frigate Contract from Philippine Navy," *IHS Jane's Defense Weekly*, September 2, 2016.
183. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
184. Mutual Defense Treaty between the United States and the Republic of the Philippines, August 30, 1951.

185. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
186. Jaime Pilapil, "Stop Firing at Filipino Fishers, DFA Tells China," *Manila Times*, May 4, 2017.
187. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
188. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
189. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
190. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
191. Anders Corr, "China Issues Threat after Philippine Activists Resupply the Sierra Madre in the South China Sea," *Forbes*, July 6, 2016; Manuel Mogato, "Exclusive: Philippines Reinforcing Rusting Ship on Spratly Reef Outpost—Sources," Reuters, July 13, 2015.
192. Richard Javad Heydarian, "Duterte's Call to Arms More Bluster than Threat," *Asia Times*, April 7, 2017.
193. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mira Rapp-Hooper, April 13, 2017.
194. InterAksyon, "Walang Magagawa? Kiko Joins Justice Carpio, Questions Duterte's Stance on Panatag," March 21, 2017; Tricia Aquino, "Carpio: Saying PH Can't Stop China from Building on Scarborough Shoal Encourages China More," InterAksyon, March 20, 2017; Ernest Z. Bower, "Enhanced Defense Cooperation Agreement: Manila's Most Credible Deterrent to China," *Center for Strategic and International Studies*, May 29, 2015.
195. Zack Cooper and Mira Rapp-Hooper, "Protecting the Rule of Law on the South China Sea: A Decision at The Hague against China's Land Reclamation Would Need the Support of the U.S.," *Wall Street Journal*, March 31, 2016.
196. Michael McDevitt, "The South China Sea: Assessing U.S. Policy and Options for the Future," *CNA*, November 2014, 91.
197. Senate Committee on Armed Services, *Hearing on U.S. Pacific Command and U.S. Forces Korea*, oral testimony of Admiral Harry B. Harris, Jr., February 23, 2016.
198. Senate Committee on Armed Services, *Hearing on U.S. Pacific Command and U.S. Forces Korea*, oral testimony of Admiral Harry B. Harris, Jr., February 23, 2016.
199. Richard Javad Heydarian, "Why Asia Is Trembling over a U.S.-China South China Sea Showdown," *National Interest*, February 23, 2017; Jacqueline Newmyer Deal, "China's Approach to Strategy and Long-Term Competition," in Thomas G. Mahnken, ed., *Competitive Strategies for the 21st Century*, Stanford University Press, 2012, 159–160.
200. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
201. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
202. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
203. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
204. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
205. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.
206. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017; Phillip Pournelle, "When the US Navy Enters the Next Superbowl, Will It

Play Like the Denver Broncos?" *War on the Rocks*, January 30, 2015; Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy in the 21st Century," translated by Andrew S. Erickson and Lyle J. Goldstein, *Naval War College Review* (Autumn 2006): 59–61.

207. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017; Kristien Bergerson, "China's Efforts to Counter U.S. Forward Presence in the Asia Pacific," *U.S.-China Economic and Security Review Commission*, March 15, 2016, 3–4.

208. Kristien Bergerson, "China's Efforts to Counter U.S. Forward Presence in the Asia Pacific," *U.S.-China Economic and Security Review Commission*, March 15, 2016, 4–5; Andrew S. Erickson and Timothy R. Heath, "China's Turn toward Regional Restructuring, Counterintervention: A Review of Authoritative Sources," *Jamestown Foundation*, November 16, 2015; U.S.-China Economic and Security Review Commission, *Hearing on China and the Evolving Security Dynamics in East Asia*, written testimony of Bonnie S. Glaser, March 13, 2014.

209. Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 471.

210. David J. Berteau and Michael J. Green, "U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment," *Center for Strategic and International Studies*, August 2012, 40.

211. David J. Berteau and Michael J. Green, "U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment," *Center for Strategic and International Studies*, August 2012, 40.

212. Michael Green et al., "Asia-Pacific Rebalance 2025: Capabilities, Presence, and Partnerships," *Center for Strategic and International Studies*, January 20, 2016, 16.

213. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.

214. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.

215. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Academy of Military Sciences Press, 2013, 116. Translation; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 506–507. Translation.

216. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 506–507. Translation.

217. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.

218. Luo Derong, "The Action Guideline for Armed Forces Building and Military Struggle Preparations - Several Points in the Understanding of the Military Strategic Guideline in the New Situation," *China Military Science*, January 1, 2017, 88–96. Translation; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 208.

219. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017; Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy*, Military Science Press, 2005, 197–212.

220. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Jacqueline N. Deal, April 13, 2017.

# **CHAPTER 3**

## **CHINA AND THE WORLD**

### **SECTION 1: CHINA AND CONTINENTAL SOUTHEAST ASIA**

#### **Key Findings**

- China's pursuit of strategic and economic interests in Burma (Myanmar), Thailand, Cambodia, and Laos often jeopardizes regional environmental conditions, threatens government accountability, and undermines commercial opportunities for U.S. firms.
- China has promoted a model of development in continental Southeast Asia that focuses on economic growth, to the exclusion of political liberalization and social capacity building. This model runs counter to U.S. geopolitical and business interests as Chinese business practices place U.S. firms at a disadvantage in some of Southeast Asia's fastest-growing economies, particularly through behavior that facilitates corruption.
- China pursues several complementary goals in continental Southeast Asia, including bypassing the Strait of Malacca via an overland route in Burma, constructing north-south infrastructure networks linking Kunming to Singapore through Laos, Thailand, Burma, and Vietnam, and increasing export opportunities in the region. The Chinese government also desires to increase control and leverage over Burma along its 1,370-mile-long border, which is both porous and the setting for conflict between ethnic armed groups (EAGs) and the Burmese military. Chinese firms have invested in exploiting natural resources, particularly jade in Burma, agricultural land in Laos, and hydropower resources in Burma and along the Mekong River. China also seeks closer relations with Thailand, a U.S. treaty ally, particularly through military cooperation.
- As much as 82 percent of Chinese imported oil is shipped through the Strait of Malacca making it vulnerable to disruption. To reduce this vulnerability, China has been investing in oil and natural gas pipelines across Burma, which will partially alleviate this problem, supplying China with up to 5 percent of its oil imports and 6 percent of its natural gas imports based on 2016 data.
- Chinese dams on the Mekong River threaten Laos, Cambodia, and Vietnam's food security by blocking sediment necessary for agriculture and restricting fish migration. Chinese dams are

poised to block half of the sediment in the river system and the dam network on the Lower Mekong is estimated to reduce the fish stock of the entire river system by 42 percent.

- Local resistance to Chinese development has stalled or closed several important Chinese projects, including the \$3.6 billion Myitsone Dam in Burma and a railway linking Kunming to the Indian Ocean. Protests against Chinese projects have emerged over environmental concerns, use of Chinese laborers, and contract terms that primarily benefit Chinese firms. Chinese business practices have created friction in Laos and Thailand where Chinese businesses have been closed by the government.
- Japan remains a competitor in continental Southeast Asia for infrastructure development. In 2016, Japan pledged to provide \$6.8 billion in infrastructure finance for Mekong River countries. Japan typically supports infrastructure projects that run east-west across the region while China constructs projects that run north-south.
- Cambodia has advocated for China's interests in the Association of Southeast Asian Nations (ASEAN), particularly regarding Chinese land reclamation in the South China Sea. In 2012 and 2016 Cambodia vetoed joint ASEAN resolutions containing language regarding the South China Sea objectionable to the Chinese government, reportedly in concert with Beijing. Beijing has contributed significantly more aid to Cambodia than the United States and other Western countries. Cambodia's government has also granted Chinese businesses special privileges in violation of its own regulations. These privileges appear linked to favors paid to Cambodian officials by Chinese firms.
- Laos has sought good relations with China and turned to China for infrastructure development and investment, but has grown uneasy over the influence China has gained through investment. This unease has caused Laos to rethink its relations with China. In 2016 the Lao People's Revolutionary Party removed Choummaly Sayasone, who was associated with granting economic concessions to Chinese firms as chief of the party.
- China faces a more complicated political landscape in Burma, including the National League for Democracy (NLD) government; the military, which retains considerable political power; and EAGs that control large segments of Burma and conduct military actions against the Burmese government and military. In response, China has leveraged its connections with all three groups to maximize its influence, establishing better relations with the NLD, maintaining contact with military leaders, and using its ties to EAGs to demonstrate its ability to influence Burma's peace process. In leveraging its ties with EAGs, China faces tension between securing stability in its borders and using EAGs and Burma's peace process to obtain influence over the NLD government.
- After U.S.-Thailand relations deteriorated following the 2014 coup, China and Thailand have signed a series of arms deals, including a \$393 million submarine purchase. Thailand may be following its historical tradition of balancing multiple powers in its closer military relationship with Beijing.

## Recommendations

The Commission recommends:

- Congress increase economic and development assistance and public diplomacy resources to Southeast Asia commensurate with its importance to U.S. strategic, economic, and political interests. A significant portion of additional funding should be directed to democracy, civil society, and governance capacity programs.
- Congress direct the U.S. Department of State and the U.S. Agency for International Development to allocate sufficient funding for the Lower Mekong Initiative and maintain funding at a level consistent with its role as a platform for water policy coordination and as a provider of U.S. expertise for environmentally safe dam construction.
- Congress direct the administration to increase cooperation on infrastructure projects supported by U.S. partners and allies, such as Asian Development Bank programs and bilateral projects administered by the Japan International Cooperation Agency. U.S. cooperation should leverage U.S. technical expertise regarding engineering, management, and social and environmental safeguards.

## Introduction

China's relations with continental Southeast Asia are rooted in a long history and shaped by several Chinese interests. The region is rich in natural resources, to which China would like greater access, and its geographical location presents an opportunity for China to create new trade corridors to access the Indian Ocean.<sup>1</sup> The region also shares a border with China that is thousands of miles long, and often porous and prone to instability, prompting Chinese concerns over securing its border.<sup>2</sup> Continental Southeast Asia intersects with China's interests in the South China Sea through its Association of Southeast Asian Nations (ASEAN) members.<sup>3</sup> Chinese infrastructure projects in the region also integrate into China's larger "One Belt One Road" (OBOR) initiative.\* To advance its regional objectives, China has promoted military ties and leveraged its significant economic engagement.

This section examines the relationship between China and the continental Southeast Asian countries of Burma (Myanmar), Cambodia, Laos, and Thailand with a focus on China's goals in the region and implications for the United States. It explores Chinese economic engagement with these countries as a group and considers China's diplomatic and military relations with each of them individually. In doing so, it draws on the Commission's June 2017 hearing on China's relations with Northeast Asia and continental Southeast Asia, unclassified briefings with U.S. officials, the Commission's May 2017 fact-finding trip to Thailand and Burma, consultations with experts on regional politics and U.S. policy, and open source research and analysis.

\*China rebranded One Belt One Road in 2017 as the Belt and Road Initiative to reflect the initiative's multiple infrastructure networks. This section continues to use the original OBOR designation. Angela Stanzel, "China's Belt and Road—New Name Same Doubts?" *European Council on Foreign Relations*, May 19, 2017.

### Chinese Economic Engagement with Continental Southeast Asia

China's proximity, robust economy, and growing infrastructure connections to the region have given it a dominant position in the region's markets, which China has used to pursue several overlapping objectives. The region's geography presents China with an opportunity to bypass transportation through the Strait of Malacca by building infrastructure connections through Burma to the Indian Ocean.<sup>4</sup> The region is also rich in minerals, energy resources, and agricultural land that have attracted Chinese investment. China has launched a series of infrastructure projects to create a north-south corridor that will boost China's export competitiveness in the region by reducing transportation costs. While China has engaged in military cooperation with all four countries discussed in this section, its military engagement appears to be subordinate to economic and geostrategic goals.

Figure 1: China and Continental Southeast Asia



Source: Google Maps, edited by Commission staff. <http://maps.google.com>.

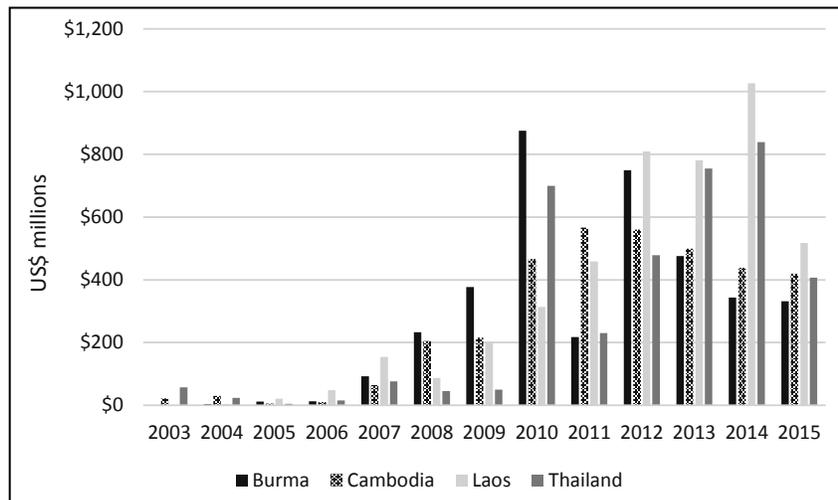
### Chinese Trade and Investment in Continental Southeast Asia

Over the past 20 years, China has emerged as an important trading partner and source of foreign direct investment (FDI) and infrastructure financing for continental Southeast Asia. Since 2005, Chinese state and private companies have invested more than \$67 billion in continental Southeast Asian infrastructure and energy

projects.<sup>5</sup> Since 2003, the first year for which Chinese data are available, Chinese FDI flows to the region have grown dramatically from \$80 million in 2003 to a peak of \$2.6 billion in 2014, an increase of 3,200 percent (see Figure 2).<sup>6</sup> Between 2003 and 2015, Chinese total FDI to the region amounted to \$16.2 billion.<sup>7</sup> In 2015, China was the top provider of FDI to Burma and Laos,\* and historically China has been the dominant source of FDI for Cambodia (see Figure 3).<sup>†</sup> With respect to trade, China is the top trading partner for both Cambodia and Burma (accounting for more than 50 percent of all of Burma's trade in goods in 2014 and 37 percent in 2016), and the second-largest trading partner for Laos (behind Thailand) (see Figure 4).<sup>8</sup>

China has a comparatively smaller economic footprint in Thailand, which has a more diversified group of trading partners. Although China is Thailand's largest trading partner, in 2015 it accounted for only 16 percent of Thailand's trade in goods, followed closely by Japan (12 percent) and the United States (9 percent).<sup>9</sup> According to official Chinese sources, China provided 4 percent of Thailand's FDI in 2015.<sup>10</sup> All four countries currently have a free trade agreement (FTA) with China through the China-ASEAN FTA and are negotiating parties to the Regional Comprehensive Economic Partnership.<sup>‡</sup>

**Figure 2: China's Annual FDI Flows to Burma, Cambodia, Laos, and Thailand, 2003–2015**



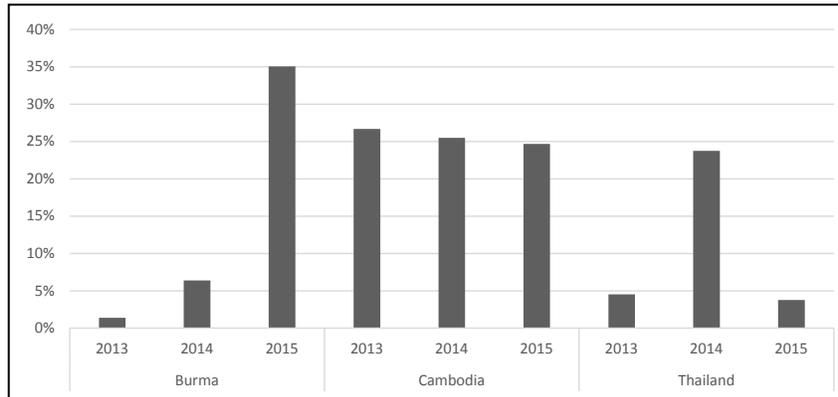
Source: National Bureau of Statistics via CEIC database.

\*China is the top provider of FDI to Burma by stock (26 percent of all FDI stock) and provided 39 percent of all FDI flows to Laos from 2011 to 2015. Myanmar Directorate of Investment and Company Administration, *Foreign Investment of Permitted Enterprises*; Laos Ministry of Planning and Investment, *All Approved Investment Projects by Country*.

†China was the top investor in Cambodia from 1995 to 2008, providing 24 percent of all FDI. Although Cambodia does not regularly provide FDI information by country, in 2015 China's FDI in Cambodia accounted for an estimated 25 percent of all FDI. Cambodian Investment Board, *FDI Trend*. <http://www.cambodiainvestment.gov.kh/why-invest-in-cambodia/investment-environment/fdi-trend.html>; National Bureau of Statistics via CEIC database; United Nations Conference on Trade and Development, "Country Fact Sheets 2016."

‡The Regional Comprehensive Economic Partnership is a so-called "mega FTA" under negotiation that includes China, ASEAN, India, Japan, and several other countries comprising 31.6 percent of global gross domestic product (GDP). World Bank, "GDP (current US\$)."

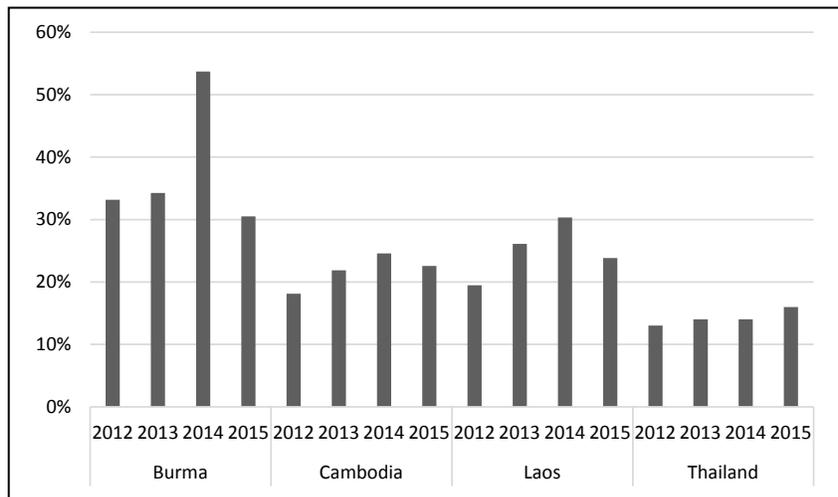
**Figure 3: China's Share of Total FDI Flows in Burma, Cambodia, and Thailand, 2013–2015**



*Note:* Laos is excluded, as Chinese and Laotian data on FDI are contradictory; in many years, China's reported FDI to Laos is more than twice that of Laos' total reported FDI. Nevertheless, both data sources show China to be the largest provider of FDI to Laos.

*Source:* Various.<sup>11</sup>

**Figure 4: China's Share of Total Goods Trade with Burma, Cambodia, Laos, and Thailand, 2012–2015**



*Source:* United Nations Comtrade, "International Trade Statistics Database."

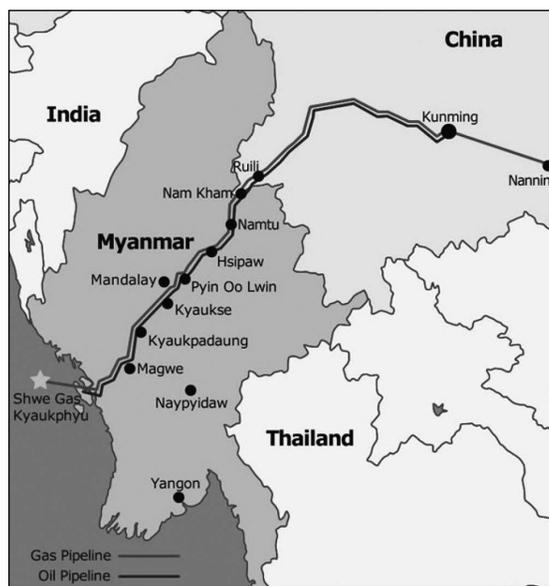
### ***China and the "Malacca Dilemma"***

The majority of China's crude oil imports (nearly 82 percent by some estimates) and a significant share of China's trade are transported through the Strait of Malacca—a narrow channel between the Malay Peninsula and the Indonesian island of Sumatra, which is vulnerable to disruption or naval blockade.\* China's military strategists have

\* China is dependent on energy imports to sustain its economy. In 2015, 62 percent of all crude oil consumed in China was imported. National Bureau of Statistics via CEIC database; Jeremy

noted that sea lanes such as the Strait of Malacca have become “lifelines” for China’s economic development and that in the event of war or maritime crisis these lines are likely to be cut off as China lacks effective control over them.<sup>12</sup> To alleviate this “Malacca Dilemma,” China has long sought to construct overland transportation corridors that will bypass the strait. One of these planned corridors would run across Burma, stretching from the Chinese city of Kunming to Kyaukphyu, a deepwater Burmese port on the Indian Ocean. Chinese firms have already constructed natural gas and oil pipelines along this corridor (see Figure 5) and are seeking an 85 percent share in the port at the pipelines’ terminus.<sup>13</sup> While the pipelines will not alleviate China’s dependency on energy transported via the Strait of Malacca (the pipelines are capable of supplying oil and gas equal to 6 percent of China’s crude oil imports and 5 percent of China’s natural gas imports in 2016), several analysts have identified securing this transportation corridor as one of China’s key objectives in the region.<sup>14</sup> Although China’s pipelines are operational, it has yet to fully develop this corridor. China sought to construct a railway along the length of this corridor, but this project was canceled in 2014 due to environmental concerns (for more on canceled Chinese projects, see “Resistance to Chinese Investment,” later in the section).<sup>15</sup> During the Commission’s visit to Burma’s capital of Naypyidaw, Burmese Minister of State for Foreign Affairs U Kyaw Tin noted that China sought not only to build this railway, but also to exercise control over it, reflecting the strategic value of the Kunming-Kyaukphyu corridor.<sup>16</sup>

**Figure 5: China-Burma Pipelines**



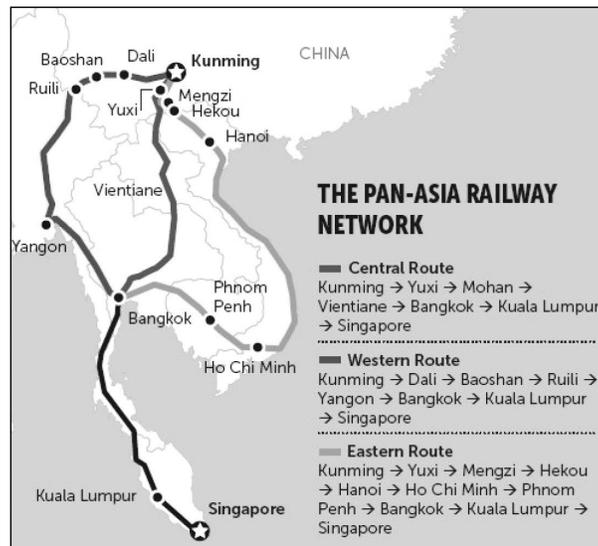
Source: Winnie Tsui, “Myanmar Rising: Opportunities in Asia’s Final Production Frontier,” *HK-TDC Research*, June 8, 2016.

Bender, “This Pentagon Map Shows What’s Really Driving China’s Military and Diplomatic Strategy,” *Business Insider*, May 13, 2015.

### ***North-South Infrastructure Corridors***

In total, Chinese firms have constructed or contracted to build \$29 billion worth of new road and rail projects in the region since 2006.<sup>17</sup> Many of these projects help create economic corridors running north-south from Kunming to Singapore. China has begun negotiations to construct three railway lines passing through Burma, Laos, Thailand, Cambodia, and Vietnam (see Figure 6).<sup>18</sup> To date, Chinese firms have begun construction on the line in Laos, and Thailand has reached a cost agreement on the first phase of its railway.<sup>19</sup> These railways will facilitate the movement of goods and people, increasing China's export competitiveness in continental Southeast Asia. Additionally, as Murray Hiebert, senior advisor at the Center for Strategic and International Studies, noted in his testimony to the Commission, such infrastructure projects serve as an outlet for China's excess capacity, particularly sectors associated with construction, such as steel and cement.<sup>20</sup>

**Figure 6: Proposed Kunming to Singapore Railway Network**



Source: Terry Frederickson, "Bangkok at the Center of Huge Future Rail Network," *Bangkok Post*, December 28, 2015.

### ***Resource Acquisition***

Chinese firms have launched many projects to obtain regional resources. In Burma, Chinese firms have been active in extracting minerals and timber, often illicitly with the assistance of the Burmese military and select ethnic armed groups (EAGs) (for more on EAGs, see the textbox "Ethnic Armed Groups in Burma" later in this section).<sup>21</sup> Burma is estimated to contain 70 percent of the world's high-quality jade, and rising incomes in China have increased demand.<sup>22</sup> Chinese firms have reportedly financed most jade mining operations in Burma and have facilitated smuggling jade across the Chinese border.<sup>23</sup> In a meeting with the Commission during its 2017 trip to Burma, an official in Burma's Ministry of Natural Resource-

es and Environmental Conservation noted most Chinese companies invest in extractive industries such as jade mining unofficially to circumvent laws restricting foreign investment.<sup>24</sup>

Throughout the region, Chinese firms have invested at least \$1.9 billion in mining projects since 2005.<sup>25</sup> Mining and trade of Burmese jade has imposed large costs on Burmese workers and negatively impacted government revenues. In 2014, jade extraction was estimated to total \$31 billion—equal to half of Burma’s gross domestic product (GDP)—but 80 percent of this jade was extracted illegally and smuggled directly into China, depriving the Burmese government of tax sources.<sup>26</sup> In a meeting with the Commission, a Burmese Ministry of Natural Resources official singled out Chinese-owned mining firms as significant sources of economic, social, and environmental damage.<sup>27</sup> Chinese firms have been active in smuggling timber out of Burma as well, including almost \$500 million worth in 2014—although according to the environmental watchdog Environmental Investigation Agency, Chinese timber smuggling has since declined.<sup>28</sup>

Chinese firms have also invested in regional agriculture. In Laos, Chinese firms have developed several plantations specializing in crops such as bananas for export to China.<sup>29</sup> The total number of Chinese plantations is not known, and some have triggered public and government complaints. For example, in 2017 the Laotian government closed Chinese banana plantations in 7 out of 17 provinces due to environmental concerns (for more on Chinese plantations in Laos, see “Laos-China Economic Relations,” later in this section).<sup>30</sup>

Since 2005, Chinese companies have invested at least \$25 billion in regional energy projects.<sup>31</sup> Much of this investment has been directed to hydropower projects. Chinese firms have constructed at least 63 hydropower projects in Burma and are contracted to construct 20 dams in the Mekong River system in Laos and Cambodia.<sup>32</sup> Some of the dams under construction by Chinese firms are intended to transfer power back into China.<sup>33</sup> In Burma, the Chinese government negotiated to build several dams on the condition that 90 percent of the power generated be transmitted to China.<sup>34</sup> Public opposition to these conditions has resulted in the suspension of Chinese hydro projects, notably the Myitsone Dam, discussed later in this section.<sup>35</sup>

#### *Chinese Dams on the Mekong River*

China has constructed many dams on the Mekong River that have the capacity to adversely transform regional livelihoods and economies. The Mekong River is the lifeline of Laos, Cambodia, and Vietnam, serving as a critical artery for transportation, agriculture, and fishing, and providing for the wellbeing of at least 60 million people.<sup>36</sup> The lower Mekong River basin supports one of the world’s largest freshwater fishing reserves,\* and 60 percent of Laos and Cambodia’s populations rely exclusively on fish from the river for their nutritional protein needs.<sup>37</sup> The river is also vital for regional agriculture. Vietnam—which contains most of the Mekong River delta within its borders—relies on the

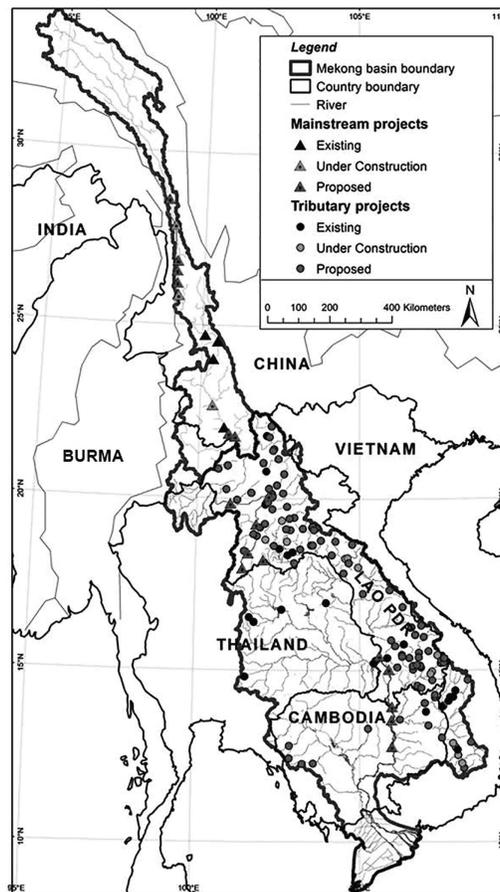
---

\*According to the UN Food and Agriculture Organization, Mekong River countries caught 882,000 metric tons of freshwater fish in 2015, an amount 63 percent greater than the total freshwater fish caught in North and South America that year (540,000 metric tons). The Mekong River is estimated to account for more than 10 percent of global freshwater fishing. Brian Eyer, “China Needs to Change Its Energy Strategy in the Mekong Region,” *China Dialogue*, July 16, 2013; Food and Agriculture Organization of the United Nations, “Online Query Panels,” <http://www.fao.org/fishery/topic/16140/en>.

delta for 53 percent of its national rice production\* and 70 percent of its fruit crop.<sup>38</sup> The Mekong not only supplies water for agriculture, but also deposits minerals carved from riverbanks upriver and fights salinization downriver by providing a steady flow of fresh water.<sup>39</sup>

Within China, 6 dams have been constructed on the Mekong and another 14 are planned.<sup>40</sup> China's upriver dam system is capable of holding 50 cubic kilometers of water (equal to 73 percent of the volume of the Chesapeake Bay) and generating 31,460 megawatts of power.<sup>41</sup> Downriver in Laos and Cambodia, Chinese firms are in the process of constructing 20 dams; in addition, over the next ten years Chinese firms may construct several of the 150 planned dams on the lower Mekong as subcontractors (see Figure 7).<sup>42</sup>

**Figure 7: Mekong River Basin Dams: Proposed, Operational, and Under Construction, 2013**



Source: Harold Houba, "Saving a River: A Joint Management Approach to the Mekong River Basin," *Environment and Development Economics*, February 2013.

\*Despite their relatively small populations, Vietnam and Cambodia were the sixth- and ninth-largest producers of rice in the world in 2016. Much of this rice production is dependent on the Mekong River system. Lanessa Cago, "10 Largest Rice Producing Countries," *World Atlas*, February 24, 2017.

China's dams on the upper Mekong block mineral sediments necessary for sustainable farming, posing a threat to the food security of Laos, Cambodia, and Vietnam. Roughly half of the sediment in the lower Mekong originates from the upper Mekong, and China's cascade of upriver dams is estimated to trap 94 percent of that sediment in China.<sup>43</sup> Downriver, Chinese dams have blocked migratory patterns of freshwater fish, preventing them from repopulating. Estimated losses from the proposed network of dams on the lower Mekong run as high as 42 percent of the river system's total fish reserves.<sup>44</sup>

According to Brian Eyler, director of the Stimson Center's Southeast Asia program, China's electrical grid in Yunnan Province is currently at capacity, suggesting China may use its future upriver dams to address its own water needs rather than generate hydropower.\* China's water consumption is likely to grow.† According to China Water Risk, a Hong Kong-based nongovernmental organization, China will have a water shortfall of 199 billion cubic meters annually in 2030, an amount equal to 41 percent of the United States' total water consumption in 2010.<sup>45</sup>

This projected shortfall is driven by several factors. First, China will need water for electricity generation, largely due to China's reliance on coal power plants which require large amounts of water to run (China currently uses coal power plants for a majority of its power generation).‡ For example, in 2015, 93 percent of China's power generation required water for daily operation.<sup>46</sup> Second, China requires water for agriculture in the country's north, which has 63 percent of China's farmland but only 25 percent of the country's renewable water resources.§ China has already completed large-scale water diversion infrastructure projects within its borders, notably two corridors of the South-North Water Diversion Project that move water from the Yangtze River system north to Beijing and Tianjin.<sup>47</sup> Transfer or diversion of water in China out of the Mekong River system would have significant adverse effects on food security downriver—an area that relies on China for 45 percent of its water during the dry season.<sup>48</sup>

\*Distribution of power in Yunnan Province has been held up by disagreement between China's central government and Yunnan's provincial government over how to transmit power out of Yunnan and what prices should be charged. In 2016, 314 terawatt-hours of power went unused in Yunnan Province, enough to power almost 29 million U.S. homes for a year. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017; U.S. Energy Information Administration, *How Much Electricity Does an American Home Use?* <https://www.eia.gov/tools/faqs/faq.php?id=97&t=3>; Michael Standaert, "Hydro Overpowers Energy Needs in China," *Bloomberg*, June 8, 2017.

†According to the National Intelligence Council, as of 2012 some parts of China already suffer from low per-capita water resources creating "high water stress." "High water stress" is defined by the National Intelligence Council as renewable freshwater resources below 1,700 cubic meters per person. As a point of reference, U.S. per capita water use is roughly 2,500 cubic meters. National Intelligence Council, *Global Water Security*, February 2, 2012.

‡In the United States, thermoelectric power generation accounted for 45 percent of all water consumed in 2010. According to the International Energy Agency, China's energy consumption will likely grow at a slower rate in the future but will still increase by roughly 20 percent from 2017 to 2030. Xiaojie Xu, "China Energy 2020," *Chinese Academy of Social Sciences*, September 11, 2014; U.S. Geological Survey, *Total Water Use in the United States, 2010, 2014*; Simon Göß, "Power Statistics China 2016: Huge Growth of Renewables Amidst Thermal-Based Generation," *Energy BrainBlog*, February 9, 2017.

§In addition to the majority of China's agricultural resources, China's north also has 86 percent of the country's coal reserves and most of its coal power plants. Debra Tan, "Towards a Water and Energy Secure China," *China Water Risk*, April 2015.

Chinese dam construction has displaced several communities in Laos and Cambodia. According to Mr. Eyler, resettlement due to dam construction has become the primary cause of internal movement in Laos.<sup>49</sup> Chinese construction firms—which, like all construction firms in Laos, are responsible for resettling displaced persons—often resettle communities on land with insufficient farming or fishing resources and with inadequate financial compensation, creating challenging living conditions and adding to domestic unrest.<sup>50</sup>

China is not a full member of the Mekong River Commission—an information-sharing multilateral body designed to coordinate management of the Mekong River that includes Cambodia, Thailand, Laos, and Vietnam.\* It participates as a “dialogue partner” and is not required to provide information on the operation or construction of dams, and in the past has unilaterally constructed dams on the upper Mekong.<sup>51</sup> The absence of an effective forum for discussing construction on the Mekong limits the ability of downstream countries to provide input on upriver Chinese dams that will affect them. During the Commission’s visit to Thailand, the Ministry of Foreign Affairs noted the need for a framework to guide dam construction on the Mekong.<sup>52</sup>

To better facilitate water management and promote economic and social development, the United States in 2009 initiated the Lower Mekong Initiative (LMI), a diplomatic and development platform for the United States to partner with Burma, Cambodia, Laos, Thailand, and Vietnam to promote better cooperation in the Mekong River sub-region.† Through the LMI, the United States has improved the capacity of regional countries to analyze the effects of dams on the Mekong, supported regional dialogues on fisheries management, and provided U.S. engineering expertise on the construction of so-called “smart infrastructure” (i.e., dams and roads that minimize their impact on the environment).<sup>53</sup> On August 6, Secretary of State Rex Tillerson delivered opening remarks to the foreign ministers of Burma, Cambodia, Laos, Thailand, and Vietnam at the 10th LMI Ministerial Meeting.<sup>54</sup>

In 2015, China created a counterpart to the LMI called the Lancang-Mekong Cooperation Mechanism (LMC), a forum including China, Vietnam, Cambodia, Thailand, and Laos focused on economic development, infrastructure construction, and water resource management.<sup>55</sup> China appears to have committed more resources to the LMC than the United States has to the LMI. In 2016, the Chinese government extended \$1.5 billion in concessional finance and a \$10 billion credit line to downriver countries through the LMC.<sup>56</sup> U.S. funding for the LMI has been smaller (averaging \$4.2 million per year from 2009 to 2016) and has been inconsistent over time (fund-

\*The Mekong River Commission is an intergovernmental organization governed by the water and environmental ministers of Laos, Cambodia, Thailand, and Vietnam. The commission serves as an advisory body on the impact of water usage on the Mekong and functions as a platform for water diplomacy between member countries. The commission is mandated to create a development plan for the Mekong River basin that equitably allocates benefits among member countries. Mekong River Commission, “About MRC.” <http://www.mrcmekong.org/about-mrc/>.

†The LMI works across a broad spectrum of development issues including health, water management, environmental protection, agriculture, education, connectivity, and energy security. The LMI largely provides assistance through capacity building (including training, technical assistance, and educational exchanges) and establishing regional dialogue. Lower Mekong Initiative, “The Lower Mekong Initiative”; U.S. Department of State, *Lower Mekong Initiative*.” <https://www.state.gov/p/eap/mekong/>.

ing for the LMI dropped from \$11.5 million in 2015 to \$3 million in 2016—a 74 percent decline).<sup>57</sup>

### ***Resistance to Chinese Investment***

Throughout the region, Chinese investments have sparked protests, occasionally resulting in delays or cancellations of Chinese projects. Chinese investment has been criticized for lacking proper environmental review procedures, utilizing imported Chinese workers, principally benefiting Chinese businesses, displacing communities without adequate compensation, extracting conditions favorable to China at the expense of regional countries' interests, and facilitating corruption.<sup>58</sup> Examples of pushback in continental Southeast Asia include:

- The Kyaukphyu-Kunming railway in Burma was canceled in 2014 over environmental concerns.<sup>59</sup> Like the Kyaukphyu-Kunming pipelines, the railway would have provided an avenue for Chinese trade to bypass the Strait of Malacca to access the Indian Ocean.
- The Thailand-China railway, a high-speed line connecting China, Laos, and Thailand, was subject to delays over cost negotiations; China's insistence on acquiring land concessions along the length of the railway; and concerns China would use Chinese—rather than Thai—engineers.<sup>60</sup> Thailand approved the first phase of the railway in 2017 after three years of negotiations, agreeing to use Chinese engineers.<sup>61</sup>
- The Areng Valley Dam in Cambodia would have been constructed in a protected forest containing several endangered species and possibly opened the forest to logging.<sup>62</sup> After sustained pressure from protesting citizens and environmental nongovernmental organizations, Cambodia canceled plans to build the dam in 2017.<sup>63</sup>

Despite local pushback, many Chinese projects continue to go forward. One example is the Chinese-constructed Lower Sesan 2 Dam in Cambodia, which was approved by Cambodia in 2012 and is scheduled to begin operations in 2017.<sup>64</sup> The dam has been the target of several protests since 2007 and is estimated to deplete the Mekong River's fish reserves by 9 percent and force 5,000 Cambodians to resettle.<sup>65</sup> In another case, the Leptadaung copper mine in Burma commenced operations in 2016, despite five years of protests over land seizures and concern for the mine's environmental effects.<sup>66</sup>

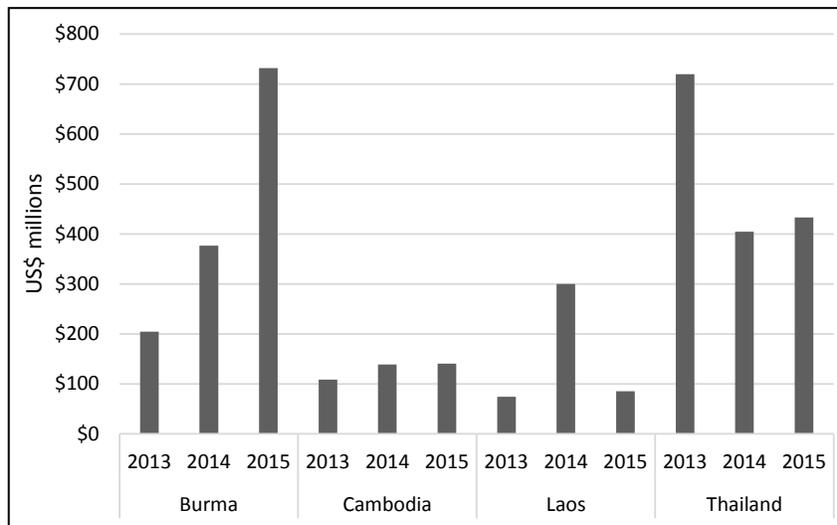
The Chinese government has responded to protests regarding some projects in the region by concealing information. For example, provincial authorities in Yunnan have obscured the location of a Kunming oil refinery built to process oil shipped through pipelines from Burma, removing the refinery from maps and instructing civil servants, students, and state-run media not to mention the refinery publicly.<sup>67</sup> Chinese public protests against the refinery and its production of paraxylene, a toxic chemical, erupted in 2013; however, according to the *South China Morning Post* most Kunming residents are unaware that the refinery will soon go into production.<sup>68</sup> Chinese authorities have also directed Chinese media to stop referring

to China's north-south Kunming-Singapore railway network as the "Trans-Asian Railway" as the term carried connotations of aggressive Chinese expansion into the region.<sup>69</sup>

### **Alternative Investment Sources**

While China is the region's dominant infrastructure and investment provider, continental Southeast Asian countries have access to other funding sources—particularly bilateral assistance from Japan. In 2016, Japan committed to a \$6.8 billion infrastructure package for Mekong River countries and a \$7.7 billion aid program for Burma to support peacebuilding and development.<sup>70</sup> Through its development agency, the Japan International Cooperation Agency (JICA) and its export credit agency, the Japan Bank for International Cooperation, Japan has provided \$3.7 billion in bilateral assistance and export loans since 2013 (see Figure 8).<sup>71</sup> Where China's regional projects run north-south, Japan's run east-west.<sup>72</sup>

**Figure 8: Japan International Cooperation Agency and Japan Bank for International Cooperation Funding to Continental Southeast Asia, 2013–2015**



Source: Various.<sup>73</sup>

### **China's Relations with Burma**

China's relations with Burma have transformed from Burma's dependency on Beijing to a new period of uncertainty as Burma engages with other countries in the international community and liberalizes politically. While Burma was under the rule of a military junta from 1989 to 2011, China became Burma's most important ally. Burma relied on China for military sales, economic development, and support from China's position on the UN Security Council.\* Burma's military government was uneasy with

\*In 2007 and 2009, Russia and China vetoed U.S.-backed UN resolutions calling on Burma to free political prisoners, end ethnic persecution, and adopt democratic governance. Mark Turner,

this dependency, fearing that China would dominate the entire country in the same way it has come to dominate its ancient capital of Mandalay, where China's economic and cultural presence is pervasive.\* These concerns prompted Burma to start searching for alternatives.

To end Western sanctions and gain political legitimacy, Burma's junta began the process of political reform in 2011, transitioning to a nominally civilian government led by former military leader Thein Sein, who began to loosen political controls imposed by the junta.† Under the Thein Sein government, Burma's dependence on China began to decline as Burma's relations with the West improved and many unpopular Chinese projects in Burma, such as the Myitsone Dam, were suspended (the Myitsone Dam is discussed in greater detail later in this section).<sup>74</sup> In 2015, Thein Sein's government was replaced by State Counsellor Aung San Sui Kyi's National League for Democracy (NLD), which won in a landslide election.‡ The NLD governs the country alongside the military, which retains considerable power under Burma's constitution, including a 25 percent share of Burma's parliament; the right to veto judicial, executive, and legislative decisions; control over the ministries of defense, home, and border affairs, as well as the national police and intelligence service; and the right to reassert complete control over the government and suspend political and civil rights by declaring a state of emergency.<sup>75</sup> Since the election, China faces a more complex political landscape in Burma, including the military, the NLD, and EAGs that control large segments of Burma and conduct military actions against the Burmese government and military.

China's central government seeks to advance two strategic goals in Burma. First, China aims to strengthen control across its 1,370-mile border with Burma and increase its leverage over the Burmese government.<sup>76</sup> The China-Burma border is porous, with individuals routinely crossing over for economic and other purposes. Fighting between the Burmese military and EAGs has spilled over into Chinese territory, claiming the lives of Chinese citizens.§ Conflict near the border has also sent tens of thousands of refugees into China.¶ Second, China seeks to control a Bur-

\*China and Russia Veto UN's 'Arbitrary' Move on Burma," *Financial Times*, January 13, 2007; Voice of America, "Russia, China Veto UN Resolution on Burma," November 1, 2009.

†Following the defeat of China's nationalist forces in 1949, many Chinese immigrated to Mandalay to escape China's communist government. Today, descendants of those Chinese emigres, combined with waves of other Chinese nationals that have since moved into the city, effectively dominate Mandalay economically, aggravating tensions between ethnic Han Chinese and ethnic Burmese residents. Raju Gopalakrishnan, "China's Sway Runs Deep in Myanmar's Ancient Capital," Reuters, November 29, 2011; Jane Perlez, "Animosity in a Burmese Hub Deepens as Chinese Get Richer," *New York Times*, November 27, 2016.

‡The Thein Sein government is credited for releasing political prisoners and preparing free and fair elections in 2015. Jonah Fisher, "Myanmar's 2015 Landmark Elections Explained," BBC, December 3, 2015.

§While Burma's constitution prevents State Counsellor Suu Kyi from serving as president, she serves as a de facto head of state, occupying the position of state counsellor, foreign minister, and head of the NLD party. State Counsellor Suu Kyi's long-time aide Htin Kyaw currently serves as president. Simon Lewis, "Who Is Htin Kyaw, Burma's New President?" *Time*, March 14, 2016.

¶In 2015, ordnance from Burma fell into China during a conflict between the Burmese Army and the Kokang Army (an ethnically Han Chinese EAG), killing five Chinese citizens. James Pomfret, "Relief Camp in China Swells as Thousands Flee Conflict in Myanmar," Reuters, March 13, 2017.

¶In March 2017, fighting between the Kokang Army and the Burmese military in Shan State drove 20,000 Burmese refugees into China. Theingi Htike, "China Meets with Myanmar's Ethnic Armies in Attempt to Quell Fighting," Voice of America, March 15, 2017.

mese deepwater port on the Indian Ocean to provide an alternative to passage through the Strait of Malacca, which is vulnerable to disruption.<sup>77</sup> China's central government also seeks to advance large suspended projects such as the Myitsone Dam, although it may be willing to accept termination of the Myitsone Dam project in exchange for receiving approval for other strategic projects such as ownership of the port at Kyaukphyu.<sup>78</sup> In addition to the goals advanced by the central government, local Chinese actors in Yunnan have various objectives in Burma, including accessing Burmese natural resources, exploiting commercial opportunities, and reportedly utilizing Burmese EAGs to launder money.<sup>79</sup> To advance its goals, the Chinese government has supported and built connections with Burma's military, the NLD government, and EAGs—sometimes playing different sides in Burma's political environment against each other.

### **Ethnic Armed Groups in Burma**

For nearly 70 years, Burma has been beset by conflict between the Burmese military and EAGs controlling various parts of the country.<sup>80</sup> These EAGs consist of several distinct groups, some of which have maintained close ties with China's military (for more on China's support for EAGs, see "China and Burmese EAGs," later in this section). EAGs also differ in their relations with Burma's government. While some are currently engaged in peace talks or have signed ceasefires with Burma's government, others remain in a state of ongoing or sporadic conflict.<sup>81</sup> Three EAGs are of particular significance due to their size and proximity to China's border. While these three EAGs have had dialogues with Burma's government, they are currently not formally a part of State Counsellor Suu Kyi's Panglong peace process.<sup>82</sup> These EAGs are:

- **The Kokang Army (MNDAA)**, an army led by Peng Jisheng, a former member of the now-dissolved insurgent Communist Party of Burma, which China backed until the 1980s as a vehicle for spreading communist ideology through revolution.<sup>83</sup> The Kokang are ethnic Han Chinese, and enjoy some degree of support from the Chinese public, successfully raising donations and supplies from Chinese citizens.<sup>84</sup> The territory controlled by the MNDAA lies on China's border and violence between the MNDAA and Burma's military has driven thousands of Kokang refugees into China; Chinese civilians have also been killed by ordnance landing in Chinese territory.<sup>85</sup> The MNDAA most recently clashed with Burma's military in March 2017 in an offensive that killed a Chinese teacher in Burma and resulted in several thousand refugees fleeing into China.<sup>86</sup> Despite the instability created by the MNDAA's clashes with Burma's military, China faces pressure to maintain a positive relationship with the MNDAA due to domestic sympathies for the Kokang related to shared ethnic Han Chinese her-

### **Ethnic Armed Groups in Burma—Continued**

itage.<sup>87</sup> Under the Thein Sein government, the MNDAA was excluded from national peace talks with the Burmese government and has largely abstained from State Counsellor Suu Kyi's current peace initiative.<sup>88</sup>

- **The United Wa State Army (UWSA)** is the most powerful EAG in Burma and has the closest relationship with China.<sup>89</sup> The UWSA is led by Bao Youxiang who also fought under the Burmese Communist Party.<sup>90</sup> The group controls a region the size of Belgium next to China's border and is heavily dependent on China both as an export market for raw materials and as a provider of most imported manufactured goods.<sup>91</sup> Significant conflict between the UWSA and Burma's military has not occurred since 1989 and the UWSA occupies a position of implicit leadership among EAGs near its territory in Burma's Shan State, including the MNDAA.<sup>92</sup> China grants the UWSA privileges denied to other EAGs, including the ability for UWSA leaders to travel to Kunming without advance approval from Beijing.<sup>93</sup> Much of the UWSA's income is believed to come from production of opium and methamphetamine.<sup>94</sup> In 2005, Bao Youxiang was indicted on drug trafficking charges by U.S. federal prosecutors, and in 2008, he and other UWSA commanders were designated as narcotics traffickers by the U.S. Department of the Treasury.<sup>95</sup> The UWSA began a bilateral peace agreement in 2011 that has yet to be fully concluded.<sup>96</sup> In 2017, the UWSA emerged as a leader among EAGs pushing for an alternative peace process to State Counsellor Suu Kyi's current framework for peace talks.<sup>97</sup>
- **The Kachin Independence Army (KIA)** has sought support from Washington based on the historical alliance between the Kachin people and the United States. During World War II, Kachin rangers fought alongside the United States and United Kingdom against Japan.<sup>98</sup> Many Kachin are of the Baptist faith following missionary efforts in the 19th century.<sup>99</sup> Delegates from the KIA have frequently traveled to the United States to seek support for their cause, and the Kachin have proposed that the United States serve as an observer to its negotiations with the Burmese government.<sup>100</sup> According to Yun Sun, Senior Associate at the Stimson Center, China has a complicated relationship with the KIA. On the one hand, the KIA receives strong support from ethnic Kachin in China, which creates an incentive for positive relations with the KIA as local Chinese governments wish to pacify domestic ethnic groups for local stability.<sup>101</sup> On the other hand, the KIA's outreach to the United States raises concerns for China, given the proximity of KIA territory to China's border (see Figure 9).<sup>102</sup> The KIA has also opposed Chinese projects in Burma such as the Myitsone Dam.<sup>103</sup> Since 2011, the

### **Ethnic Armed Groups in Burma—*Continued***

KIA has been fighting a pitched battle with the Burmese military, resulting in the displacement of at least 100,000 persons.<sup>104</sup> Alongside clashes with Burma's military, the Kachin have been engaged in peace talks with Burma's government in a variety of fora.<sup>105</sup> Most recently the Kachin have joined with the UWSA in declining to participate in State Counsellor Suu Kyi's current peace process and insisting on a new framework for peace talks.<sup>106</sup>

### ***China and the Burmese Government***

After the NLD's election, China has been careful to cultivate good relations with the NLD government while maintaining its ties with Burma's military. State Counsellor Suu Kyi has also demonstrated that she wants to maintain good relations with China. She made China her first visit to a country outside Southeast Asia after the NLD took power in 2016.<sup>107</sup> She also participated in Beijing's OBOR summit in May 2017 and President Htin Kyaw met with Chinese President and General Secretary of the Chinese Communist Party Xi Jinping in April 2017.<sup>108</sup> At both meetings China signed economic and development agreements with Burma.<sup>109</sup> Immediately prior to State Counsellor Suu Kyi's 2016 visit, a Chinese Communist Party official met with Burma's previous military leaders, former President Thein Sein and General Than Shwe, former leader of Burma under the junta government.<sup>110</sup> China has also maintained an elevated level of arms sales to Burma's military since the NLD took power (for more on China's arm sales, see "Burma-China Defense Relations," later in this section).<sup>111</sup>

### ***China and Burmese EAGs***

EAGs continue to control large portions of Burma's territory, and conflict between Burma's military and EAGs has persisted.<sup>112</sup> State Counsellor Suu Kyi has identified ending these conflicts as her government's top priority.<sup>113</sup> China has longstanding ties to EAGs operating near its border, particularly the UWSA and the MNDAA (see Figure 9). Both of these groups have benefited militarily from their relationship with China. The UWSA reportedly hires Chinese mercenaries and uses arms that come from China.<sup>114</sup> China has also permitted the MNDAA to use Chinese territory to outflank the Burmese military and collect donations from the Chinese public.<sup>115</sup> During the Commission's 2017 trip to Burma, Burma-based analyst David Mathieson noted China has sold various weapons, including transport helicopters and light tanks, to the UWSA.<sup>116</sup>

Figure 9: EAGs Operating near the China-Burma Border



Source: *Economist*, "Myanmar's Border with China: Good Fences," November 25, 2010.

China has sought to use its leverage with EAGs to exert influence over the NLD through Burma's ongoing peace process. China has officially adopted a position of support for Burma's peace process and contributed at least \$3 million to support peace talks between Burma's government and EAGs.<sup>117</sup> More importantly, China has sought to show State Counselor Suu Kyi that it has the ability to bring nonparticipating EAGs to the negotiating table for peace talks. In a clear demonstration of China's influence over EAGs, in 2017 as State Counselor Suu Kyi held the second round of the 21st Century Panglong Peace Conference, Chinese officials independently organized a group of leaders from EAGs that have long refrained from participating in peace talks with the Burmese government and brought them to Naypyidaw during the Panglong Peace Conference to participate in sidebar conversations.<sup>118</sup>

China's engagement in Burma's peace process comes with many complexities. While a successful resolution to the Burmese government's conflict with EAGs would promote stability along China's border and win favor from the NLD, it may reduce China's leverage over the Burmese government through its influence with EAGs. To this end, China continues to prop up select EAGs as a way to enhance its influence over the Burmese government.<sup>119</sup>

The Chinese government has also expressed concern about U.S. involvement in Burma's peace process. In 2013, China and the Burmese government blocked a proposal by the KIA to invite the United States to serve as a witness to negotiations between the KIA and the central government, and in 2015 China's opposition reportedly prevented the United States from witnessing the signing of Burma's National Cease-fire Agreement.<sup>120</sup> The United States is a long-standing supporter of

Burma's peace process. Since 2012, the U.S. Department of State has allocated at least \$31 million for conflict and peace programs in Burma.<sup>121</sup> U.S. assistance is designed to support local efforts for conflict resolution and reconciliation, promote democracy, build the capacity of local leaders and civil society, and empower women to participate in the peace process and national reconciliation efforts.<sup>122</sup>

### ***Chinese Infrastructure Projects in Burma***

Key to the NLD's relations with China is the looming decision over whether to resume Chinese energy and infrastructure projects. Chief among these is the Myitsone Dam, a \$3.6 billion hydropower project on Burma's Irrawaddy River.<sup>123</sup> Construction on this dam began in 2009; however, due to local protests over the resettlement of thousands of people and construction terms that required 90 percent of the dam's power be sent to China, the project was suspended in 2011.<sup>124</sup> State Counselor Suu Kyi faces a difficult choice as she reviews the dam's suspension. On the one hand, the Myitsone Dam remains unpopular with the Burmese public, and her party will likely pay a political price if it resumes construction.<sup>125</sup> On the other hand, terminating the project would likely strain relations with China and cost the Burmese government \$800 million due to contractual obligations, a sum roughly equal to 38 percent of Burma's defense budget and 4 percent of its total government spending for 2017.<sup>126</sup> According to Sean Turnell, senior economic advisor to the government of Burma, the high costs associated with canceling the Myitsone Dam have placed the NLD government "over a barrel," indicating the leverage China has acquired over Burma through the project.<sup>127</sup> Burma also has great energy development needs. According to the development research organization International Institute for Environment and Development, only 34 percent of Burma's population has access to grid-quality electricity as of 2016.<sup>128</sup>

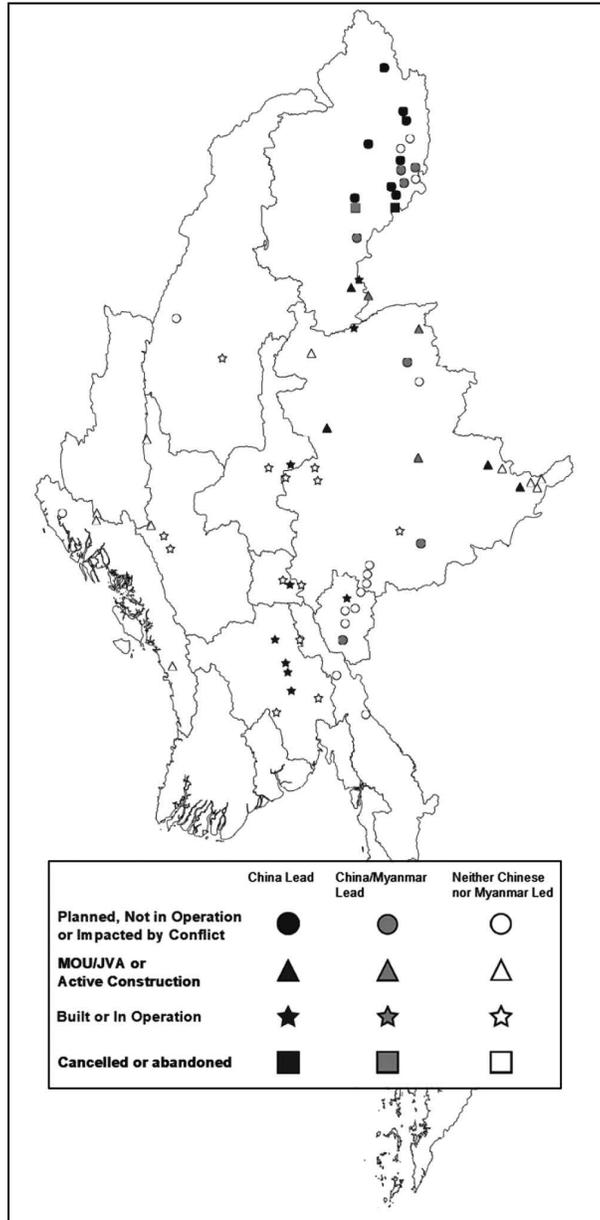
The Chinese government appears eager to deepen China's investment in the port at Kyaukphyu. Ownership of this port would grant China greater control over the terminus of its overland economic corridor and a deepwater port on the Indian Ocean that would advance China's "string of pearls" strategy, wherein China expands its naval capacity in the Indian Ocean through the development of civilian port facilities.\* According to some analysts, China may be willing to accept approval for its investment in the Kyaukphyu port project in exchange for cancellation of the Myitsone Dam.<sup>129</sup> This trade seems advantageous to China as the electrical grid in Yunnan Province where power from the Myitsone Dam would be sent appears to be at capacity, obviating the intended benefits of the dam to China.<sup>130</sup> Chinese companies have expressed their eagerness to reopen talks to construct a high-speed railway running from Kunming to Kyaukphyu, and are seeking an 85 percent ownership stake in the deepwater port at Kyaukphyu.<sup>131</sup> Despite ongoing unrest in Rakhine State associated with the Rohingya crisis, China's port and pipeline projects in Rakhine State appear unthreatened by regional violence (for more on the Rohingya crisis and

---

\*The "string of pearls" concept was coined by U.S. analysts in 2005 to describe possible Chinese naval strategy. For more on this strategy, see U.S.-China Economic Security Review Commission, Chapter 3, Section 1, "China and South Asia," in *2016 Annual Report to Congress*, November 2016, 313-346; Catherine Wong, "Five Things You Should Know About China-Backed Port in Myanmar," *South China Morning Post*, May 9, 2017.

China, see the textbox “The Rohingya and Rakhine State” later in this section). Although the Myitsone Dam is one of China’s largest projects in the country, it is just one of many Chinese dams planned or under construction throughout Burma (see Figure 10).<sup>132</sup>

**Figure 10: Chinese Hydropower Projects in Burma**



Source: “Hydropower and Chinese Engagement in Myanmar,” *Envisage*, May 2017.

Chinese business practices have harmed China's image in Burma. According to Thant Myint U, chairman of the Yangon Heritage Trust, the environmental damage, displacement of communities, and corruption caused by Chinese investment has caused Burmese public opinion on China to "sour considerably over the last quarter century."<sup>133</sup>

#### *Burmese Regulatory Capacity*

The NLD government appears to lack the administrative capacity to properly analyze foreign investment and infrastructure projects. According to an advisor to the Burmese government who met with the Commission during its trip to Burma, many junta-era government officials remain in positions even after the NLD came into power, resulting in the retention of many unqualified individuals.<sup>134</sup> An analyst with the Asia Foundation noted that most government officials lack the skills necessary to manage a large organization and that candidates with expertise are driven away from government service due to low salaries and the burden of living in Naypyidaw.<sup>135</sup> This lack of administrative expertise leaves Burma exposed to harmful and exploitative Chinese projects and slows the approval of beneficial projects in Burma.

#### **The Rohingya and Rakhine State**

Many of China's most important projects in Burma are located in Rakhine State on the Indian Ocean, including the port at Kyaukphyu and sections of the Kunming-Kyaukphyu pipelines. This region has been beset by turmoil due to ongoing conflict involving the Rohingya ethnic group. The Rohingya are a Muslim ethnic group who have resided in Burma for several hundred years but are denied basic rights by the Burmese government.<sup>136</sup> Under Burma's 1982 citizenship law, the more than 1 million Rohingya in Burma are not recognized as Burmese citizens and are restricted from education and employment opportunities, moving freely across the country, and obtaining marriage certificates.\* Since 2012, when a group of Rohingya men were accused of raping and killing a Buddhist woman, thousands of Rohingya have been displaced from their homes due to violence from Burmese security forces and Buddhist nationalists.<sup>137</sup>

Strife in Rakhine State increased following attacks by a Rohingya armed group on Burmese border posts and police facilities in October 2016 and August 2017.<sup>138</sup> The Burmese military has launched crackdowns in reprisal for the attacks.<sup>139</sup> According to witnesses and representatives from the UN High Commissioner for Refugees, following both attacks Burma's security forces

\*Government-issued marriage certificates are required in Burma and marrying without one can result in a jail sentence of several years. Jack Kurtz, "More Burmese Persecution of Rohingya: Blocking Marriages," *Worldcrunch*, May 27, 2015; Human Rights Watch, "Crimes against Humanity and Ethnic Cleansing of Rohingya Muslims in Burma's Arakan State," April 22, 2013.

### **The Rohingya and Rakhine State—Continued**

and Buddhist vigilantes burned down Rohingya homes, conducted mass killings and widespread rape, and drove hundreds of thousands of Rohingya into hiding or across the border into Bangladesh.<sup>140</sup> As of September 2017 at least 422,000 Rohingya have fled into Bangladesh to escape the violence, many of them women and children.<sup>141</sup> Bangladesh already hosts 300,000 to 500,000 Rohingya refugees who fled prior violence and persecution.<sup>142</sup>

In responding to the Rohingya crisis, China has supported Burma's right to respond to internal security threats while also encouraging humanitarian assistance for Rohingya refugees and urging Bangladesh and Burma to cooperatively address the crisis.<sup>143</sup> According to Ms. Sun, China views the Rohingya crisis as an "opportunity" to "gain the potential friendship" of the NLD government, noting that from China's perspective "the Rohingya issue doesn't affect us and by supporting Aung San Suu Kyi we don't lose anything."<sup>144</sup> Following the August 2017 crackdown, Chinese Foreign Minister Wang Yi told UN Secretary General Antonio Guterres that China "understands and supports" Burma's efforts to protect itself against security concerns in Rakhine State. Similarly, Hong Liang, China's ambassador to Burma, noted that "China's position is very clear. We support the Myanmar government's effort to restore the peace and stability in Rakhine."<sup>145</sup> According to Burmese state media, Hong Liang told Burmese officials that China viewed Burma's actions as an "internal affair" and that it "welcomed" counterattacks against "extremist" groups in Rakhine State.<sup>146</sup> In April 2017, China offered to mediate between Burma and Bangladesh regarding a dispute over responsibility for the 69,000 Rohingya who fled into Bangladesh following the October 2016 crackdown.<sup>147</sup> This offer was declined by the NLD government.<sup>148</sup>

China has used its position on the UN Security Council to shield Burma. In March 2017, China and Russia reportedly blocked a UN Security Council statement expressing concern regarding the treatment of Rohingya by Burma's military.<sup>149</sup> In September 2017, China reportedly blocked a UN Security Council proposal to support the right of Rohingya refugees to return to Burma.<sup>150</sup> While China agreed to a September 2017 UN Security Council statement that expresses concern about reports of violence associated with Burma's crackdown, China has largely refrained from criticizing the NLD and Burma's military or linking Burma's security forces with violence against Rohingya civilians.<sup>151</sup>

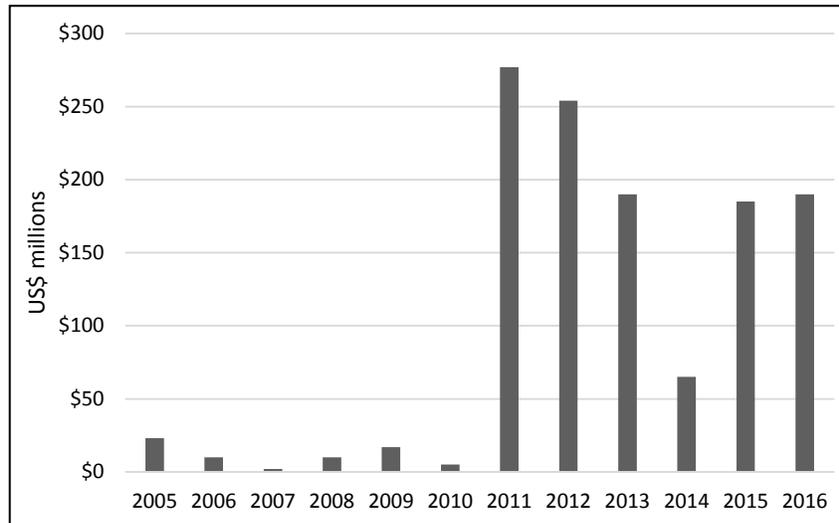
Although China's key infrastructure projects in Rakhine State do not appear to be currently threatened by instability in Rakhine State, the *Global Times*, a newspaper affiliated with the Chinese Communist Party, has stated that the key role of Burma in China's OBOR initiative serves as a motivation for Chinese involvement in the Rohingya crisis.<sup>152</sup> The *Global Times* suggested China should continue to offer resolution be-

**The Rohingya and Rakhine State—Continued**

tween Burma and Bangladesh and increase humanitarian assistance for Rohingya refugees in Bangladesh.<sup>153</sup> The impact of the Rohingya crisis on Chinese investors is not clear. While the *Global Times* claims that Chinese investors are concerned that the crisis will disrupt their operations, according to Tun Khin, president of the Burmese Rohingya Organization UK, Chinese firms have at times benefited from Burma's crackdown, rebuilding on sites occupied by Rohingya after the military has driven them away.<sup>154</sup>

**Burma-China Defense Relations**

China's increasing engagement with the Burmese military suggests China seeks to maintain good relations and influence with the military—the institution responsible for Burma's defense and defense policy—in the evolving political landscape in Burma.<sup>155</sup> In testimony before the Commission, Ms. Sun wrote, "China has paid special attention not to alienate the military while it pursues good relations with the civilian government and the [EAGs]."<sup>156</sup> This engagement could also give China leverage to counter Burma's turn toward Western and other international partners. China appears to be using arms sales to this end. Burma bought \$1.4 billion in arms from China from 2000 to 2016, the third-largest total for any of China's arms purchasers over that period (see Figure 11).<sup>157</sup> Approximately \$1 billion of these sales occurred since 2011, when then Burmese President Thein Sein took office.<sup>158</sup> Since 2011, China has accounted for more than 60 percent of all arms sales to Burma.<sup>159</sup> Moreover, Burma and China have conducted military exchanges at the highest level. Notably, in September 2016, Xu Qiliang, vice-chairman of China's Central Military Commission, met Burmese Commander-in-Chief Min Aung Hlaing to promote training and bilateral exercises and highlight the importance of Burma's peace process and improving stability on China's border.<sup>160</sup> In June 2017 Central Military Commission member General Fang Fenghui met Commander-in-Chief Hlaing to deepen military cooperation and bilateral ties.<sup>161</sup> These high-level meetings, combined with the powerful position Burma's military enjoys in Burma's government, reflect a deep political relationship between the People's Liberation Army (PLA) and Burma's military that extends beyond military affairs.

**Figure 11: Chinese Arms Sales to Burma, 2005–2016**

Source: Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.

### **China's Relations with Cambodia**

China's relations with Cambodia have changed dramatically over time. Although Cambodia was initially adversarial toward China due to Beijing's support for the Khmer Rouge regime from 1975 to 1979, since the early 2000s Prime Minister Hun Sen has emerged as one of China's most reliable advocates in Southeast Asia. On at least two occasions, Cambodia has single-handedly blocked ASEAN from issuing statements critical of China's activity in the South China Sea.\* In 2012, Cambodia prevented ASEAN foreign ministers from issuing a joint communiqué referring to the China-Philippines confrontation over Scarborough Reef, and reportedly shared early drafts of the communiqué with Chinese officials.† In 2016, after the Permanent Court of Arbitration in The Hague issued a ruling invalidating China's territorial claims in the South China Sea, Cambodia refused to support an ASEAN joint communiqué referring to the ruling.<sup>162</sup>

### **Cambodia-China Economic Relations**

Since 2013, the Chinese government has pledged \$13 billion worth of loans and grants to Phnom Penh.<sup>163</sup> By comparison, from 2013

\*As ASEAN operates on a consensus basis, the objection of one country is sufficient to block ASEAN decisions or statements. Le Hong Hiep, "Can ASEAN Overcome the 'Consensus Dilemma' over the South China Sea?" *ISEAS-Yusak Ishak Institute of Southeast Asian Studies*, October 24, 2016.

†In June 2012, after a two-month standoff between Chinese and Philippine vessels, China established de facto control over Scarborough Reef, a land feature disputed with the Philippines but previously unoccupied, and began preventing access to the area. According to Manila, China backtracked on an agreement to simultaneously withdraw from the area. China has maintained control over the area ever since. U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, 231–233; Ernest Bower, "China Reveals its Hand on ASEAN in Phnom Penh," *CSIS Commentary*, July 20, 2012.

to 2015 Cambodia received \$2.36 billion in official development assistance from multilateral organizations and Organization for Economic Cooperation and Development (OECD) countries.\* In 2016, several days prior to blocking ASEAN's communiqué regarding The Hague ruling, Cambodia received \$600 million in aid from China.<sup>164</sup> Cambodia is strongly bound to China commercially, which may increase Chinese influence. China has consistently been Cambodia's largest trading partner and investor, accounting for 23 percent of Cambodia's trade in goods in 2016 and 25 percent of Cambodia's FDI in 2015.<sup>165</sup>

Chinese firms have benefited from close relationships with Cambodian officials. In 2009, a Chinese firm headed by a former PLA officer received permission from Prime Minister Sen to develop property in a national park after making a donation of 220 motorcycles to Prime Minister Sen's military bodyguard unit.<sup>166</sup> Chinese firms have also been granted land concessions significantly larger than the 100-square-kilometer limit established by law.<sup>167</sup>

### ***Cambodia-China Military Relations***

China's defense relationship with Cambodia is growing at the expense of U.S. and regional interests. The following are notable examples of China-Cambodia defense engagement:

- *Education programs:* China funds and sends Chinese PLA advisers to teach at a military academy for Cambodian military personnel.<sup>168</sup> Roughly 200 Cambodian military personnel attend the school each year.<sup>169</sup> Since 2012, China has also offered Chinese language training to Cambodian military personnel at the Confucius Institute of the Royal Academy of Cambodia.<sup>170</sup>
- *Bilateral exercises:* From December 11 to 23, 2016, Cambodia hosted its first-ever bilateral exercise with China, the Golden Dragon 2016 exercise in humanitarian assistance and disaster relief (HA/DR) operations. Ninety-seven PLA and 280 Royal Cambodian Armed Forces troops participated.<sup>171</sup> As Cambodia has initiated exercises with China, it has rolled back its cooperation with the United States. In January 2017, Cambodia scrapped the annual U.S.-Cambodia Angkor Sentinel HA/DR exercise for 2017 and 2018, and in April 2017, the U.S. Embassy in Cambodia announced the Cambodian government would "postpone indefinitely" the humanitarian assistance mission of the U.S. Navy Mobile Construction Battalion ("Seabees").<sup>172</sup> According to the embassy, "20 planned [Seabee] projects, including maternity wards and school bathrooms" will be canceled.<sup>173</sup>
- *Arms transfers:* In 2013, Cambodia accepted a \$195 million concessionary loan from China to buy 12 Chinese Harbin Z-9 helicopters.<sup>174</sup> In 2014, China donated 26 trucks and 30,000 military uniforms.<sup>175</sup> In 2015, China reportedly delivered 44

---

\*Comparing development assistance from OECD countries to Chinese aid is difficult, as Chinese aid lacks transparency and may contain more loans than grants given on less generous terms. For more on China's development aid, see Sabrina Snell, "China's Development Finance: Outbound, Inbound, and Future Trends in Financial Statecraft," *U.S.-China Economic Security Review Commission*, December 16, 2015; Organization for Economic Cooperation and Development, Development Assistance Committee, "Development Aid at a Glance: Statistics by Region, Asia," 2017.

military vehicles, including rocket-launcher-mounted trucks and anti-aircraft guns.<sup>176</sup>

### **China's Relations with Laos**

As a small, landlocked country of 6.75 million people, Laos has been careful to maintain good relations with its larger neighbors despite concerns over falling into a position of complete dependency.<sup>177</sup> Since first taking control of the country in 1975 (with Vietnamese assistance), the Lao People's Revolutionary Party has had a special relationship with Vietnam that caused friction with China following China's 1979 invasion of Vietnam.\* In the years that followed, Laos reduced its diplomatic relations with China from the ambassador to the chargé d'affaires level, and China reportedly began training resistance forces to oppose the Laotian government in Yunnan Province.<sup>178</sup> Laos' diplomatic relations with China have since normalized, allowing China to pursue investment and business opportunities in Laos and incorporate the country into its regional infrastructure network.

China's growing presence in Laos recently appears to have caused Laos to rethink its political relationship with China. In 2016, the Lao People's Revolutionary Party Congress removed Choummaly Sayasone as chief of the party and replaced him with Vice President Bounnhang Vorachith.<sup>179</sup> Choummaly Sayasone was instrumental in facilitating economic concessions to Chinese businesses during his tenure, and his removal is seen as a pivot away from China toward Vietnam motivated by concern over China's significant economic presence in the country.<sup>180</sup> In the Commission's May 2017 meeting with the National Defense Studies Institute in Bangkok, the participants highlighted the impact of China's presence in Laos, noting that as Chinese migrants and investment move into Laos, Laos is losing its ability to stand up to China.<sup>181</sup>

### ***Laos-China Economic Relations***

China has developed an expansive economic footprint in Laos, and is Laos' top export market and source of FDI.<sup>182</sup> Chinese business interests in Laos include several shopping complexes, malls, mining facilities, plantations, transportation networks, and hydropower projects.<sup>183</sup> This investment has been encouraged by the Chinese government, which reportedly offers Chinese farmers up to \$200,000 to develop plantations in Laos to export agricultural products back to China.<sup>184</sup> However, China's economic presence has sparked friction between Laotian communities and Chinese firms. For example, Chinese banana plantations have been blamed for improperly using pesticides, causing 63 percent of plantation workers in northern Laos to fall ill, according to the Laos Agriculture and Forestry Institute.<sup>185</sup> Dam construction has also displaced several communities, resulting in protests over poor Chinese resettlement policies.<sup>186</sup>

---

\*In 1979, at least 200,000 Chinese troops invaded northern Vietnam to punish the country for its intervention in Cambodia to remove the China-backed Khmer Rouge. The invasion cost 50,000 lives and increased tension between China and Vietnam—the two would not reestablish diplomatic relations until 1990. Xuan Loc Doan, "27 Days of Hell: When China and Vietnam Went to War," *National Interest*, February 26, 2017; Michael Sullivan, "Ask the Vietnamese about War, and They Think China, Not the U.S.," *National Public Radio*, May 1, 2015.

Laos has turned to China to update its underdeveloped infrastructure, most notably approving a \$6 billion high-speed rail network connecting Laos to China in the north and Thailand in the south.<sup>187</sup> The railway faces significant criticism: it is anticipated to utilize mostly Chinese workers, with few benefits accruing to Laos.<sup>188</sup> The railway is also expensive relative to the Laotian economy—the total price of construction is equal to 37 percent of Laos' GDP in 2016.<sup>189</sup>

In northern Laos, Chinese investment has created a territory where political control between the Laotian government and Chinese businesses is occasionally ambiguous. In the Golden Triangle Special Economic Zone, an area under a 99-year lease to a Chinese casino firm, Chinese security guards appear to have primary law enforcement responsibility, and while Laotian police are present, according to Jeremy Douglas, the regional representative of the UN Office of Drugs and Crime in Bangkok, it is not clear to what extent they are active.<sup>190</sup> The area appears to function as a de facto Chinese enclave, with Chinese currency being the principal method of exchange, clocks set an hour ahead to Beijing time, street signs written in Chinese, and passports processed by both Chinese and Laotian inspectors.<sup>191</sup> The Environmental Investigation Agency described the zone as an “illegal wildlife supermarket” for providing Chinese consumers access to products processed from endangered animals, notably tiger skins and tiger bone wine.<sup>192</sup> The area is also situated in a region central to the Southeast Asian drug trade, estimated to be worth at least \$31 billion in 2013, nearly twice Laos' 2016 GDP.<sup>193</sup>

### ***Laos-China Military Relations***

The defense relationship appears to be a relatively minor aspect of the overall China-Laos relationship. Little public information is available on their defense relationship, which is composed of people-to-people exchanges, border security and counter drug and human trafficking operations, and arms transfers.<sup>194</sup> Despite many joint statements in recent years by Chinese and Laotian officials pledging to deepen military cooperation, the two countries do not appear to have taken concrete actions to expand their defense ties.<sup>195</sup> In what appears to be China's only arms transfer to Laos since 2013, it gave office equipment to the Laos Ministry of Defense.<sup>196</sup>

Violence against Chinese nationals in Laos is the most prominent issue affecting the China-Laos defense relationship. The following are selected cases of attacks against Chinese nationals in Laos in the last two years. In all cases, the identities of the assailants are unclear.

- In January 2016, two Chinese nationals died and one was injured in a bomb attack. One of the victims was an employee of a Chinese mining company.<sup>197</sup>
- In March 2016, a Chinese worker was killed and three other Chinese workers were wounded in a shooting attack on a logging company.<sup>198</sup> The company was reportedly linked to a Chinese dam project in the area.<sup>199</sup>

- Later in March 2016, six Chinese nationals were wounded in a shooting attack on a passenger bus.<sup>200</sup>

The connection of many of the victims to Chinese companies operating in Laos suggests the violence reflects local resentment of China's growing economic presence and poor Chinese business practices.<sup>201</sup> In May 2016, China and Laos announced they would increase military cooperation to ensure "the safety of each other's people, organizations, and important projects."<sup>202</sup> This statement reflects a trend in China's global security engagement toward greater involvement of the Chinese military in protecting China's economic interests abroad.<sup>203</sup>

### China's Relations with Thailand

In his testimony to the Commission, Karl Jackson, professor of Southeast Asian Studies at Johns Hopkins University, noted Thailand has historically prioritized its national interests through a careful strategy of "cultivating relations simultaneously with ... opposing coalitions of powers."<sup>204</sup> While Thailand has been a U.S. treaty ally since 1954,\* according to Panitan Wattanayagorn, advisor to Thailand Defense Minister Prawit Wongsuwan, Thailand has fostered a working relationship with China since at least the 1980s when Thailand purchased tanks and naval frigates from the Chinese military.<sup>205</sup>

U.S. relations with Thailand entered a rocky phase following the 2014 coup, when General Prayuth Chan-ocha became prime minister after seizing control of the government.<sup>206</sup> Consistent with U.S. law, in response to the coup the United States immediately suspended Foreign Military Financing and International Military Education and Training funds for Thailand.† The United States also limited the scope of its annual Cobra Gold joint military exercises to cover only HA/DR.<sup>207</sup> In 2015, Thailand's junta government accused the United States of meddling in its political affairs after a visiting U.S. official called for an end to martial law.‡ U.S.-Thai diplomatic and military ties have begun to gradually improve since 2015. In December 2015, the United States and Thailand conducted their first high-level strategic dialogue in three years, and in April 2017 President Donald Trump invited Prime Minister Chan-ocha to visit the White House.<sup>208</sup>

Thailand may be responding to China's growing economic and military power and pivoting accordingly. According to Dr. Jackson,

*In Thailand regimes and constitutions come and go. But Thailand persistently hedges its bets, by tilting toward whatever*

\*The basis for the United States' treaty alliance with Thailand is the 1954 Manila Pact of the Southeast Asian Treaty Organization. Although the organization was disbanded in 1977, the Manila Pact remains in force. Prashanth Parameswaran, "Oldest U.S. Ally in Asia: Thailand or the Philippines?" *Diplomat*, February 17, 2017.

†On average, from 2011 to 2013 Thailand received \$5.3 million from the United States in Foreign Military Financing and International Military Education and Training, most of which went to training programs. U.S. Department of State, *Response to Coup in Thailand*, May 28, 2014; U.S. Department of State, "Foreign Military Financing Account Summary"; U.S. Department of State, *Foreign Military Training: Fiscal Years 2011 and 2012*, 2012; U.S. Department of State, *Foreign Military Training: Fiscal Years 2013 and 2014*, 2014.

‡Assistant Secretary of State for East Asia Daniel Russell delivered these remarks in January 2015. Amy Sawitta Lefevre, "Thailand Accuses U.S. of Meddling in Its Politics," Reuters, January 28, 2015.

*power is emerging in Asia (once Great Britain, subsequently the U.S., and now China) but without abandoning relationships with other powers who might be needed to preserve Thai sovereignty in some future scenario.*<sup>209</sup>

China's goals in Thailand include building a north-south economic corridor stretching to Singapore, increasing exports into Thailand's market, and establishing better diplomatic and military relations with a U.S. treaty ally. According to Dr. Jackson, China's goals in Thailand mirror its ambitions in continental Southeast Asia overall in drawing "these smaller but strategically placed countries into [its] economic, diplomatic, and cultural orbit," and replacing the United States as "the most influential outside power in Southeast Asia."<sup>210</sup>

### ***Chinese Soft Power Projection in Thailand***

To boost its influence, China has committed significant soft-power resources to Thailand. Thailand hosts 35 Confucius Institute facilities (see Figure 12), more than any other Southeast Asian country.\* These facilities are key to China's soft power efforts, promoting Chinese culture and giving the Chinese government influence in Thai colleges and secondary schools.† China's Confucius Institutes in Thailand reach a wide audience—one Confucius Institute currently has 50,000 Thai students enrolled in Chinese language and culture programs.<sup>211</sup> The United States does not have a comparable program in Asia. In 2015 China announced it would send 1,800 Chinese language instructors to Thailand that year.<sup>212</sup> By contrast, as of 2015 there were only 22 Fulbright teaching assistants in Thailand.<sup>213</sup>

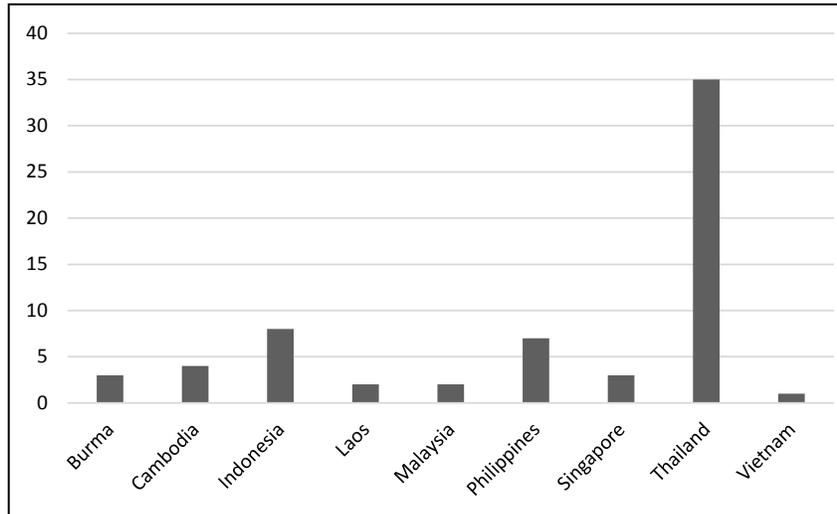
China also leverages the large population of ethnic Han Chinese living in Thailand to promote its interests. Roughly 14 percent of Thailand's population is ethnic Chinese and many Thai-Chinese have a prominent place in Thailand's business community.<sup>214</sup> During his meeting with the Commission in May 2017, Mr. Wattanayagorn, advisor to Thailand's minister of defense, noted that the Chinese government frequently targets Thai-Chinese businessmen to advance Chinese business interests, inviting them back to Beijing to meet with high-level government officials who encourage them to promote Chinese firms.<sup>215</sup> According to Mr. Wattanyagorn, China has tried to use its economic reach and soft power in regional countries as tools of coercion.<sup>216</sup>

---

\*The Confucius Institute is a nonprofit education organization funded by the Chinese government. Its purpose is to promote Chinese influence and soft power through language training and cultural exchanges. Hanban, "About Confucius Institute/Classroom." [http://english.hanban.org/node\\_10971.htm](http://english.hanban.org/node_10971.htm).

†The influence of Confucius Institutes has caused some U.S. academics to express concerns and call for their removal from U.S. universities. John Sudworth, "Confucius Institute: The Hard Side of China's Soft Power," BBC, December 22, 2014.

**Figure 12: Confucius Institutes and Confucius Classrooms in ASEAN Countries**



Source: Hanban, "About Confucius Institute/Classroom." [http://english.hanban.org/node\\_10971.htm](http://english.hanban.org/node_10971.htm).

### ***Thailand-China Economic Relations***

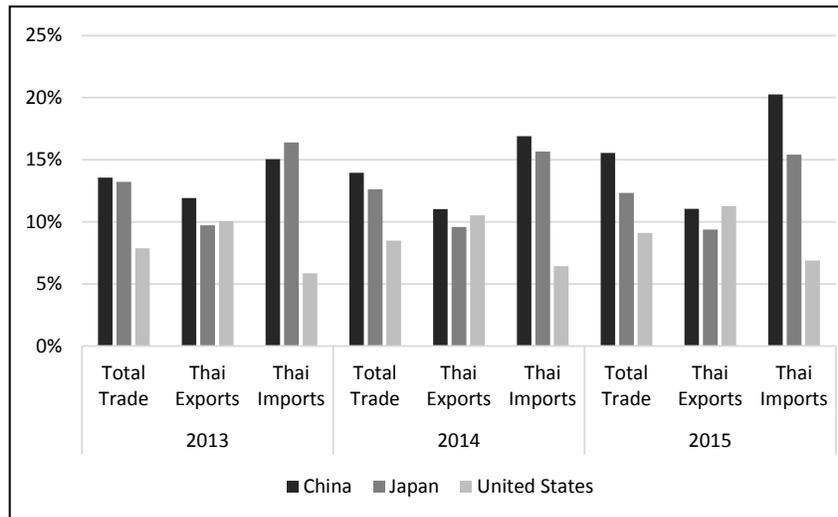
China has devoted significant efforts to incorporating Thailand into its planned north-south economic corridor stretching from Kunming to Singapore. The centerpiece of this corridor is the Kunming-Singapore high-speed railway. The Thai section of this railway was delayed several times due to disputes over cost, use of Chinese engineers, and China's demand for concessions to develop commercial property at railway stations and on a stretch of land extending on both sides of the railway along its length.<sup>217</sup> The initial phase of this railway was approved for construction in July 2017.<sup>218</sup> From Laos and China's perspective, securing approval for the Thai section of the railway was critical, as without it the Laos section of the railway would fail to connect to areas with high economic activity, throwing the economic value of the \$6 billion China-Laos railway into doubt.<sup>219</sup>

Thailand's economy is heavily dependent on foreign trade but is broadly diversified across several trading partners.\* While China is Thailand's largest trading partner, it accounts for a smaller portion of Thailand's goods trade compared to its share in Burma, Laos, and Cambodia.<sup>220</sup> In 2015 China claimed 16 percent of Thailand's total trade (see Figure 13), followed closely by Japan (12 percent) and the United States (9 percent).<sup>221</sup> China is Thailand's second largest market for exports, falling just behind the United States (in 2015, 11.25 percent of all Thai goods exports

\*In 2015, goods exports accounted for 53 percent of Thailand's GDP. Including service exports such as tourism, exports may account for 61 to 72 percent of Thailand's economy. United Nations Comtrade, "International Trade Statistics Database;" The World Bank, "GDP (current US\$)." <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>; World Travel and Tourism Council, "Travel and Tourism, Economic Impact 2015," 2016.

went to the United States and 11.05 percent went to China).<sup>222</sup> China's share of Thailand's total goods trade has increased over time, growing from 13 percent in 2012 to 16 percent in 2015.<sup>223</sup> China's goods exports to Thailand consist mostly of manufactured goods, with an emphasis on computers and communication devices.\*

**Figure 13: U.S., Japanese, and Chinese Share of Thailand's Goods Trade, 2013-2015**



Source: United Nations Comtrade, "International Trade Statistics Database."

The Thai government has attempted to position Thailand as a regional trading hub, where foreign companies invest in manufacturing facilities and regional headquarters to produce goods for export to the rest of Southeast Asia.<sup>224</sup> This strategy has attracted investment from Chinese manufacturing firms, including Chinese appliance-maker Haier, which is expanding its factories in Thailand, and SAIC Motor, China's largest automaker, which is currently spending nearly \$1 billion to construct a second factory in Thailand (with cars manufactured there destined for export to ASEAN countries).<sup>225</sup> High real estate prices in China have also caused many Chinese investors to turn to Thailand's comparatively more affordable market. Thai realtors report a significant increase in sales to Chinese buyers either as an investment or a rental unit for tourists: according to Chinese property portal Juwai.com, in the first half of 2017 Thailand was the third most-searched real estate market for Chinese investors, up from its position as the sixth-most searched market in 2016.†

\* In 2015 broadcasting equipment accounted for 6.3 percent of all Chinese exports to Thailand, followed by computers (4.9 percent) and telephones (3.7 percent). Observatory of Economic Complexity, "What Does China Export to Thailand (2015)?"

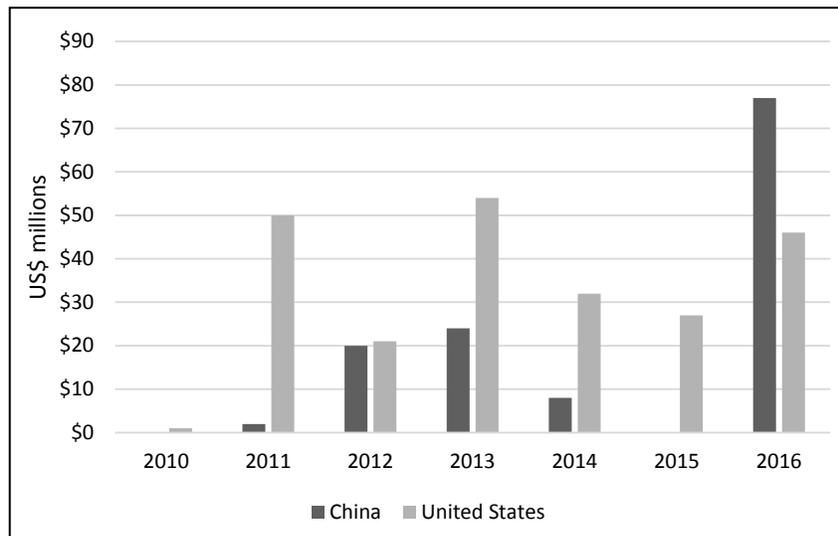
† In 2016, the first and second most-searched markets were the United States and Australia, respectively. Juwai.com, "Where Chinese Are Looking Globally?"; Donna Airola, "Priced Out from Home Market, Chinese Swoop in to Buy Thai Real Estate," Reuters, August 2, 2017.

China has become an important source of tourists to Thailand, an industry key to Thailand's economic growth.\* From 2014 to 2015, Chinese tourism to Thailand increased 71 percent and Chinese tourists currently account for 27 percent of Thailand's tourism sector by revenue.<sup>226</sup> While tourism is vital to Thailand's growth, Chinese tourism has created friction between Thailand and China. The Thai government claims Chinese tourism does not benefit Thai workers, as Chinese tour operators spend most of their expenses on Chinese vendors associated with Chinese-conducted tours.<sup>227</sup> In 2017, the Thai government shut down several low-cost Chinese tourism agencies operating in Thailand that it claimed do not contribute to the local economy.<sup>228</sup>

### ***Thailand-China Military Relations***

Following the 2014 military coup, China-Thailand military engagement has increased. Chinese arms sales to Thailand grew from \$20 million in 2012 to \$77 million in 2016, exceeding U.S. arms sales to Thailand by \$30 million for that year, the largest margin since 1995 (see Figure 14).<sup>229</sup>

**Figure 14: Estimated U.S. and Chinese Arms Sales to Thailand, 2010–2016**



Source: Stockholm International Peace Research Institute, "The SIPRI Arms Transfers Database." <http://www.sipri.org/databases/armstransfers>.

Recent Thailand-China military cooperation includes:

- ***New submarines:*** The junta government purchased a Yuan-class diesel-electric submarine for \$393 million from China in 2017—Thailand's first submarine purchase in 50 years—and is planning to purchase two more.<sup>230</sup> Members of Thailand's two ma-

\*By some measures, tourism is Thailand's largest sector, accounting for 19 percent of its economy. In 2015, without expansion in Thailand's tourism sector the economy would have registered no growth at all. *Fortune*, "For Thailand's Economy, Bombs Aren't the Biggest Problem," August 18, 2015; World Travel and Tourism Council, "Travel and Tourism, Economic Impact 2015," 2016.

for civilian political parties have criticized the purchase as a mismanagement of government resources.<sup>231</sup> Furthermore, according to Thailand's Ministry of Foreign Affairs, the Gulf of Thailand is too shallow for effective submarine operations.<sup>232</sup> According to Mr. Wattanayagorn, Thailand's submarine purchase will cultivate a long-term relationship with China as China will provide maintenance for Thailand's submarine fleet.<sup>233</sup>

- *Small arms and tank sales:* Thailand has committed to purchasing 38 Chinese VT-4 tanks to upgrade its aging stock of U.S.-built tanks and is exploring joint military manufacturing facilities to maintain its Chinese equipment and produce small arms.<sup>234</sup>
- *Bilateral exercises:* Thailand and China launched their first-ever joint air force exercises in 2015 and have recently expanded their joint naval drills, which first began in 2010.<sup>235</sup>

Some military projects—such as a multi-billion-dollar Chinese deal to renovate Thailand's Sattahip naval base—remain under negotiation.<sup>236</sup> According to a U.S. diplomat, agreements between the United States and Thailand preventing Chinese maintenance crews from inspecting U.S. weapons systems may prevent China and Thailand from running joint projects at facilities that have sensitive U.S. military equipment.<sup>237</sup>

### Implications for the United States

During the Commission's 2017 trip to Burma, a member of the American Chamber of Commerce in Myanmar noted continental Southeast Asia's position—situated between the largest population centers on Earth, including India, China, and Indonesia—makes it an important nexus of regional trade.\* With sufficient infrastructure development, the region could emerge as an important logistics and trade hub. This position as a crossroads between the world's largest population centers and trading routes from the Indian and Pacific Oceans has already attracted significant U.S. investment. As Vice President Mike Pence noted during his April 2017 visit to ASEAN's secretariat, the stock of U.S. FDI in ASEAN countries stood at \$274 billion in 2015, an amount greater than the stock of U.S. FDI in China, India, and Japan combined.<sup>238</sup>

China's engagement in these countries constitutes an effort to shape the economic future of the region toward its own interests and away from those of the United States and other countries. China's facilitation of corruption puts U.S. firms at a disadvantage and the close relationship between Chinese firms and some regional leaders threatens to crowd out U.S. firms. While Chinese firms already enjoy an advantage over U.S. firms due to their geographical proximity, China's north-south infrastructure projects are enhancing that advantage by creating low-cost transportation corridors that

---

\* In 2015, Danny Quah, professor of economics and international development at the London School of Economics, calculated the smallest circle that could be drawn over the globe that would contain half of the world's population. The circle was centered over Mong Khet in Burma with a radius of 2,000 miles. Danny Quah, "The World's Tightest Cluster of People," *London School of Economics*, December 16, 2015; Member of the American Chamber of Commerce in Myanmar, meeting with Commission, Rangoon, Burma, May 24, 2017.

will direct trade away from the United States and other countries to Beijing.

In her testimony before the Commission, Ms. Sun noted China promotes a model of development in Burma that “prioritizes economic development at the cost of political liberalization,” in contrast to the U.S. approach that has advanced governance, social justice, and capacity building as the bedrock for improving livelihoods.<sup>239</sup> Throughout the region, China provides aid with no robust governance or environmental or social standards, facilitating a political and economic environment prone to corruption.\* For example, in both Laos and Cambodia, government officials have personally benefited from promoting Chinese economic engagement.<sup>240</sup>

The development model promoted by China places U.S. firms at a disadvantage. To the extent that China’s engagement with the region facilitates unaccountable political systems prone to corruption, such an environment will deny U.S. businesses commercial opportunities in some of ASEAN’s most dynamic economies. While Burma, Cambodia, and Laos rank among ASEAN’s smallest economies, they are also among the fastest growing: In 2016, Laos grew faster than any other ASEAN country, with 7 percent GDP growth, while Cambodia and Burma grew at 6.9 percent and 6.5 percent, respectively, the third- and fourth-highest growth rates in ASEAN.<sup>241</sup> Since 2012, these three countries have averaged 7.4 percent growth every year.<sup>242</sup> Over time, these high growth rates will result in richer economies and will increase commercial opportunities for U.S. firms. For example, the Asian Development Bank estimates that at its current growth rates, Burma’s economy will increase by a factor of two to four by 2030, and enjoy a GDP per capita roughly equal to Indonesia, ASEAN’s largest economy.<sup>243</sup>

The United States also has an interest in promoting democratic institutions in the region. The state of democracy in the region is challenged: Burma is transitioning away from military rule, but the army retains significant political power under the constitution; Thailand has been under martial law for three years following a coup; Cambodia’s Hun Sen has used violence and other coercive practices to win elections, arrested the leader of Cambodia’s political opposition on treason charges, closed independent media organizations, and expelled the U.S.-backed National Democratic Institute;<sup>244</sup> and Laos has long functioned as a dictatorship.<sup>245</sup> China’s focus on economic development in the region at the expense of political liberalization runs counter to U.S. values of promoting democracy and sustainable growth.

Despite the significant economic and governance needs of these countries, the United States allocates a relatively small share of its non-military assistance to the region. According to the U.S. Agency for International Development (USAID), from 2011 to 2015 Thailand, Cambodia, Laos, and Burma received approximately \$1.3 billion, or 0.8 percent, of the \$161 billion of world-wide U.S. non-military foreign assistance.<sup>246</sup> Over the same period, the United States

---

\*In 2016, Transparency International rated Cambodia as having the highest perceived corruption levels in Southeast Asia, and Global Witness has reported on several Cambodian businesses owned by Prime Minister Sen’s family members that have benefited from his patronage. “Corruption Perceptions Index 2016,” *Transparency International*, January 25, 2017; “Hostile Takeover: The Corporate Empire of Cambodia’s Ruling Family,” *Global Witness*, July 2016.

allocated around 3 percent of its non-military assistance to ASEAN countries.<sup>247</sup> Available estimates of Chinese assistance to the region suggest that it eclipses U.S. support. In 2011 and 2012 China's government pledged or distributed an estimated \$12 billion to Burma, Cambodia, Laos, and Thailand.\* While it is difficult for the United States to match China's assistance to these countries, the ability of regional countries to follow a model of development that is consistent with U.S. interests and international governance, social, and economic standards hinges on the availability of alternative sources of support.

Although China exceeds the United States in financial assistance, the United States has improved its relations with some regional countries, particularly Burma. According to Ms. Sun, China has perceived U.S. relations with continental Southeast Asian countries as zero-sum and believes stronger connections between the United States and regional countries come at China's expense.<sup>248</sup> China has most strongly perceived increased U.S. influence in Burma due to the opening up of the country to the West during the Obama Administration.† Chinese concerns over U.S. influence, combined with the region's strategic importance to China, may make the region an area of greater geopolitical competition between the United States and China in the future.

China's close relationship with Cambodia has undercut ASEAN's ability to promote freedom of navigation in the South China Sea. Cambodia's objections have prevented ASEAN from supporting The Hague's finding invalidating China's nine-dash line and from adopting a joint position regarding China's activity at Scarborough Shoal, although the Philippines' decision not to take advantage of the Hague decision to press China on its behavior now contributes to ASEAN's inertia on the South China Sea.<sup>249</sup> Although the United States does not support any claimant regarding territorial disputes in the South China Sea, U.S. officials have repeatedly expressed support for freedom of navigation and have stated that China's land reclamation increases regional instability.<sup>250</sup>

---

\*China's assistance to other countries is opaque and often difficult to classify. According to AidData, an organization that tracks Chinese projects, in 2011 and 2012 China distributed or pledged more than \$12 billion to Burma, Cambodia, Laos, and Thailand in loans, grants, and official investment. Of this \$12 billion, \$822 million was estimated to be on concessional terms equivalent to OECD official development assistance criteria. AidData, "Tracking Chinese Development Finance."

†After 2011, Chinese President and General Secretary of the Chinese Communist Party Xi Jinping reportedly asked his government "Who lost Burma?" after perceiving U.S. inroads into the country. Jane Perlez, "China Showers Myanmar with Attention, as Trump Looks Elsewhere," *New York Times*, July 19, 2017.

## ENDNOTES FOR SECTION 1

1. Kyaw Min, "China-Myanmar Gas Pipeline Becomes Fully Operational," *Myanmar Business Today*, October 28, 2013.
2. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
3. Association of Southeast Asian Nations, "ASEAN Member States." <http://asean.org/asean/asean-member-states/>.
4. Kyaw Min, "China-Myanmar Gas Pipeline Becomes Fully Operational," *Myanmar Business Today*, October 28, 2013.
5. Various, for details contact Commission staff.
6. National Bureau of Statistics via CEIC database.
7. National Bureau of Statistics via CEIC database.
8. United Nations Comtrade, "International Trade Statistics Database."
9. United Nations Comtrade, "International Trade Statistics Database."
10. United Nations Comtrade, "International Trade Statistics Database;" National Bureau of Statistics via CEIC database; United Nations Conference on Trade and Development, "Country Fact Sheets 2016."
11. United Nations Conference on Trade and Development, "Country Fact Sheets 2016"; Myanmar Directorate of Investment and Company Administration, *Foreign Investment of Permitted Enterprises*; Laos Ministry of Planning and Investment, *All Approved Investment Projects by Country*; National Bureau of Statistics via CEIC database.
12. Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 210. Translation.
13. Kyaw Min, "China-Myanmar Gas Pipeline Becomes Fully Operational," *Myanmar Business Today*, October 28, 2013; Yimou Lee, "Exclusive: China Seeks up to 85 Percent State in Strategic Port in Myanmar," Reuters, May 5, 2017.
14. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Murray Hiebert, June 8, 2017; Adam Pasick, "China's Canceled Burma Railway Is Its Latest Derailment in Southeast Asia," *Quartz*, June 25, 2014.
15. Adam Pasick, "China's Canceled Burma Railway Is Its Latest Derailment in Southeast Asia," *Quartz*, June 25, 2014.
16. U Kyaw Tin, Minister of Foreign Affairs, meeting with Commission, Naypyidaw, Burma, May 26, 2017.
17. Various, for details contact Commission staff.
18. Terry Frederickson, "Bangkok at the Center of Huge Future Rail Network," *Bangkok Post*, December 28, 2015.
19. Chaiwat Subprasom, "Thailand, China Agree on \$5 Billion Cost for Rail Project's First Phase," Reuters, September 21, 2016; *Railway Gazette*, "Construction Starts on China—Laos Railway," December 28, 2016.
20. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Murray Hiebert, June 8, 2017.
21. Daniel Pye, "The Dark Shadow of Myanmar's Jade Trade," *Financial Times*, September 26, 2016; Environmental Investigation Agency, "Hiatus in Timber Smuggling from Myanmar to China," March 7, 2016.
22. Renaud Egretau, "Jade or JADE? Debating International Sanctions on Burma's Gem Industry," *East-West Center*, October 13, 2011.
23. Elizabeth Economy, "China's Role in Myanmar's Dangerous Jade Trade," *Council on Foreign Relations*, November 2, 2015.
24. Official, Burma Ministry of Natural Resources and Environmental Conservation, meeting with Commission, Naypyidaw, Burma, May 26, 2017.
25. Various, for details contact Commission staff.
26. Elizabeth Economy, "China's Role in Myanmar's Dangerous Jade Trade," *Council on Foreign Relations*, November 2, 2015; Daniel Pye, "The Dark Shadow of Myanmar's Jade Trade," *Financial Times*, September 26, 2016.
27. Official, Burma Ministry of Natural Resources and Environmental Conservation, meeting with Commission, Naypyidaw, Burma, May 26, 2017.
28. Environmental Investigation Agency, "Hiatus in Timber Smuggling from Myanmar to China," March 7, 2016.
29. Prashanth Parameswaran, "What's Behind Laos' China Banana Ban?" *Diplomat*, April 14, 2017.

30. Voice of America, "More Chinese-Owned Banana Plantations to Close in Laos," April 12, 2017.
31. Various, for details contact Commission staff.
32. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
33. Tom Fawthrop, "China's Myanmar Dam Hypocrisy," *Diplomat*, January 28, 2017.
34. Tom Fawthrop, "China's Myanmar Dam Hypocrisy," *Diplomat*, January 28, 2017.
35. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017.
36. World Wildlife Federation, "Greater Mekong Facts." <https://www.worldwildlife.org/places/greater-mekong>.
37. Brian Eyler, "China Needs to Change Its Energy Strategy in the Mekong Region," *China Dialogue*, July 16, 2013.
38. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
39. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
40. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
41. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017; National Hydropower Association, "Policy, FAQ." <http://www.hydro.org/policy/faq/>; Bay Trippers, "Quick Facts about the Chesapeake Bay."
42. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
43. International Rivers, "Understanding the Impacts of China's Upper Mekong Dams."
44. Jamie Pittock, "Dams on the Mekong: Lost Fish Protein and the Implications for Land and Water Resources," *Global Environmental Change*, October 2012.
45. U.S. Geological Survey, *Total Water Use in the United States, 2010, 2014*.
46. Debra Tan, "Towards a Water and Energy Secure China," *China Water Risk*, April 2015.
47. Jonathan Kaiman, "China's Water Diversion Project Starts to Flow to Beijing," *Guardian*, December 12, 2014.
48. International Rivers, "Understanding the Impacts of China's Upper Mekong Dams."
49. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
50. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
51. Pilita Clark, "Troubled Waters: The Mekong River Crisis," *Financial Times*, July 18, 2014.
52. Official, Thailand Ministry of Foreign Affairs, meeting with Commission, Bangkok, Thailand, May 23, 2017.
53. Lower Mekong Initiative, "Environment and Water Pillar."
54. U.S. Department of State, *Secretary Tillerson Speaks at 10th Lower Mekong Initiative Ministerial*, August 6, 2017.
55. Mekong River Commission, "Lancang—Mekong Cooperation: MRC Welcomes the New Initiative for Regional Cooperation by Six Countries in the Mekong River Basin." <http://www.mrcmekong.org/news-and-events/news/lancang-mekong-cooperation-mrc-welcomes-the-new-initiative-for-regional-cooperation-by-six-countries-in-the-mekong-river-basin/>.
56. Zhang Yue, "Plan Cements Mekong Cooperation," *China Daily*, March 24, 2016.
57. Erik Barboriak, Congressional Advisor, U.S. Department of State, interview with Commission staff, July 21, 2017.
58. Brenda Goh, "China's Silk Road Push in Thailand May Founder on Mekong River Row," Reuters, May 4, 2017; Ben Blanchard, "After Myanmar Protests, China Says Companies Should Respect Laws," Reuters, May 9, 2016; Simon Denyer, "The Push and Pull of China's Orbit," *Washington Post*, September 5, 2015; Arnaud Dubus, "How Northern Laos Is Being Swallowed by China," *Le Temps*, November 10, 2015; Thant Myint-U, "Why Burma Must Reset Its Relationship with China," *Foreign Policy*, January 12, 2016.
59. Adam Pasick, "China's Canceled Burma Railway Is Its Latest Derailment in Southeast Asia," *Quartz*, June 25, 2014.
60. Shawn Crispin, "China-Thailand Railway Project Gets Untracked," *Diplomat*, April 1, 2016; Laura Zhou, "Engineers Put Brakes on Chinese-Thai Rail Plan," *South China Morning Post*, June 19, 2017.

61. *South China Morning Post*, "Thailand Approves Long-Delayed US\$5.2 Billion Rail Link to China," July 11, 2017.
62. Pichamon Yeophantong, "Cambodia's Environment: Good News in Areng Valley?" *Diplomat*, November 3, 2014.
63. Khuon Narim, "Government Ditches Hydropower Dam for More Coal Power," *Cambodia Daily*, February 20, 2017.
64. Ame Trandem, "Cambodia's Lower Sesan 2 Dam's Draft Law Evades Costs and Concerns," *International Rivers*, February 11, 2013; Gus Greenstein, "Fork in the River," *Slate*, July 17, 2017.
65. *International Rivers*, "Cambodia's Lower Sesan 2 Dam's Draft Law Evades Costs and Concerns," February 11, 2013; *International Rivers*, "Proposed Lower Sesan 2 Dam, Cambodia Fails to Uphold Best Practice," August 19, 2009.
66. Mark Magnier, "Myanmar Farmers Protest Land Seizures for Copper Mine," *Los Angeles Times*, December 14, 2012; San San Tin, "Myanmar Police Arrest Two in Letpadaung Copper Mine Protest," *Radio Free Asia*, May 6, 2016.
67. He Huifeng, "The 'Belt and Road' Projects China Doesn't Want Anyone Talking about," *South China Morning Post*, August 8, 2017.
68. He Huifeng, "The 'Belt and Road' Projects China Doesn't Want Anyone Talking about," *South China Morning Post*, August 8, 2017.
69. He Huifeng, "The 'Belt and Road' Projects China Doesn't Want Anyone Talking about," *South China Morning Post*, August 8, 2017.
70. Kiyoshi Takenaka, "Japan to Provide \$7.73 Billion in Aid to Myanmar, PM Abe Says," Reuters, November 2, 2016; Ron Corben, "Japan Seeks to Boost Role in ASEAN, Challenge China's Growing Influence," *Voice of America*, May 6, 2016.
71. Japan International Cooperation Agency, *JICA 2016 Annual Report*, 2016; Japan International Cooperation Agency, *JICA 2015 Annual Report*, 2015; Japan International Cooperation Agency, *JICA 2014 Annual Report*, 2014.
72. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Murray Hiebert, June 8, 2017.
73. Japan International Cooperation Agency, *JICA 2016 Annual Report*, 2016; Japan International Cooperation Agency, *JICA 2015 Annual Report*, 2015; Japan International Cooperation Agency, *JICA 2014 Annual Report*, 2014; Japan Bank for International Cooperation, *JBIC Annual Report 2016*, 2016; Japan Bank for International Cooperation, *JBIC Annual Report 2015*, 2015; Japan Bank for International Cooperation, *JBIC Annual Report 2014*, 2014.
74. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017.
75. Jared Gesner, "Democracy on a Leash," *U.S. News and World Report*, November 12, 2015.
76. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
77. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
78. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017; Caleb Gorton, "China Ostensibly Cancels Myitsone Dam Project in Myanmar in Favor of Access to Kyaukpyu Port," *Global Food and Water Crises Research Program*, April 12, 2017.
79. Murray Hiebert, Senior Advisor, Center for Strategic and International Studies, interview with Commission staff, March 27, 2017; Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
80. Oxford Burma Alliance, "Ethnic Nationalities of Burma." <http://www.oxfordburmaalliance.org/ethnic-groups.html>; Ashley South, "Burma's Longest War, Anatomy of the Karen Conflict," *Transnational Institute*, March 2011.
81. Antoni Slodkowski, "Myanmar Signs Ceasefire with Eight Armed Groups," Reuters, October 15, 2015.
82. Nyan Hlaing Lynn, "Mixed Results at Latest Panglong Peace Conference," *Frontier Myanmar*, May 30, 2017.
83. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
84. Viola Zhou, "China Turns Blind Eye to Mainland Supporters of Ethnic Chinese Rebels Fighting in Myanmar," *South China Morning Post*, November 21, 2016.
85. James Pomfret, "Relief Camp in China Swells as Thousands Flee Conflict in Myanmar," Reuters, March 13, 2017.

86. James Pomfret, "Relief Camp in China Swells as Thousands Flee Conflict in Myanmar," Reuters, March 13, 2017. Kristin Huang, "Chinese Teacher Killed in Myanmar Conflict after Shelling Hits School," *South China Morning Post*, March 13, 2017.
87. *Economist*, "The Han That Rocks the Cradle," March 12, 2015.
88. Al Jazeera, "Myanmar's Suu Kyi Opens Fresh Round of Peace Talks," May 24, 2017; Nyan Hlaing Lynn, "Mixed Results at Latest Panglong Peace Conference," *Frontier Myanmar*, May 30, 2017.
89. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017; "Through Reclusive Wa, China's Reach Extends into Suu Kyi's Myanmar," Voice of America, December 28, 2016.
90. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
91. "Through Reclusive Wa, China's Reach Extends into Suu Kyi's Myanmar," Voice of America, December 28, 2016.
92. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
93. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
94. U.S. Department of the Treasury, *Treasury Action Targets Burmese Drug Cartel*, November 13, 2008.
95. U.S. Department of the Treasury, *Treasury Action Targets Burmese Drug Cartel*, November 13, 2008.
96. "Through Reclusive Wa, China's Reach Extends into Suu Kyi's Myanmar," Voice of America, December 28, 2016; Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
97. Nyan Hlaing Lynn, "Mixed Results at Latest Panglong Peace Conference," *Frontier Myanmar*, May 30, 2017.
98. Kachin.net, "Kachin Rangers: Allied Guerrillas in World War II Burma."
99. Bob Allen, "Missing Burmese Pastors in Police Custody," *Baptist News Global*, January 27, 2017.
100. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
101. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
102. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
103. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
104. Bertil Litner, "Kachin War Explodes Myanmar's Peace Drive," January 19, 2017.
105. Nyen Nyen, "Six Year Battle with No End in Sight," *Irawaddy*, June 9, 2017.
106. Nyan Hlaing Lynn, "Mixed Results at Latest Panglong Peace Conference," *Frontier Myanmar*, May 30, 2017.
107. Jane Perlez, "Visiting Beijing, Myanmar's Aung San Suu Kyi Seeks to Mend Relations," *New York Times*, August 17, 2016; Cristina Garafola, "Aung San Suu Kyi's China Trip and the Future of Sino-Myanmar Relations," *Diplomat*, August 6, 2015.
108. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
109. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
110. Michael Peel, "Myanmar's Suu Kyi Heads for China in First Big Foreign Trip," *Financial Times*, August 17, 2016.
111. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.
112. Oxford Burma Alliance, "Ethnic Nationalities of Burma." <http://www.oxfordburmaalliance.org/ethnic-groups.html>.
113. "Peace Top Priority—Aung San Suu Kyi," *Mizzima*, August 11, 2017.
114. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
115. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
116. David Mathieson, Independent Analyst, meeting with Commission, Rangoon, Burma, May 24, 2017.

117. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
118. Jane Perlez, "China Showers Myanmar with Attention, as Trump Looks Elsewhere," *New York Times*, July 19, 2017.
119. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
120. Yun Sun, "China and Myanmar's Peace Process," *United States Institute of Peace*, 2017.
121. United States Agency for International Development, *Foreign Aid Explorer*. <https://explorer.usaid.gov/aid-dashboard.html>.
122. U.S. Department of State, *U.S. Relations With Burma: Fact Sheet*, January 27, 2017.
123. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017.
124. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017.
125. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017.
126. Mike Ives, "A Chinese-Backed Dam Leaves Myanmar in a Bind," *New York Times*, March 31, 2017; Htoo Thant, "USDP Majority Parliament Passes Trimmed Budget for Next Govt," *Myanmar Times*, January 21, 2016; Jon Grevatt, "Myanmar Proposes a 2017 Defense Budget of USD2.1 Billion," *Jane's 360*, March 1, 2017.
127. Sean Turnell, senior economic advisor to the Burmese government, meeting with Commission, Naypyidaw, Burma, May 26, 2017.
128. "Energy Poverty in Myanmar: Only 34% of the Population Have Grid Quality Electricity," *International Institute for Environment and Development*, May 10, 2016.
129. Caleb Gorton, "China Ostensibly Cancels Myitsone Dam Project in Myanmar in Favor of Access to Kyaukpyu Port," *Global Food and Water Crises Research Program*, April 12, 2017.
130. Brian Eyler, Director, Stimson Center, briefing to Commission, Washington, DC, May 10, 2017.
131. Gabrielle Paluch, "China-Backed Railway Expansion Stalls in Myanmar," *Voice of America*, August 1, 2014; Yimou Lee, "Exclusive: China Seeks up to 85 Percent State in Strategic Port in Myanmar," *Reuters*, May 5, 2017.
132. "Hydropower and Chinese Engagement in Myanmar," *Envisage*, May 2017.
133. Thant Myint U, "Why Burma Must Reset Its Relationship with China," *Foreign Policy*, January 12, 2016.
134. Advisor to the Burmese Government, meeting with Commission, Naypyidaw, Burma, May 26, 2017.
135. Asia Foundation Staff, meeting with Commission, Rangoon, Burma, May 24, 2017.
136. Eleanor Albert, "The Rohingya Migrant Crisis," *Council on Foreign Relations*, January 12, 2017.
137. Eleanor Albert, "The Rohingya Migrant Crisis," *Council on Foreign Relations*, January 12, 2017.
138. Austin Ramzy, "270,000 Rohingya Have Fled Myanmar, U.N. Says," *New York Times*, September 8, 2017.
139. "Myanmar Policemen Killed in Rakhine Border Attack," *BBC*, October 9, 2016; Austin Ramzy, "270,000 Rohingya Have Fled Myanmar, U.N. Says," *New York Times*, September 8, 2017.
140. Vivian Tan, "Rohingya Take to the Sea in Search of Safety in Bangladesh," *United Nations High Commissioner for Refugees*, September 7, 2017. Feliz Solomon, "Burma Is Pursuing 'Ethnic Cleansing' of Rohingya Muslims, U.N. Official Says," *Time*, November 24, 2016.
141. "The Rohingya Refugee Crisis Is the Worst in Decades," *Economist*, September 21, 2017.
142. Tommy Wilkes, "Rohingya Refugees Tell of New Violence; Call for Myanmar Sanctions," *Reuters*, September 17, 2017.
143. Lara Zhou, "China Pledges Aid for Rohingya Refugees in Bangladesh, but 'Doesn't Want to Damage Ties with Myanmar,'" *South China Morning Post*, September 15, 2017.
144. Austin Ramzy, "Myanmar Draws Scorn for Rohingya Crisis, but Few Urge Sanctions," *New York Times*, September 18, 2017.
145. "Factbox: Reactions to Speech by Myanmar's Suu Kyi on Violence in Rakhine State," *Reuters*, September 19, 2017; "China Offers Support to Myanmar at U.N. Amid Rohingya Crisis," *Reuters*, September 18, 2017.

146. Serajul Quadir, "U.N. Seeks 'Massive' Help for Rohingya Fleeing Myanmar 'Ethnic Cleansing,'" Reuters, September 14, 2017.
147. Serajul Quadir, "China Ready to Mediate Between Myanmar, Bangladesh over Rohingya Row," Reuters, April 25, 2017.
148. "Myanmar Rejects China's Offer to Resolve Row with Bangladesh over Rohingya," Radio Free Asia, May 1, 2017.
149. Soe Zeya Tun, "China, Russia Block U.N. Council Concern about Myanmar Violence," Reuters, March 17, 2017.
150. Austin Ramzy, "Myanmar Draws Scorn for Rohingya Crisis, but Few Urge Sanctions," *New York Times*, September 18, 2017.
151. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017; "U.N. Security Council condemns excessive violence in Myanmar," Reuters, September 13, 2017.
152. Hu Weijia, "China Ready to Play a Greater Role in Resolving Conflicts in South & Southeast Asia," *Global Times*, May 1, 2017.
153. Hu Weijia, "China Ready to Play a Greater Role in Resolving Conflicts in South & Southeast Asia," *Global Times*, May 1, 2017.
154. Thun Kin, President, Burmese Rohingya Organization UK, interview with Commission staff, May 2, 2017.
155. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Murray Hiebert, June 8, 2017; Murray Hiebert, "Engaging Myanmar's Military: Carpe Diem Part II," *Center for Strategic and International Studies*, September 5, 2013.
156. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
157. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.
158. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.
159. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database." <https://www.sipri.org/databases/armstransfers>.
160. Zhang Tao, "Senior Chinese Military Leader Meets with Myanmar Military Chief in Myanmar," *China Military Online*, September 9, 2016.
161. An, "Myanmar, China Pledge to Deepen Ties," Xinhua, June 2, 2017.
162. Manuel Mogato, "ASEAN Deadlocked on South China Sea, Cambodia Blocks Statement," Reuters, July 26, 2016.
163. James Kynge, "FT Investigation: How China Bought Its Way into Cambodia," *Financial Times*, September 8, 2016.
164. James Kynge, "FT Investigation: How China Bought Its Way into Cambodia," *Financial Times*, September 8, 2016.
165. National Bureau of Statistics via CEIC database; United Nations Conference on Trade and Development, "Country Fact Sheets 2016"; United Nations Comtrade, "International Trade Statistics Database."
166. James Kynge, "FT Investigation: How China Bought Its Way into Cambodia," *Financial Times*, September 8, 2016.
167. James Kynge, "FT Investigation: How China Bought Its Way into Cambodia," *Financial Times*, September 8, 2016.
168. Aubrey Belford and Prak Chan Thul, "Chinese Influence in Cambodia Grows with Army School, Aid," Reuters, April 2, 2015.
169. Aubrey Belford and Prak Chan Thul, "Chinese Influence in Cambodia Grows with Army School, Aid," Reuters, April 2, 2015.
170. Jeffrey Becker, "What Is the PLA's Role in Promoting China-Cambodia Relations?" *Diplomat*, April 29, 2017; CCTV.com, "Confucius Institute in Cambodia Launches Chinese Department in University," August 10, 2012.
171. Huang Panyue, "Highlights of China-Cambodia 'Golden Dragon 2016' Joint Drill," *Chinamil.com*, December 27, 2016.
172. U.S. Embassy Phnom Penh, Cambodia's Facebook page. April 2, 2017; Sopheng Cheang, "Cambodia Cancels Military Exercise with U.S.," Associated Press, January 16, 2017.
173. U.S. Embassy Phnom Penh, Cambodia's Facebook page. April 2, 2017. <https://www.facebook.com/us.embassy.phnom.penh/videos/10154577010818224/>.

174. Aubrey Belford and Prak Chan Thul, "Chinese Influence in Cambodia Grows with Army School, Aid," Reuters, April 2, 2015.
175. Yang Ru, "China Delivers Military Trucks, Uniforms to Cambodia," Xinhua, February 7, 2014.
176. Prashanth Parameswaran, "China Just Gave Cambodia's Military a Boost," *Diplomat*, May 27, 2015.
177. World Bank, "Population, Total."
178. *International Business Publications USA*, "Laos Foreign Policy and Government Guide," 2015.
179. Murray Hiebert, "New Opportunities for U.S.–Laos Relations," *East Asia Forum*, February 16, 2016.
180. Murray Hiebert, "New Opportunities for U.S.–Laos Relations," *East Asia Forum*, February 16, 2016.
181. Apisak Sombutchaonnon, Director, National Defense Studies Institute, meeting with Commission, Bangkok, Thailand, May 22, 2017.
182. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>; Laos Ministry of Planning and Investment, *All Approved Investment Projects by Country*.
183. Murray Hiebert, "New Opportunities for U.S.–Laos Relations," *East Asia Forum*, February 16, 2016.
184. Arnaud Dubus, "How Northern Laos Is Being Swallowed by China," *Le Temps*, November 10, 2015.
185. Prashanth Parameswaran, "What's Behind Laos' China Banana Ban?" *Diplomat*, April 14, 2017.
186. Arnaud Dubus, "How Northern Laos Is Being Swallowed by China," *Le Temps*, November 10, 2015.
187. Radio Free Asia, "Clearing for Lao-China Railway Begins, but Questions about the Project Still Remain," January 4, 2017.
188. Radio Free Asia, "Clearing for Lao-China Railway Begins, but Questions about the Project Still Remain," January 4, 2017; Murray Hiebert, "Leadership Changes and Upcoming Obama Visit Give U.S. New Opportunities in Laos," *Center for Strategic and International Studies*, February 4, 2016.
189. World Bank, "GDP (Current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.
190. Sebastian Strangio, "The 'Lawless' Playgrounds of Laos," Al Jazeera, July 24, 2016.
191. Andrew Marshall, "Special Report: In Mekong, Chinese Murders and Bloody Diplomacy," Reuters, January 26, 2012; Jonathan Kaiman, "In Laos' Economic Zone, a Casino and Illicit Trade Beckon in 'Lawless Playground,'" *Los Angeles Times*, September 8, 2015.
192. Environmental Investigation Agency, "Laos' Sin City's an Illegal Wildlife Supermarket for Chinese Tourists," March 19, 2015.
193. Andrew Marshall, "Led by China, Mekong Nations Take on Golden Triangle Narco-Empire," Reuters, March 15, 2016; World Bank, "GDP (Current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.
194. Prashanth Parameswaran, "China Gifts Military Equipment to Laos," *Diplomat*, April 14, 2017; An Lu, "China, Laos Pledge Closer Military Ties," Xinhua, July 8, 2015; Xinhua, "China, Neighbors Launch Fresh Mekong River Patrols," September 21, 2012; BBC, "China and Neighboring States to Patrol Mekong River," November 27, 2011; Stockholm International Peace Research Institute, *SIPRI Arms Transfers Database*. <https://www.sipri.org/databases/armstransfers>.
195. Mimi Lau, "China and Laos Vow to Forge Stronger Military Links," *South China Morning Post*, November 28, 2016; Huaxia, "China, Laos Pledge Further Cooperation," Xinhua, May 5, 2016; An Lu, "China, Laos Pledge Closer Military Ties," Xinhua, July 8, 2015; Xinhua, "China, Laos Vows to Further Enhance Military Relations," December 5, 2011.
196. Yamei, "Chinese Embassy Presents Office Equipment to Lao Defense Ministry," Xinhua, April 12, 2017.
197. Xinhua, "China Urges Probe into Citizens' Death in Laos Attack," January 25, 2016.
198. China Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on March 3, 2016*, March 3, 2016.
199. Brooks Boliek, "Chinese Man Killed and Others Injured in Laos Shootings," Radio Free Asia, March 3, 2016.
200. Tan Shaohui, "One Injured Chinese National in Bus Shooting in Laos Returns Home," Xinhua, March 25, 2016.
201. Joshua Kurlantzick, "Violence Flares in Laos," *Diplomat*, January 30, 2016.

202. Reuters, "China, Laos Increase Security Cooperation after Attacks on Chinese," May 4, 2016.
203. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 255–260; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 248–252.
204. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Karl Jackson, June 8, 2017.
205. Panitan Wattanayagorn, Advisor to Deputy Prime Minister Prawit Wongsuwan, meeting with Commission, Bangkok, Thailand, May 22, 2017; U.S. Department of State, *U.S. Relations with Thailand*, January 24, 2017. <https://www.state.gov/r/palei/bgn/2814.htm>.
206. Steve Herman, "One Year after Thai Coup, No End in Sight for Military Rule," *Voice of America*, May 20, 2015.
207. Amy Sawitta Lefevre, "Thailand Accuses U.S. of Meddling in Its Politics," *Reuters*, January 28, 2015.
208. Linsay Dunsmuir, "Trump Invites leaders of Thailand, Singapore to the White House," *Reuters*, April 30, 2017; Prashanth Parameswaran, "Is the U.S.-Thailand Alliance Permanently Frozen in the Post-Coup Era?" *World Politics Review*, March 30, 2017.
209. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Karl Jackson, June 8, 2017.
210. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Karl Jackson, June 8, 2017.
211. "Confucius Institutes Help Boost China-Thailand Ties," *CCTV*, September 9, 2016.
212. "China Will Send 1800 Chinese Teachers Volunteer to Teach in Thailand This Year," *China News Network*, March 30, 2015.
213. Fulbright U.S. Student Program, "Study/Research & English Teaching Assistant Statistics."
214. Seth Mydans, "Chinese Opera Performers See Fewer Faces in the Audience," *New York Times*, April 25, 2013.
215. Panitan Wattanayagorn, Advisor to Deputy Prime Minister Prawit Wongsuwan, meeting with Commission, Bangkok, Thailand, May 22, 2017.
216. Panitan Wattanayagorn, Advisor to Deputy Prime Minister Prawit Wongsuwan, meeting with Commission, Bangkok, Thailand, May 22, 2017.
217. *South China Morning Post*, "Thailand Approves Long-Delayed US\$5.2 Billion Rail Link to China," July 11, 2017.
218. *South China Morning Post*, "Thailand Approves Long-Delayed US\$5.2 Billion Rail Link to China," July 11, 2017.
219. David Lampton, Professor, Johns Hopkins University School of Advanced International Studies, interview with Commission staff, June 28, 2017.
220. United Nations Comtrade, "International Trade Statistics Database."
221. United Nations Comtrade, "International Trade Statistics Database."
222. United Nations Comtrade, "International Trade Statistics Database."
223. United Nations Comtrade, "International Trade Statistics Database."
224. Thailand Board of Investment, *Government to Promote Thailand as a Regional Trading Hub—More than 700 Investors Attend the IHQ & ITC Seminar*, June 30, 2015; Kentaro Iwamoto, "Thailand Can Rise as Regional Business Hub in Post-Brexit Era," July 8, 2016.
225. Hiroshi Kotani, "China's SAIC Motor to Make Thailand an Export Hub," *Nikkei Asian Review*, May 17, 2017; Pitsinee Jitpleecheep, "Haier to Boost Production of Air Conditioners," *Bangkok Post*, August 1, 2016; Sirivish Toomgum, "Haier to Invest Bt300 Million on R&D in Thailand," *Nation*, November 4, 2016.
226. Suttinee Yuvejwattana, "Thailand Wants Rich Chinese Tourists, Not Budget Groups," *Bloomberg*, January 17, 2017; ThaiWebsites, "Tourist Arrivals to Thailand by Nationality 2014 and 2015."
227. Marwaan Macan-Markar, "Thailand Cracks down on 'Zero-Dollar' Tour Groups," *Financial Times*, January 8, 2017.
228. Marwaan Macan-Markar, "Thailand Cracks down on 'Zero-Dollar' Tour Groups," *Financial Times*, January 8, 2017.
229. Stockholm International Peace Research Institute, "The SIPRI Arms Transfers Database." <http://www.sipri.org/databases/armstransfers>.
230. Associated Press, "Thai Gov't Approves Purchase of \$393M Submarine from China," April 25, 2017.

231. Juarawee Kittisilpa, "Thai Navy Defends Submarine Purchase, Shrugs Off Criticism," Reuters, May 1, 2017.
232. Thailand Ministry of Foreign Affairs officials, meeting with Commission, Bangkok, Thailand, May 23, 2017.
233. Panitan Wattanayagorn, Advisor to Deputy Prime Minister Prawit Wongsuwan, meeting with Commission, Bangkok, Thailand, May 22, 2017.
234. Thanarith Satrusayang, "Thailand Seeks to Develop Military Production Facilities with China," Reuters, December 21, 2016; *Straits Times*, "Thailand and Cambodia Strengthen Ties with China," April 5, 2017.
235. Shawn Crispin, "Thailand's Post-Coup Foreign Policy: Omnidirectional or Directionless?" *Diplomat*, June 10, 2016.
236. Shawn Crispin, "Thailand's Post-Coup Foreign Policy: Omnidirectional or Directionless?" *Diplomat*, June 10, 2016.
237. Shawn Crispin, "Thailand's Post-Coup Foreign Policy: Omnidirectional or Directionless?" *Diplomat*, June 10, 2016.
238. White House Office of the Vice President, *Remarks by the Vice President at ASEAN*, April 20, 2017; U.S.-ASEAN Business Council, "Investment: Asean Is the Number One Destination for US Investment in Asia."
239. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Yun Sun, June 8, 2017.
240. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Murray Hiebert, June 8, 2017; James Kynge, "FT Investigation: How China Bought Its Way into Cambodia," *Financial Times*, September 8, 2016.
241. World Bank, "GDP Growth (Annual %)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.
242. World Bank, "GDP Growth (Annual %)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>.
243. Asian Development Bank, "Myanmar Unlocking the Potential," August 2014.
244. "Cambodian Opposition Leader Arrested and Accused of Treason," *Daily Telegraph*, September 3, 2017; "Cambodian Opposition Leader Gets 5-month Jail Sentence," Associated Press, September 9, 2017; "Cambodia: Onslaught on Media, Rights Groups," *Human Rights Watch*, August 25, 2017; Michael Peel, "Cambodia's Hun Sen Warns of 'Civil War' as Election Looms," *Financial Times*, June 1, 2017; Panarat Thepmanat, "Three Years after Coup, Junta Is Deeply Embedded in Thai Life," Reuters, May 20, 2017.
245. Economist Intelligence Unit, "The Economist Intelligence Unit's Democracy Index."
246. U.S. Agency for International Development, *Foreign Aid Explorer*. <https://explorer.usaid.gov/aid-dashboard.html>.
247. U.S. Agency for International Development, *Foreign Aid Explorer*. <https://explorer.usaid.gov/aid-dashboard.html>.
248. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Yun Sun, June 8, 2017.
249. Ernest Bower, "China Reveals Its Hand on ASEAN in Phnom Penh," *CSIS Commentary*, July 20, 2012; Manuel Mogato, "ASEAN Deadlocked on South China Sea, Cambodia Blocks Statement," Reuters, July 26, 2016.
250. Kanupriya Kapoor, "U.S. Says South China Sea Reclamations Stoke Instability," Reuters, May 20, 2015.

## SECTION 2: CHINA AND NORTHEAST ASIA

### Key Findings

- China's and the United States' divergent approaches to North Korea reflect their fundamentally different priorities in Northeast Asia. The United States has made denuclearization its priority in its North Korea policy, whereas China appears willing to accept a nuclear North Korea rather than upset the status quo. Efforts by Washington to compromise in other areas of the U.S.-China relationship in the hopes of winning Beijing's support in pressuring North Korea risk disappointing results.
- Chinese actors appear to have complied with some provisions of UN sanctions against North Korea and violated others. Despite restrictions on the trade in coal and other goods, China-North Korea trade is robust, with Chinese exports to North Korea increasing significantly in 2017.
- China's objections to the deployment of a U.S. Terminal High Altitude Area Defense (THAAD) missile defense battery in South Korea most likely reflect a deep-seated desire to counter perceived encirclement by the United States by limiting the expansion of the U.S.-allied missile defense system in the region, rather than substantive objections to the practical effect of THAAD's presence in South Korea on China's security environment.
- China's efforts to punish South Korea for hosting THAAD marked a turning point in South Korean attitudes toward China, which until 2016 had been fairly positive. This trend likely will lead to warming U.S.-South Korea defense relations. At the same time, however, Seoul will continue to seek positive relations with Beijing, in part because South Korea is economically dependent on China and relies on China's support to manage the North Korean situation.
- China's continued regional assertiveness and military modernization is contributing to deteriorating Japan-China relations. Japan is likely to continue pursuing military capabilities that would enable it to counter China's expanding military might, as well as North Korea's growing nuclear and missile arsenal.
- Despite North Korea's advancing nuclear and missile programs and China's growing military capabilities, South Korea and Japan have not substantially increased their bilateral defense cooperation and have taken only small steps toward greater trilateral cooperation with the United States. Poor South Korea-Japan relations could hinder the United States' ability to harness its alliances with each country to pursue U.S. interests in the region.

- Most Korean Peninsula conflict or crisis scenarios would require large-scale evacuations of U.S. and other citizens from South Korea. Planning and coordination for noncombatant evacuation operations remain a challenge for the United States, South Korea, and Japan.

### **Recommendations**

The Commission recommends:

- Congress support initiatives that enable cooperation between the U.S. Coast Guard and maritime Asian coast guards (possibly to include joint patrols, shiprider agreements, and the expansion of the Code for Unplanned Encounters at Sea [CUES] to include coast guard and other maritime law enforcement agencies), given the prominent role of the China Coast Guard in aggressively advancing China's territorial ambitions in the East and South China seas.
- Congress examine the state of the U.S.-Japan alliance in light of China's military modernization, paying particular attention to efforts to achieve a joint command structure for planning and executing complex combined operations.

### **Introduction**

Northeast Asia is the locus of some of the most pressing security challenges in Asia. For the purposes of this section, Northeast Asia encompasses China, Japan, the Democratic People's Republic of Korea (North Korea), and the Republic of Korea (South Korea). Two of these countries—Japan and South Korea—are U.S. treaty allies. They host the majority of U.S. military forces deployed in Asia and play a central role in advancing U.S. interests in peace, prosperity, stability, and openness in the region. North Korea, on the other hand, is “the most urgent and dangerous threat to peace and security,” according to U.S. Secretary of Defense James Mattis.<sup>1</sup> In addition to demonstrating the ability to conduct missile strikes against the continental United States, North Korea's arsenal of nuclear and conventional weapons already gives it the ability to inflict massive damage and military and civilian casualties on South Korea and Japan, which the United States is obligated by treaty to defend, and which are home to more than 300,000 U.S. citizens and tens of thousands of U.S. soldiers and support personnel.

China's relations with each of these countries are fraught in different ways. With Japan, tensions are driven primarily by a maritime dispute over the Senkaku Islands in the East China Sea, historical animosity, Japan's close ties with the United States, and Japan's concerns about China-North Korea cooperation. Similarly, South Korea's alliance with the United States and abiding apprehensions about the North Korean threat play a central role in tensions between Beijing and Seoul. Imbalanced trade relationships further complicate Tokyo's and Seoul's relations with Beijing. China is North Korea's top trading partner, most reliable supporter, and a treaty ally.\* It is necessarily a key player in any significant inter-

\*The 1961 Treaty of Friendship, Cooperation and Mutual Assistance between China and North Korea states that each party should “adopt all measures to prevent aggression against either [country] by any state,” and includes a mutual defense clause, though some Chinese observers

national effort to address nuclear and missile proliferation in North Korea through economic or diplomatic pressure. However, China's interests on the Korean Peninsula, and its overall security outlook in Northeast Asia, suggest it prefers the status quo to any decisive action to rein in North Korea. Understanding China's interests and goals in Northeast Asia is crucial for U.S. policymakers seeking to find solutions to the serious and escalating security challenge in the region.

This section examines China's bilateral relationships with North Korea, South Korea, and Japan; the U.S.-China relationship as it relates to Northeast Asia security issues; the state of the trilateral U.S.-South Korea-Japan relationship; and implications of recent developments in Northeast Asia for the United States. It is based on the Commission's May 2017 fact-finding trip to Japan and South Korea, a June 2017 Commission hearing on China's relations with Northeast Asia, open source research and analysis, and consultations with U.S. and foreign government and nongovernmental experts.

### **China-North Korea Relations**

North Korea's hostile relationship with the United States and its allies in Northeast Asia, compounded by its development of nuclear weapons and its frequent tests of increasingly advanced and longer-range missiles, present China with a rapidly deteriorating security situation on its doorstep and a complicated and often contradictory array of policy options.

Several factors shape China's approach to its relationship with North Korea, which China has a limited treaty obligation to defend. Addressing many of these factors presents dilemmas for China. China has frequently stated its priorities for the Korean Peninsula are "stability, denuclearization, and peace."<sup>2</sup> Among these priorities, China's desire for stability appears to be the overriding factor.<sup>3</sup> Moreover, China's interests in denuclearization appear to differ from those of the United States and its allies. In testimony before the Commission, Andrew Scobell, senior political scientist at the RAND Corporation, wrote that "from Beijing's point of view, Pyongyang's nuclear and missile programs are most problematic in that they trigger what China sees as threatening military responses by the United States and its allies."<sup>4</sup> A confrontation between North Korea and the United States and its allies could lead to several contingencies that would threaten China's interests (see textbox, "North Korea Contingencies and Implications for China," later in this section).

China faces a balancing act in applying pressure to and maintaining influence over North Korea. According to Dr. Scobell, China's top leaders "are afraid that if China gets too tough on North Korea that

question China's commitment to North Korea's defense in a contingency. The treaty automatically renews every 20 years and is up for renewal again in 2021. According to China scholar Bonnie Glaser of the Center for Strategic and International Studies, "Beijing has attempted on several occasions to persuade North Korea to excise the mutual assistance clause from the Treaty, but Pyongyang has not agreed." ChinaFile, "What Will China do if the U.S. Attacks North Korea?" September 21, 2017; *South China Morning Post*, "China Unlikely to Come to North Korea's Defense if Tensions Escalate over Nuclear Weapons Tests, Say Chinese Experts," April 17, 2016; Zhu Feng and Nathan Beauchamp-Mustafaga, "North Korea's Security Implications for China," in Carla Freeman, ed., *China and North Korea: Strategic and Policy Perspectives from a Changing China*, Palgrave Macmillan, 2015, 46; and Treaty of Friendship, Cooperation and Mutual Assistance between the People's Republic of China and the Democratic People's Republic of Korea, July 11, 1961.

this will only exacerbate matters—Pyongyang will pull away and Beijing will lose what little influence it has, Pyongyang will escalate its provocations, or both.”<sup>5</sup> Andrei Lankov, professor at South Korea’s Kookmin University, told the Commission in May 2017, “China doesn’t have leverage; it has a hammer.” In other words, the only way for China to change Pyongyang’s behavior would be to completely destabilize the country.<sup>6</sup> How Pyongyang responds to China’s recent steps to sanction and otherwise apply pressure to the North Korean regime—the most forceful Beijing has taken to date—could shed light on the limits of China’s influence.

#### **North Korea Contingencies and Implications for China**

- *War on the Korean Peninsula:* If war breaks out between North Korea and the United States and its allies, or if North Korea collapses into internal armed conflict, China would face a war on its border and beyond. The North Korean government might lose centralized control of its nuclear weapons in the course of a war, putting China’s security at risk and creating a situation in which Chinese and U.S.-allied forces could come into conflict while seeking to secure nuclear sites.<sup>7</sup>
- *Unified Korea under a U.S.-allied South Korean government:* A South Korean-led government of a unified Korea might maintain a close defense relationship with the United States.<sup>8</sup> In testimony before the Commission, Abraham Denmark, former deputy assistant secretary of Defense for East Asia, wrote that China “[worries] that a unified Korean Peninsula (which would presumably remain a U.S. ally) would extend American power and influence to China’s border.”<sup>9</sup>
- *Refugee crisis:* Instability or war on the Korean Peninsula could drive hundreds of thousands of North Koreans to flee to China, which could destabilize the fragile economy of northeastern China and aggravate historical tension over sovereignty in ethnic Korean-majority areas on the Chinese side of the border.\*<sup>10</sup> China most likely would use its military to establish a buffer zone on the North Korean side of the border to encamp North Koreans before they reach China.<sup>11</sup> South Korea could view this as a violation of its sovereignty.<sup>12</sup> China’s refugee camps could draw international attention and, depending on conditions in the camps, international condemnation.<sup>13</sup> Infectious diseases—such as tuberculosis, from which thousands of North Koreans suffer—could create disastrous health conditions in the camps and public health risks in China.<sup>14</sup>

\*Expert estimates of the number of North Koreans who would try to flee to China in a crisis vary from several hundred thousand to several million. Among other factors, obstacles to reaching and crossing the border with China suggest the lower end of these estimates is more likely. Bridget Coggins, “Refugees, Internal Displacement, and the Future of the Korean Peninsula,” *Center for Strategic and International Studies*, February 2, 2017.

**Figure 1: Map of Northeast Asia**

Source: *Washington Post*, "McAuliffe Attempts to Defuse Dilemma over Textbook Maps of Sea of Japan," January 30, 2014.

### ***Developments in North Korea's Nuclear and Missile Programs***

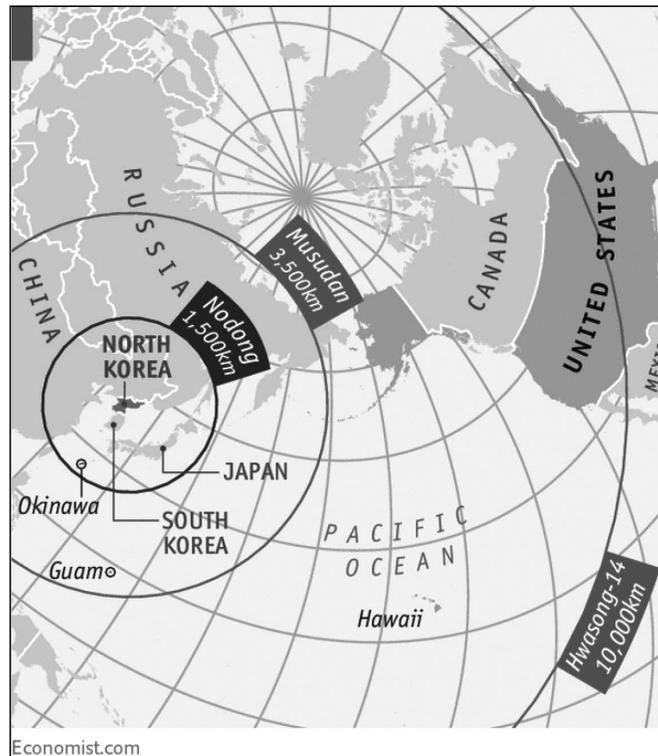
In the past two years, North Korea has conducted three nuclear tests and numerous tests of missiles with new capabilities and longer ranges. Its September nuclear test—its sixth—had an estimated explosive yield of up to 280 kilotons (by comparison, the nuclear bomb dropped on Hiroshima had a 15-kiloton yield).<sup>15</sup> North Korean ruler Kim Jong-un has presided over 19 missile launches in 2017 alone, more than the total number of missiles launched during his father's entire 17-year-long rule.<sup>16</sup> North Korea has demonstrated its missiles can reach South Korea, Japan, Guam, and, with the successful test of two intercontinental ballistic missiles (ICBMs)\* in July 2017, the continental United States. Moreover, North Korea has produced miniaturized nuclear warheads. An indication of how tense the situation has become, in 2017 Japan staged several missile attack evacuation drills and Hawaii's Emergency Management Agency released guidance for surviving a nuclear attack.<sup>17</sup>

\*The U.S. Department of Defense defines an ICBM as having a range greater than roughly 3,400 miles; a medium-range ballistic missile as having a range of roughly 600–1,800 miles; and a short-range ballistic missile as having a range of roughly 180–600 miles. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 46; U.S. National Air and Missile Intelligence Center, *Ballistic and Cruise Missile Threat*, 2013, 9.

### ICBM Tests and Nuclear Bomb Miniaturization

On July 4, 2017, North Korea conducted its first test of an ICBM, the KN-20 (Hwasong-14), which terminated in the Sea of Japan. The missile's 37-minute flight time and highly-lofted trajectory suggested it could have a range of at least 4,000 miles (mi).<sup>18</sup> However, based on this test, many experts placed upper estimates of the KN-20's range at nearly 6,000 mi or more, and able to reach much of the continental United States (see Figure 2).<sup>19</sup> On July 28, 2017, North Korea conducted its second test of an ICBM, reportedly another KN-20, which also terminated in the Sea of Japan.<sup>20</sup> Initial analyses of the missile's flight time and trajectory indicated it could have traveled at least 6,200 mi.<sup>21</sup> According to Jeffrey Lewis, director of the East Asia Nonproliferation Program at the Middlebury Institute of International Studies at Monterey, imagery and technical analysis of the KN-20 indicate it "should be able to deliver a nuclear-weapon-size payload ... to targets throughout most of the continental United States."<sup>22</sup>

**Figure 2: Approximate Range of North Korean Missiles**



Source: *Economist*, "How Close Is North Korea to Having a Missile that Can Hit LA?" August 5, 2017.

In July 2017, the *Washington Post* reported that the U.S. Defense Intelligence Agency had made a confidential assessment that North Korea could field a "reliable, nuclear-capable intercontinental ballistic missile" as early as 2018.<sup>23</sup> North Korea is developing two other

missiles—the Taepodong-2 and the road-mobile KN-08—that U.S. government sources estimate will be capable of reaching the continental United States.<sup>24</sup> The Taepodong-2 has been used for satellite launches, but has never been tested as an ICBM;<sup>25</sup> the KN-08 has never been tested.<sup>26</sup>

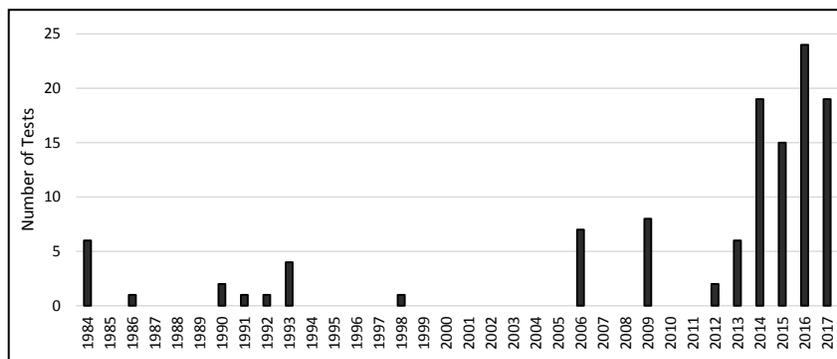
In March 2016, the North Korean state-run Korean Central News Agency (KCNA) reported that North Korea had developed nuclear warheads “standardized to be fit for ballistic missiles by miniaturizing them.”<sup>27</sup> North Korean state media also released a photograph of a purported miniaturized warhead.<sup>28</sup> The U.S. intelligence community confirmed this development in August 2017.<sup>29</sup> North Korea said a miniaturized nuclear weapon was the weapon detonated in its September 2016 nuclear test, and reaffirmed its claimed ability to mount miniaturized warheads on its ballistic missiles.<sup>30</sup>

#### *Other Missile Tests*

In addition to the KN-20, North Korea has tested shorter-range missiles in 2017 that increase its ability to strike U.S. forces and territory and U.S.-allied countries in the region. The frequency of these tests has risen sharply since Kim Jong-un took power in 2012 (see Figure 3).<sup>31</sup> Recently-tested missiles include the following:

- *Hwasong-12*: North Korea conducted the first six tests of its Hwasong-12 intermediate-range ballistic missile in 2017.<sup>32</sup> The missile’s reported range—about 2,800 mi—reaches Guam.<sup>33</sup>
- *KN-15*: North Korea conducted its first test of the road-mobile KN-15 medium-range ballistic missile, with a reported range of 750–1,250 mi, in February 2017.<sup>34</sup> The KN-15 is a road-mobile variant of the KN-11 submarine-launched ballistic missile.
- *KN-18 Maneuvering Reentry Vehicle Scud*: In May 2017, North Korea conducted its first test of its road-mobile maneuvering reentry vehicle Scud short-range ballistic missile, with a range upwards of 280 mi.<sup>35</sup>
- *Extended Range Scud*: North Korea conducted four tests of its Extended Range Scud missile in 2017.<sup>36</sup> These missiles have a range of roughly 430–620 mi.<sup>37</sup>

North Korea’s advances in missile technology are making its arsenal more survivable. The mobility of some North Korean missiles, which is growing as North Korea fields indigenously-built tracked transporter erector launchers, greatly increases the difficulty for opposing forces to monitor and target them.<sup>38</sup> In addition, since its first tests of solid-fuel ballistic missiles in 2016 North Korea has continued testing these missiles, including the solid-fuel KN-15. Solid-fuel missiles are less vulnerable to preemptive strikes because they have shorter launch preparation times and require fewer support vehicles—shortening the time for detection and intervention and reducing their visibility.<sup>39</sup> Moreover, in 2017 North Korea simultaneously launched four Extended Range Scuds that landed in the Sea of Japan.<sup>40</sup> A barrage of simultaneously-launched missiles might stretch or overwhelm U.S.-allied missile defenses in the region.<sup>41</sup>

**Figure 3: Number of North Korean Missile Tests, 1984 to September 2017**

Source: Nuclear Threat Initiative, "The CNS North Korea Missile Test Database."

### North Korean Biological and Chemical Weapons

According to the U.S. Department of Defense, North Korea is pursuing and may consider using biological weapons in a conflict and "probably has had a longstanding chemical weapons program with the capability to produce nerve, blister, blood, and choking agents and likely possesses a [chemical weapons] stockpile."<sup>42</sup> Some analysts estimate North Korea has stockpiled thousands of tons of chemical agents.<sup>43</sup> North Korea might be capable of delivering these agents with ballistic missiles and artillery.<sup>44</sup> According to Balbina Hwang, visiting professor at American University, a biological and chemical attack from North Korea is a "more immediate threat to South Korea than the potential use of nuclear weapons, and perhaps even more than a massive conventional military attack."<sup>45</sup>

U.S. and South Korean military forces drill for a chemical or biological attack from North Korea. In 2016 and 2017, hundreds of U.S. and South Korean troops conducted exercises simulating assaults on North Korean chemical weapons laboratories.<sup>46</sup> The South Korean public, however, almost certainly is not prepared to respond to a chemical or biological attack. On its fact-finding trip to South Korea in 2017, a U.S. military official told the Commission that the South Korean public does not take drills for these contingencies seriously.<sup>47</sup> A 2014 survey reported only 7 percent of South Koreans own gas masks.<sup>48</sup>

### *China's Role in North Korean Sanctions Enforcement*

China's dominant trading position with North Korea makes it the most important actor in international efforts to restrict the flow of money and sanctioned resources into North Korea. China accounted for 90 percent of North Korea's foreign trade in 2016, and provides nearly all North Korea's critical energy and food resources and foreign investment.<sup>49</sup> The legal bilateral trade relationship comprises billions of dollars in investments and exchanges. The best available data suggest Chinese actors have observed some UN sanctions and violated others.

The UN Security Council has enacted several resolutions to curtail the flow of money and military and dual-use equipment into North Korea. In 2016–2017 it unanimously passed the following resolutions:

- Resolution 2270, passed in March 2016 in response to North Korea’s January 2016 nuclear test, prohibited imports of North Korean coal, iron and iron ore, gold, titanium ore, vanadium ore, and rare earth minerals.<sup>50</sup> However, Resolution 2270 includes a clause that allows imports of these goods “exclusively for humanitarian purposes or exclusively for livelihood purposes.”<sup>51</sup> China cited this exemption to import more than \$1 billion in North Korean coal from March to December 2016.<sup>52</sup>
- Resolution 2321, passed in November 2016 in response to North Korea’s September 2016 nuclear test, closed the livelihood exemption for coal imports and capped global imports of North Korean coal at \$400 million for 2017.<sup>53</sup> It banned all imports of copper, nickel, silver, and zinc, but preserved the livelihood exemption for North Korean iron and iron ore. It also led to the creation in December 2016 of a list of dual-use items banned for transfer to North Korea.<sup>54</sup>
- Resolution 2356, passed in June 2017 after a series of North Korean missile tests, imposed travel bans and asset freezes on 14 North Koreans and asset freezes on 4 North Korean institutions, including a bank with a presence in China.<sup>55</sup>
- Resolution 2371, passed in August 2017 following North Korea’s two ICBM tests, fully banned North Korean coal, iron, iron ore, seafood, lead, and lead ore exports; sanctioned additional North Korean individuals and entities; enabled the UN Security Council to deny international port access to ships with links to sanctions violations; banned countries from accepting additional North Korean migrant laborers; and allocated additional resources for the UN Panel of Experts to monitor North Korean sanctions enforcement.<sup>56</sup>
- Resolution 2375, passed in September 2017 following North Korea’s sixth nuclear test, capped oil exports to North Korea and banned natural gas exports altogether; prohibited, with some exceptions, the employment of North Korean migrant laborers; banned North Korean textile exports; and strengthened requirements for interdictions of suspected North Korean cargo ships.<sup>57</sup>

The following is a discussion of China’s recent record of compliance with sanctions targeting large-scale trade with North Korea.

#### *Coal Imports and Oil and Natural Gas Exports*

According to the U.S. Department of the Treasury, “North Korea generates a significant share of the money it uses to fuel its nuclear and ballistic missile programs by mining natural resources and selling those resources abroad. In particular, coal trade has generated over \$1 billion in revenue per year for North Korea.”<sup>58</sup> Through February 2017, China was on pace to greatly exceed UN

Resolution 2321's annual cap on global imports of North Korean coal, but that month, China announced a total ban on imports of North Korean coal through December 31, 2017, to comply with the resolution.<sup>59</sup> However, Chinese customs data released in September show China imported 1.75 million tons of coal worth \$138 million from North Korea in August, just before Resolution 2371's coal ban took effect.<sup>60</sup> Chinese Ministry of Commerce spokesperson Gao Feng insisted the imports were not in violation of UN sanctions, but declined to explain how they comported with China's self-imposed ban from February.<sup>61</sup> Traders and industry experts concluded it must have been a sudden clearance of accumulated coal imports held at Chinese ports since Beijing's ban was announced in February.<sup>62</sup>

In late August 2017, Treasury designated\* three Chinese coal companies—Dandong Zhicheng Metallic Materials Co., Ltd., JinHou International Holding Co., Ltd., and Dandong Tianfu Trade Co., Ltd.—for collectively importing almost \$500 million in coal from North Korea from 2013 to 2016.<sup>63</sup> The network of companies to which Dandong Zhicheng belongs allegedly used tactics like bartering and the use of multiple shell companies to avoid detection.<sup>64</sup> According to a North Korean defector cited by U.S. officials, Dandong Zhicheng's owner is one of “a relatively small group of trusted individuals who have reliably provided the North Korean government with desired services.”<sup>65</sup>

Most of North Korea's oil imports come from China (although China has not published data on oil exports to North Korea since 2014).<sup>66</sup> Following Resolution 2375's restrictions on oil and natural gas exports to North Korea, China announced it would begin limiting refined oil product exports in October and banning liquefied natural gas exports immediately.<sup>67</sup> The resolution allows for 2 million barrels of oil exports to North Korea annually starting in 2018—close to estimates of China's total oil exports to the country in 2016.<sup>68</sup>

#### *Dual-Use Exports*

In January 2017, to comply with Resolution 2321, China's Ministry of Commerce incorporated the UN's December 2016 list of banned dual-use items into a list of products it would ban from export to North Korea, such as “modeling and design software related to aerodynamics and thermodynamics analysis of rockets.”<sup>69</sup> Although it is too soon to assess whether Beijing has adhered to its latest obligations, previous transfers by Chinese actors—including state-owned enterprises (SOEs)—of resources to North Korea that would support its nuclear and missile programs despite long-standing UN sanctions targeting these transfers give reason to doubt Beijing's commitment. Examples include the following:

\*Treasury's Office of Foreign Assets Control publishes and regularly updates “a list of individuals and companies owned or controlled by, or acting for or on behalf of, targeted countries. It also lists individuals, groups, and entities, such as terrorists and narcotics traffickers designated under programs that are not country-specific. Collectively, such individuals and companies are called ‘Specially Designated Nationals’ or ‘SDNs.’ Their assets are blocked and U.S. persons are generally prohibited from dealing with them.” U.S. Department of the Treasury, *Specially Designated Nationals and Blocked Persons List (SDN) Human Readable Lists*, August 22, 2017.

- In September 2017, the *Wall Street Journal* reported North Korean researchers in China and elsewhere almost certainly have acquired expertise and know-how that could be applied to North Korea's weapons programs, possibly in violation of a 2016 UN ban on teaching certain subjects related to advanced and dual-use technologies.<sup>70</sup>
- In August 2017, Treasury reported the aforementioned company Dandong Zhicheng "allegedly used the foreign exchange received from the end users of North Korean coal to purchase other items for North Korea, including nuclear and missile components."<sup>71</sup>
- In May 2017, the *Wall Street Journal* reported that Limac Corp., a Chinese SOE, had participated since 2008 in a joint venture with a North Korean company that had been sanctioned by the UN in 2009 for its involvement in North Korea's nuclear and missile programs.<sup>72</sup>
- In April 2017, trucks built by Sinotruk, a subsidiary of the Chinese SOE China National Heavy Duty Truck Group, carried North Korean submarine-launched ballistic missiles in a military parade in Pyongyang.<sup>73</sup> In June 2013, the UN Panel of Experts reported a Chinese company sold North Korea six lumber transport vehicles that North Korea later likely converted to transporter erector launchers.<sup>74</sup> These launchers were displayed in a military parade in Pyongyang in April 2012, and one reportedly was used to launch the ICBM North Korea tested on July 3, 2017.<sup>75</sup>
- In February 2017, the UN Panel of Experts reported that Chinese companies exported to North Korea parts used in an Unha-3 rocket that put a satellite in orbit in February 2016.<sup>76</sup>
- In September 2016, the Asan Institute and the Center for Advanced Defense Studies reported that one Chinese trading conglomerate, the Liaoning Hongxiang Group (a private Chinese trading conglomerate that conducted more than \$500 million in reported trade with North Korea from 2011 to 2015) exported to North Korea at least four dual-use products—including \$253,219 in aluminum oxide, which is used to enrich uranium.<sup>77</sup>

The involvement of SOEs in these activities suggests Beijing actively or tacitly approves some of these activities.<sup>78</sup>

#### *Mineral, Seafood, and Labor Imports*

According to data from Korea International Trade Association, China has continued to import silver, copper, and zinc from North Korea, despite an outright ban on the import of these materials under UN Resolution 2321.<sup>79</sup> Chinese customs data for many banned minerals are unavailable, but China has reported \$44,000 in copper imports since Resolution 2321 came into effect.<sup>80</sup>

In mid-August 2017 China banned all North Korean seafood imports in accordance with Resolution 2371, worth \$196 million in 2016.<sup>81</sup> China's initial implementation appeared fairly forceful. When the ban went into effect, several Chinese seafood traders suffered losses when truckloads of seafood imports were

turned away or left to rot at the border.<sup>82</sup> Chinese companies specializing in processing North Korean seafood imports, as well as the restaurants serving them, are likely to lose business, and some wholesalers have closed.<sup>83</sup> The seafood trade is notoriously opaque and poorly managed, and smuggling continues despite the ban.<sup>84</sup> A Chinese seafood trader told Bloomberg, “As long as there’s demand, smugglers will keep coming ... no matter how hard Beijing tries.”<sup>85</sup>

Following the passage of Resolution 2371, Chinese factories notified North Korean traders that they will no longer hire North Korean workers, and some workers currently in the country are being asked to leave.<sup>86</sup> An estimated 50,000–150,000 North Koreans work abroad, primarily in China and Russia;<sup>87</sup> the majority of North Korean migrant workers in China are in the textile industry (the exports of which are banned under Resolution 2375).<sup>88</sup> Kim Byung-yeon, an expert on the North Korean economy and a professor at Seoul National University, told the Commission the North Korean migrant worker industry is North Korea’s second-highest source of income (the foreign goods trade is the highest).<sup>89</sup> According to Dr. Lankov, North Korean migrant laborers are essentially indentured servants; nevertheless, for many poor North Korean citizens, migrant work can be more profitable than finding work domestically.<sup>90</sup>

#### *The Effect of China’s Sanctions Enforcement*

A total loss of income from coal exports to China, combined with restricted oil and natural gas imports from China, could have an enormous impact on North Korea’s economy. Coal reportedly accounted for 40 percent of North Korea’s exports to China in 2016.<sup>91</sup> However, China’s apparent reversal of its February pledge to ban all North Korean coal imports will limit the immediate impact, and it is too soon to assess its implementation of the UN coal import ban, which went into effect in early September. Moreover, the UN oil and natural gas export restrictions do not go into effect until 2018. August 2017 data on Chinese imports of North Korean iron ore showed a year-on-year increase in value and volume; during this time, North Korean iron ore imports were sanctioned but subject to a livelihood exemption under Resolution 2321 (data on Chinese imports of North Korean iron ore following the full ban required by Resolution 2371 are not yet available).<sup>92</sup> All in all, North Korea’s imports from China increased 17 percent between the first eight months of 2016 and the same period in 2017.<sup>93</sup> The growth in North Korea’s imports from China can also be attributed to legal trade (such as food),\* unreported illegal trade, including trade in sanctioned goods such as coal and in-kind trade in goods; remittances from North Korean businesses and forced labor overseas; financial assistance from China; cyber theft from foreign financial institutions; or foreign currency reserves and overseas accounts.<sup>94</sup>

\*For example, China’s agricultural exports to North Korea jumped sharply in July and August 2017, with corn exports increasing to nearly 100 times the level of the same period in 2016, and rice exports increasing by 79 percent. Lucy Craymer, “China’s Food Exports to North Korea Surge,” *Wall Street Journal*, September 27, 2017.

### North Korea's Domestic Economy

North Korea's domestic economy reportedly is stable and growing. The Bank of Korea, South Korea's central bank, reported the North Korean economy grew by 3.9 percent in 2016.<sup>95</sup> Moreover, although it is difficult to measure the conversion rate of the North Korean won to the U.S. dollar, the best available data suggests the rate has been consistent since 2012—a dramatic improvement over the rampant inflation under Kim Jong-il.<sup>96</sup> Many analysts attribute the apparent health of North Korea's economy to liberalization of local markets under Kim Jong-un.<sup>97</sup> These reforms may have contributed to a rise in the standard of living of ordinary North Koreans by further opening local markets to goods imported from China through low-level—and sometimes illegal—trade across the border.<sup>98</sup> According to South Korea-based journalists Daniel Tudor and James Pearson, “Chinese traders make regular crossings at border towns like Dandong, bringing with them all manner of items sought after by North Koreans. . . . Though the overall value of trade is high, it is mostly conducted by small traders that authorities aiming to uphold UN goods sanctions would find it extremely difficult to monitor.”<sup>99</sup> However, dry weather in recent years, including a severe drought in 2017, threaten North Korea's economic stability and food security.<sup>100</sup>

Outsourcing the production of fraudulent goods to North Korea by Chinese companies might also be an important factor in its economic growth. In 2012–2013 Professor Kim of Seoul National University conducted a survey of 138 firms based in Dandong, China, that showed 31 percent of them outsourced some of their business to North Korea, and “the majority of the outsourcing firms were engaged in clothes manufacturing.”<sup>101</sup> (Clothing is North Korea's second-largest export behind coal and other minerals, totaling \$752 million in 2016.)<sup>102</sup> Experts with whom the Commission met in Seoul and other analysts report that this outsourced production includes the manufacture of goods fraudulently labeled “made in China” and later sold abroad through Chinese companies.<sup>103</sup> Some of these goods make their way to the United States, Europe, Japan, South Korea, Canada, and Russia.<sup>104</sup> These activities could account for a significant portion of the \$500 million in reported clothing exports from North Korea to China in 2016.<sup>105</sup>

China's formal support for and apparent selective enforcement of UN sanctions might reflect a sincere desire to apply pressure to North Korea to halt its nuclear and missile programs. China also might be trying to offer a symbolic concession to the United States that signals its willingness to cooperate on resolving tension on the Korean Peninsula and downplay criticism that it is shielding North Korea from international pressure.<sup>106</sup> However, some Chinese actors' violations of other sanctions undermine its claim to being a responsible partner.

### ***The Assassination of Kim Jong-nam***

In February 2017, two women allegedly affiliated with a network of North Korean agents killed Kim Jong-nam, the half-brother of Kim Jong-un, by smearing VX nerve agent on his face at Kuala Lumpur International Airport in Malaysia.<sup>107</sup> Kim Jong-nam was the eldest son of former North Korean leader Kim Jong-il and half-brother of Kim Jong-un. He fell out of favor with his father in 2001, was exiled from North Korea in 2003, and was replaced by Kim Jong-un as Kim Jong-il's designated successor.<sup>108</sup>

Kim Jong-nam's assassination was widely seen as an affront to China, as he was reportedly under China's protection at the time of his death.<sup>109</sup> Many analysts speculated that China's protection of Kim Jong-nam was a sign it wanted to preserve him as an alternative to Kim Jong-un as the leader of North Korea, and cited this as a motive for Kim Jong-un to order the assassination.<sup>110</sup> However, it is unclear whether China saw strategic value in protecting Kim Jong-nam; despite an alleged standing order from Kim Jong-un for Kim Jong-nam's assassination and an attempt on his life in 2012, China does not appear to have provided him any security in Malaysia, a country with relatively close people-to-people ties to North Korea.<sup>111</sup> The assassination might have been aimed primarily at a domestic audience. While in exile, Kim Jong-nam criticized the leadership of Kim Jong-un and called for reform in North Korea.<sup>112</sup> According to Marcus Noland and Stephan Haggard of the Peterson Institute for International Economics, "The assassination was a warning to elite North Korean leadership to toe the line or end up like Kim Jong-nam."<sup>113</sup>

### ***Shifting Chinese Views on North Korea***

Criticism of North Korea from Chinese state media, including the state-run newspaper the *People's Daily* and the *Global Times*—a news source that is backed by the Chinese Communist Party but is not authoritative—and the response from North Korea has been unusually harsh. An April 30, 2017 editorial in the *People's Daily* said, "North Korea's development of nuclear missiles is tantamount to putting itself and the entire region in a very insecure position."<sup>114</sup> A May 1 editorial in the *Global Times* criticized North Korea's "reckless pursuit of nuclear and long-range missile technologies."<sup>115</sup> North Korea's state-run KCNA responded to this criticism with an editorial accusing China of "the cowardly act of dancing to the tune of the United States."<sup>116</sup> KCNA said, "The 'red line' of [North] Korea-China relations is not being crossed by [North Korea] but is being violently trampled down and unabashedly crossed by China." A subsequent *Global Times* editorial said, "[Beijing] should ... make Pyongyang aware that it will react in unprecedented fashion if Pyongyang conducts another nuclear test."<sup>117</sup> One Chinese expert on Korean affairs told *Foreign Policy* that China's leaders would view North Korea's September nuclear test as deliberately timed to pressure Beijing during the sensitive period ahead of the Chinese Communist Party's 19th Party Congress in October.<sup>118</sup>

The Chinese government is also tolerating blunt criticism within China of its North Korea policies—criticism it almost certainly would have censored several years ago.<sup>119</sup> In April, Shen Zhihua, a prominent Chinese scholar of China-North Korea relations, published a speech in

which he said, “Outwardly, China and North Korea are allies, while the United States and Japan support South Korea against North Korea.... [But] my basic conclusion is judging by the current situation, North Korea is China’s latent enemy and South Korea could be China’s friend.”<sup>120</sup> The speech is available in Chinese on East China Normal University’s website.<sup>121</sup> In July 2017, Zhu Feng, director of the Institute of International Studies and Executive Director of the China Center for Collaborative Studies of the South China Sea at Nanjing University, wrote in *Foreign Affairs* that “abandoning Pyongyang ... is both the strategic and the moral choice” for China.<sup>122</sup>

These statements do not necessarily reflect a shift in the views of China’s leadership. Beijing sometimes uses state media to float policy ideas that it does not pursue or to create the impression of a debate where there is none. For example, in April 2017 the *Global Times* suggested China would restrict oil exports to North Korea “if the North makes another provocative move [in April].”<sup>123</sup> North Korea conducted six missile tests in April and May; China did not appear to restrict oil exports in response.<sup>124</sup>

#### ***U.S.-China Divergence on North Korea***

In April 2017, U.S. Secretary of State Rex Tillerson, Secretary of Defense Mattis, and Director of National Intelligence Dan Coats echoed China’s stated interest in “stability, denuclearization, and peace,” saying the United States seeks “stability and the peaceful denuclearization of the Korean peninsula.”<sup>125</sup> China’s desire for stability, however, outranks its desire for denuclearization—the primary goal of the United States.<sup>126</sup>

Although China and the United States have agreed on UN resolutions targeting North Korea, they disagree sharply on the causes of tension on the Korean Peninsula. China advances the narrative that the United States has incited North Korea to take provocative actions.<sup>127</sup> China’s position on North Korea reflects China’s perception of the role of the United States in Northeast Asia. China sees U.S. policy on North Korea as designed to strengthen Washington’s regional alliances and military posture to contain China.<sup>128</sup>

On July 4, 2017, Secretary Tillerson said, “Any country that ... provides any economic or military benefits [to North Korea] or fails to fully implement UN Security Council resolutions is aiding and abetting a dangerous regime.”<sup>129</sup> China has rejected criticism from the United States and others that it has not applied enough pressure to North Korea and that it is responsible for reining in North Korea. On July 11, 2017, a spokesman from China’s Ministry of Foreign Affairs said:

*The crux of the Korean nuclear issue rests on the conflict between [North Korea] and the U.S... . The Chinese side is neither the focal point of the conflict of the Korean nuclear issue nor the catalyzer for escalation of tensions at present, and it does not hold the key to solving the Korean Peninsula nuclear issue. In recent days, certain people have been exaggerating and playing up the so-called “China responsibility” theory. Those people have either failed to grasp the Korean Peninsula nuclear issue comprehensively and accurately, or done this out of ulterior motives with an attempt to shirk responsibility.*<sup>130</sup>

China has called for mutual concessions from North Korea and the United States to deescalate rising tensions on the Korean Peninsula. Hours after North Korea's ICBM test on July 4, 2017, China and Russia released a joint communiqué reiterating China's proposal for a "suspension for suspension" solution in which "North Korea suspends the nuclear missile activities and the United States and South Korea suspend large-scale joint military exercises."<sup>131</sup> The U.S. and South Korean governments have consistently rejected this tradeoff. Speaking a few days before the ICBM test, South Korean President Moon Jae-in called U.S.-South Korea exercises "legitimate" and said, "I believe we cannot trade an illicit activity for something that is legal. Furthermore, I believe that we cannot reward bad behavior."<sup>132</sup> On July 5, U.S. Forces Korea and the South Korean military conducted a joint ballistic missile defense drill.<sup>133</sup> On July 7, the U.S. Air Force cited an "ironclad U.S. commitment to our allies against the growing threat from North Korea's ballistic missile and nuclear programs" as two U.S. Air Force B-1 bombers conducted exercises with South Korean aircraft over the Korean Peninsula.<sup>134</sup> U.S. and South Korean forces have continued to hold military exercises. From August 21 to 31, South Korea and the U.S. Combined Forces Command held their annual Ulchi Freedom Guardian exercise despite North Korean warnings that the exercise would be "pouring gasoline on a fire."<sup>135</sup> This year's iteration featured a computer simulation involving 17,500 U.S. personnel across all services, as well as observers from seven other countries.<sup>136</sup>

In 2017, the United States imposed secondary sanctions on several Chinese actors over their relationships with North Korea. In addition to the three aforementioned coal companies sanctioned in August, Treasury moved to cut off the privately-owned Bank of Dandong from the U.S. financial system in June for "facilitating millions of dollars of transactions for companies involved in North Korea's weapons of mass destruction and ballistic missile programs."<sup>137</sup> At that time, it also designated two Chinese individuals for their connections to banks that conducted financial transactions for North Korea, as well as the privately-owned Dalian Global Unity Shipping Co., Ltd., for smuggling luxury goods into North Korea.<sup>138</sup> U.S. Secretary of Treasury Steven Mnuchin said the United States "in no way target[ed] China with these actions" and that U.S. officials "look forward to continuing to work closely with the government of China to stop the illicit financing in North Korea."<sup>139</sup> The day after Treasury announced the sanctions, a spokesman from China's Ministry of Foreign Affairs said China "opposes unilateral sanctions out of the UN Security Council framework, especially the 'long-arm jurisdiction' over Chinese entities and individuals exercised by any country in accordance with its domestic laws."<sup>140</sup>

On September 21, the White House issued Executive Order 13810, a "simultaneously precise, detailed, and sweeping" sanctions package constituting "the most significant experiment in the use of secondary sanctions on North Korea to date," according to Mr. Haggard.<sup>141</sup> Five days later, pursuant to this and a similar executive order from 2015, Treasury sanctioned 19 China-based individuals linked to North Korean financial networks.<sup>142</sup> Mr. Haggard predicts "Beijing clearly does not like secondary sanctions and may feel like

they have gone too far and need to recalibrate. If they do, there are a myriad of ways they could throw Kim Jong-un political and economic lifelines.”<sup>143</sup>

### **China-South Korea Relations**

In the years leading up to 2016, China-South Korea relations were generally positive, buoyed by robust trade relations and a mutual commitment to good relations by Chinese President Xi Jinping and Park Geun-hye, president of South Korea from 2013–2017. Tensions would arise periodically, usually from disagreements over managing relations with North Korea, or over Seoul’s close military cooperation with Washington, but in general, the China-South Korea relationship was among the most stable in Northeast Asia. Facing the dual challenge of a more assertive China and a more threatening North Korea, however, South Koreans have become more pessimistic about relations with China.<sup>144</sup>

The China-South Korea relationship took a negative turn starting in 2016 over the planned deployment of a U.S. Terminal High Altitude Area Defense (THAAD) missile defense system to South Korea.\* China’s economic retaliation over the deployment reflects a desire to influence South Korea’s policies toward China and North Korea, as well as its defense engagement with the United States. China’s response to the THAAD deployment illustrates President Moon’s challenge in balancing South Korea’s relationships with the United States, its security guarantor, and China, its largest trading partner and most powerful neighbor—all while facing an increasing military threat from North Korea.

#### ***THAAD Deployment***

Since 2014, the U.S. Department of Defense has considered deploying THAAD in South Korea,<sup>145</sup> but until recently, Seoul has been reluctant to proceed with the system. South Korean officials raised concerns about the cost of hosting THAAD; uncertainty about THAAD’s effectiveness against the North Korean threat; and South Korea’s existing plan to develop an indigenous missile defense system. Seoul also may have been concerned that THAAD would contribute to the U.S.-allied regional ballistic missile defense network—which it seemed averse to join because of longstanding frictions with Japan—and, perhaps most importantly, may have been reluctant to antagonize China due to the two countries’ close economic ties.<sup>146</sup>

The increased security threat posed by continued North Korean missile development, however, changed Seoul’s calculus on THAAD. Hours after North Korea’s February 2016 satellite launch testing ballistic missile technology, South Korea said it would pursue formal talks with the United States about the system.<sup>147</sup> In July 2016, the U.S. Department of Defense and South Korean Ministry of National Defense announced in a joint statement the alliance decision to proceed with the deployment of a THAAD battery in South Korea

---

\*For a thorough examination of the THAAD deployment and China’s reaction, see Ethan Meick and Nargiza Salidjanova, “China’s Response to U.S.-South Korean Missile Defense System Deployment and Its Implications,” *U.S.-China Economic and Security Review Commission*, July 26, 2017.

by late 2017, at an estimated cost of \$1.6 billion.\*<sup>148</sup> In March 2017, the United States began delivery of the first major THAAD components, amid U.S. and South Korean defense officials' calls for an accelerated deployment schedule in response to increased North Korean missile launches and additional nuclear tests.<sup>149</sup> In April, U.S. Forces Korea began delivering major THAAD components to the deployment site and installing them, including the X-band radar, two launchers (of a total of six), and interceptors.<sup>150</sup> In early September, the remaining four launchers were deployed.<sup>151</sup>

#### *China's Opposition to the THAAD Deployment*

Beijing has vocally opposed the deployment since the announcement of formal U.S.-South Korea talks on THAAD in February 2016. China's Ministry of Foreign Affairs has spoken out against the deployment more than 50 times.<sup>152</sup> The following are examinations of several of China's stated objections to the THAAD deployment.

- *X-band radar*: Chinese officials and experts have said THAAD's X-band radar, which is capable of monitoring missiles launched from northeastern China, harms China's nuclear deterrent.<sup>153</sup> In February 2016, Chinese Foreign Minister Wang Yi said, "The coverage of the THAAD missile defense system, especially the monitoring scope of the X-band radar, goes far beyond the defense need of the Korean Peninsula. It will reach deep into the hinterland of Asia, which will ... directly damage Chinese strategic security interests."<sup>154</sup> Chinese missile defense experts argue that the radar could detect Chinese missiles targeting the United States.<sup>155</sup> According to Li Bin, a professor at China's Tsinghua University, the X-band radar allows the United States to detect the radar signature from the back of the warhead and could discern between a real Chinese warhead and a decoy, which would "[undermine] China's nuclear deterrent capability."<sup>156</sup> Although the X-band radar is capable of monitoring northeastern China, the battery in South Korea is to operate in "terminal mode," during which it will be oriented toward intercepting North Korean missiles. In this mode, radar coverage would not extend to inland launch sites in China.<sup>157</sup>
- *THAAD's target*: Chinese experts and media commenters have said THAAD is designed to intercept high-altitude missiles, which would be ineffective against North Korea's short- and tactical-range missiles that would likely be employed against South Korea, but suited to intercepting high-altitude Chinese missiles.<sup>158</sup> However, North Korea's recent tests of missiles with higher trajectories demonstrate THAAD provides a valuable layer of defense against North Korea.<sup>159</sup>
- *Arms race*: In October 2016, a Chinese Foreign Ministry official said THAAD's extension of the U.S.-allied missile defense network in Northeast Asia will "trigger [a] regional arms race."<sup>160</sup> These statements overlook an existing trend of military mod-

---

\*Under the Status of Forces Agreement between the United States and South Korea, the United States will fund the battery's deployment and maintenance costs and contribute the necessary operational forces, while South Korea will provide the necessary land and facilities. Kang Seung-woo, "Seongju Picked as Site for THAAD Battery," *Korea Times*, July 13, 2016; Jung Sung-ki, "South Korea Eyes THAAD despite China's Fear," *Defense News*, February 14, 2016.

ernization in all countries in Northeast Asia—including China—and THAAD’s role and capabilities as a response to North Korea’s missile development, and overestimate THAAD’s practical effect on China’s nuclear deterrent.<sup>161</sup>

China’s primary concern with the THAAD deployment appears to be that THAAD’s X-band radar and interceptors could harm Beijing’s strategic security interests by expanding the U.S.-allied missile defense and intelligence, surveillance, and reconnaissance network in the region and contributing to perceived encirclement by U.S. and U.S.-allied forces.<sup>162</sup> These fears are not entirely unfounded. In the face of the growing North Korean threat, Japan and the United States are strengthening cooperation on missile defense as well (see “Japan’s Military Modernization,” later in this section).

#### *Economic Retaliation*

China has exerted significant economic pressure on South Korea in response to the THAAD deployment. Given China’s increasingly dominant position in the bilateral trade relationship (see “China-South Korea Trade Relationship,” later in this section), this development was particularly concerning for the South Korean public, business elites, and political establishment.

The largest target of China’s economic retaliation has been the South Korean conglomerate Lotte. In November 2016, Lotte agreed to give one of its golf courses to the South Korean government for the THAAD deployment site; in exchange, Lotte received a plot of military-owned land.<sup>163</sup> In December 2016, Chinese authorities launched an investigation into Lotte operations in Shanghai, Beijing, Shenyang, and Chengdu.<sup>164</sup> In March 2017, construction of a chocolate factory jointly operated by Lotte and Hershey was suspended.<sup>165</sup> That same month, Lotte announced that its Chinese website came under a cyber attack from unidentified Chinese hackers.<sup>166</sup> (More than two months later, the website was finally back online.<sup>167</sup>) By April 2017, 87 of 99 Lotte Marts in mainland China had been closed by Chinese regulators, citing safety violations.<sup>168</sup> In the case of Lotte and other South Korean companies, Chinese retaliation has involved informal coercion. China has interfered with the operations of some South Korean companies by launching investigations into tax evasion and various regulatory violations.<sup>169</sup> These actions were accompanied by Chinese state media editorials attacking Lotte and demanding it reject the land-swap agreement or face economic repercussions.<sup>170</sup> Some reports indicate Lotte will lose hundreds of millions of dollars because of China’s retaliation.<sup>171</sup> In September, Lotte announced plans to sell its Lotte Mart stores in China.<sup>172</sup>

Beijing has also applied economic pressure to other South Korean entities in response to the THAAD deployment. In January 2017, Chinese regulators banned the sale of some South Korean products, including certain types of air purifiers, high-tech toilet seats, and cosmetics, citing safety concerns.<sup>173</sup> June 2017 data from the Korea Tourism Organization showed a 66 percent year-on-year drop in Chinese tourism to South Korea.<sup>174</sup> China accounted for 47 percent of all tourists and around 70 percent of sales at duty-free shops in South Korea in 2016.<sup>175</sup> South Korea’s entertainment industry was

impacted as well. Several events in China featuring South Korean pop music performers and actors were suspended or canceled without any explanation.<sup>176</sup>

In March 2017, South Korea complained to the World Trade Organization (WTO) that because of the THAAD deployment, China had retaliated against South Korean companies.<sup>177</sup> South Korea has not pursued further action at the WTO. On the Commission's 2017 trip to South Korea, General Kim Hee-sang, deputy director of the South Korean Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, told the Commission that South Korea is cautious about taking action against China at the WTO because Lotte's losses from China's retaliation have not been very high.<sup>178</sup> South Korea has partially made up for China's retaliation with other sources of income, such as an increase in tourism from Southeast Asian countries—though non-Chinese tourists spend less than half of what a typical Chinese tourist spends.<sup>179</sup>

China's retaliation over THAAD appears to be backfiring. South Korea has not reversed the THAAD deployment. At the same time, anti-China sentiment is growing in South Korea, along with an awareness that China has enormous leverage over South Korea's economy.<sup>180</sup> Lee Sook-jung and Chun Chae-sung of the South Korean East Asia Institute told the Commission on its 2017 trip to South Korea that before the THAAD controversy, many South Koreans believed China would become more important to South Korea than the United States, but public opinion has become more skeptical of China, and South Korean citizens and businesses are interested in diversifying away from China.<sup>181</sup> General Kim told the Commission that "we're finding our economy is too reliant on China," and that South Korea is trying to diversify its trade and investment relationships to emerging markets, such as India and countries in Southeast Asia.<sup>182</sup>

#### *South Korea's Position on THAAD*

THAAD has been a contentious issue in South Korean politics. In December 2016, as the campaign to replace former President Park Geun-hye ramped up, a poll showed 51 percent of South Koreans opposed the THAAD deployment.<sup>183</sup> During the campaign, Mr. Moon emphasized the need for transparency and oversight of the deployment, and his party largely opposed the deployment.<sup>184</sup> On May 2, one week before his election and just after the announcement that THAAD had become operational, Mr. Moon said the "deployment of THAAD is not over. [The deployment] should be considered and decided anew by the next administration. The process should involve diplomatic efforts, and be subjected to ratification by the [South Korean] National Assembly."<sup>185</sup> President Moon claimed the deployment of THAAD—which was originally planned for late 2017—was accelerated to take place days before the election.<sup>186</sup> In May 2017, he ordered an investigation into the deployment of the four remaining THAAD launchers, which his office said the South Korean Ministry of National Defense had accepted from the United States without his knowledge.<sup>187</sup> Ultimately, however, President Moon indicated he did "not intend to change the existing decision or send a different message to the U.S." on THAAD.<sup>188</sup> President Moon's shifting posi-

tion on THAAD could be a response to South Korean public opinion, which is now favorable toward THAAD overall. An August poll revealed that more than 70 percent of South Koreans supported the deployment of the remaining four launchers.<sup>189</sup>

President Moon's reaction to the acceptance of the additional launchers illustrates what appears to be a movement toward the United States and away from widely-perceived South Korean strategy of hedging between the United States and China. Although his campaign rhetoric suggested he would seek greater independence from the United States on defense issues, he appears unlikely to reverse the THAAD deployment, the most prominent recent development in the bilateral defense relationship, and after North Korea's July 28, 2017 test of an ICBM, he moved to discuss with the United States the deployment of additional missile defense systems.<sup>190</sup>

Resentment of China's retaliation over THAAD might be an additional factor in the Moon Administration's apparent turn toward the United States.<sup>191</sup> In June 2017, President Moon said, "The biggest pending issue currently in Korea-China bilateral relations is China's strong opposition to [the] THAAD deployment and China's economic retaliatory measures in order to force a hand in Korea's decision."<sup>192</sup> On the Commission's fact-finding trip to Asia, Hahm Chaibong, president of South Korea's Asan Institute for Policy Studies, told the Commission that China's economic coercion over THAAD was the "final straw" in what he described as South Korea's years-long retreat from hedging.<sup>193</sup>

### **China-South Korea Fishing Disputes**

Chinese fishermen and South Korean authorities have frequently clashed over illegal Chinese fishing in South Korean-claimed waters. These incidents are not new—in 2011, a Chinese fisherman stabbed a Korea Coast Guardsman to death during a Korea Coast Guard (KCG) boarding operation—but several significant recent incidents have coincided with the general trend of cooling ties between China and South Korea. In September 2016, the KCG killed three Chinese fishermen who were illegally fishing in South Korea's exclusive economic zone (EEZ)\* in a boarding operation.<sup>194</sup> In October 2016 a Chinese fishing boat rammed and sunk a KCG vessel in South Korean waters; later that month, a KCG vessel fired warning shots with a machine gun in response to attempts by a group of Chinese fishing boats to ram KCG vessels.<sup>195</sup>

Many confrontations between South Korean authorities and Chinese fishermen occur near the Northern Limit Line—the disputed maritime border between South Korea and North Korea—where Chinese fishermen buy fishing rights from North Korea.<sup>196</sup> Confrontations between Chinese fishing boats and the KCG near the Northern Limit Line, which in recent years have been the site

\*An EEZ is a 200-nautical-mile zone extending from a country's coastline, within which that country can exercise exclusive sovereign rights to explore for and exploit natural resources, but over which it does not have full sovereignty. UN Convention on the Law of the Sea, "Part 5: Exclusive Economic Zone."

### China-South Korea Fishing Disputes—*Continued*

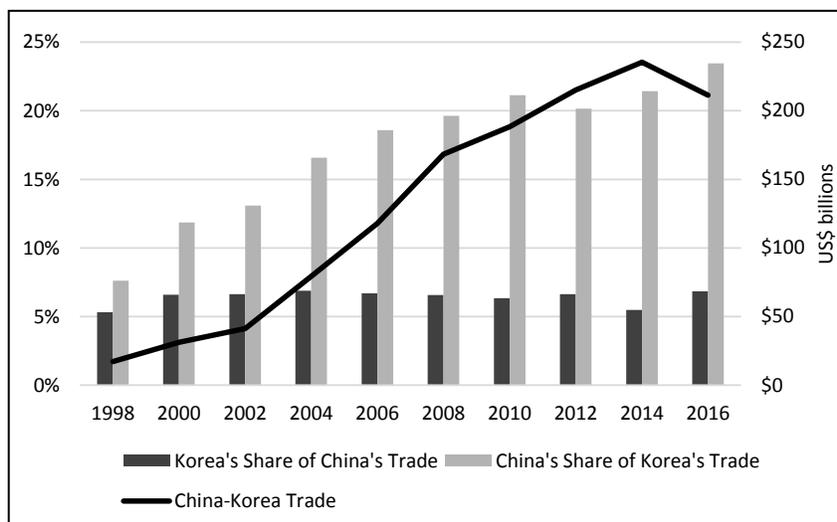
of deadly clashes between North Korea and South Korea, raise the risk that North Korea could intervene with military force to assert its sovereignty over the area and its right to sell fishing rights there.<sup>197</sup>

These incidents fit a pattern of assertive and sometimes aggressive incursions by Chinese maritime actors into the seas claimed by its East Asian neighbors.<sup>198</sup> For a discussion of these maritime challenges, see Chapter 2, Section 3, “Hotspots along China’s Maritime Periphery.”

### China-South Korea Trade Relationship

China’s large share of South Korea’s trade-intensive economy makes South Korea vulnerable to disruptions or restrictions in China’s market, such as the restrictions China imposed against South Korean entities in response to the THAAD deployment. China is South Korea’s largest trading partner and South Korean goods exports to China accounted for almost 9 percent of South Korea’s gross domestic product (GDP) in 2016.<sup>199</sup> Chinese goods exports to South Korea accounted for less than 1 percent of China’s GDP that same year.<sup>200</sup> Since China joined the WTO, its share of South Korea’s total trade has increased from 8 percent in 1998 to 23 percent in 2016, while South Korea’s share of China’s trade has held steady at 5–7 percent over the same time period (see Figure 4).<sup>201</sup>

Figure 4: South Korea-China Goods Trade, 1998–2016



Source: United Nations Comtrade, “International Trade Statistics Database.” <https://comtrade.un.org/>.

As China has moved up the value chain, it has competed in many of South Korea's traditional export sectors. Competition from Chinese government-subsidized companies, which have lowered their costs by up to 20 percent through Chinese government subsidies and created significant excess capacity, has driven South Korea's shipbuilding industry—which accounted for 6.5 percent of South Korea's GDP in 2015—into debt and bankruptcy.<sup>202</sup> South Korea remains a world leader in higher-tech sectors, but Chinese firms are gaining market share. For example, South Korea's Samsung remains the world's largest supplier of mobile phones, but in the first half of 2017 its global market share declined to 21.6 percent from 22.8 percent in the first half of 2016; the market share of China's Huawei increased from 8.6 percent to 9.4 percent over the same period.<sup>203</sup> Overall, as China exports higher-tech products its exports increasingly overlap with South Korea's, sparking competition. According to the Korea Institute for Industrial Economics and Trade, the export competition index\* between China and South Korea in Association of Southeast Asia Nations (ASEAN) countries increased from 66.2 in 2010 to 70.2 in 2014.<sup>204</sup>

China and South Korea concluded a four-year negotiation of a bilateral free trade agreement (FTA) in June 2015.<sup>205</sup> In 2012, South Korea began negotiations with China and Japan to form a trilateral FTA. Negotiations continued with the 12th round of talks in April 2017, but no agreement has emerged.<sup>206</sup> Since November 2012, South Korea, Japan, and China have been negotiating members of the Regional Comprehensive Economic Partnership (RCEP), a so-called “mega-FTA” among 16 countries in the Asia Pacific that account for 47.6 percent of the world's population and 31.1 percent of global GDP as of 2016.<sup>207</sup> Differing policy priorities may delay RCEP negotiations. China reportedly has pushed for a quickly negotiated agreement focused on tariff reduction, but Japan and other parties reportedly have worked to include provisions on trade in services and investment.<sup>208</sup>

A South Korean Foreign Ministry official told the Commission, “We're finding our economy is too reliant on China.”<sup>209</sup> The extent of South Korea's trade dependence on China necessarily impacts Seoul's broader strategy toward and approach to China. According to South Korea scholars Scott A. Snyder, Darcie Draught, and Sung-tae Park:

*In recent times, China's integration into the global economic order has been an enormous boon for South Korea. Nevertheless, this dependence on China means that as the Chinese economy has slowed, so has the South Korean economy. Chinese companies are also competing with their South Korean counterparts, sometimes through unfair practices that have undercut South Korean companies on price, and have copied or stolen South Korean designs. South Korea's ability to shift its economy away from heavy dependence on trade*

\*An export competition index measures the similarity of exports of two countries to a single market. A score of 0 shows no similarity while a score of 100 denotes perfect similarity. Yonhap News Agency, “Competition between Korea, China Intensifies in ASEAN Market,” September 9, 2016.

*to domestic consumption will influence its strategic options. Less dependence on trade could mean a country that is more flexible in the conduct of its foreign policy, particularly in regard to China.*<sup>210</sup>

### **China-Japan Relations**

Currently, tensions over military and security issues dominate the China-Japan relationship, with the East China Sea dispute remaining the primary driver. In addition, the proliferation of North Korean nuclear weapons and missiles and the rapid and ongoing modernization of China's military rank among Japan's top security concerns. In testimony before the Commission, Sheila Smith, senior fellow for Japan Studies at the Council on Foreign Relations, said "For Tokyo ... it has become apparent that both the Chinese military expansion and the North Korean success in its proliferation [have] changed the balance of military forces in the region and in a direction that undermines Japanese security."<sup>211</sup> These concerns bear on China-Japan relations directly, through the East China Sea dispute and China's expanding military footprint in the Asia Pacific, and indirectly, through China's relationship with North Korea. As with South Korea, tensions over imbalanced trade relations also play a role.

China's approach to its relationship with Japan features incremental advances in disputed territory that strengthen China's hand without rising to the level of armed conflict. Its military modernization—particularly the development, production, and deployment of advanced military aircraft and naval vessels—supports these activities and its pursuit of military superiority over the United States and its allies in the Western Pacific.

### ***The East China Sea and China's Military Modernization***

China's military modernization and its growing capability to project force into and beyond the East China Sea have significant implications for Japan's security outlook and have been a factor in adjustments to Japan's defense posture. According to Dr. Smith, "Chinese conventional military forces now pose a direct threat to Japanese control over its maritime and air domains. The growing reach of Chinese maritime forces, in particular, has raised the bar" for Japan's naval and air forces.<sup>212</sup> Japan has deployed more soldiers, missiles, airborne early warning aircraft, and jet fighters near the Senkaku Islands to address China's growing air and maritime capabilities.<sup>213</sup> The stakes of the routine confrontations between the Japan Coast Guard and Chinese official and unofficial vessels around the Senkaku Islands are rising along with these trends.

Although tension between China and Japan over their competing claims to the Senkaku Islands (called the Diaoyu Islands by China) and much of the East China Sea has declined since its peak in 2012–2013, the dispute continued to simmer in 2017 with persistent Chinese maritime operations near the Senkaku Islands and sharply increasing Chinese air operations in the East China Sea.

Figure 5: Map of the East China Sea

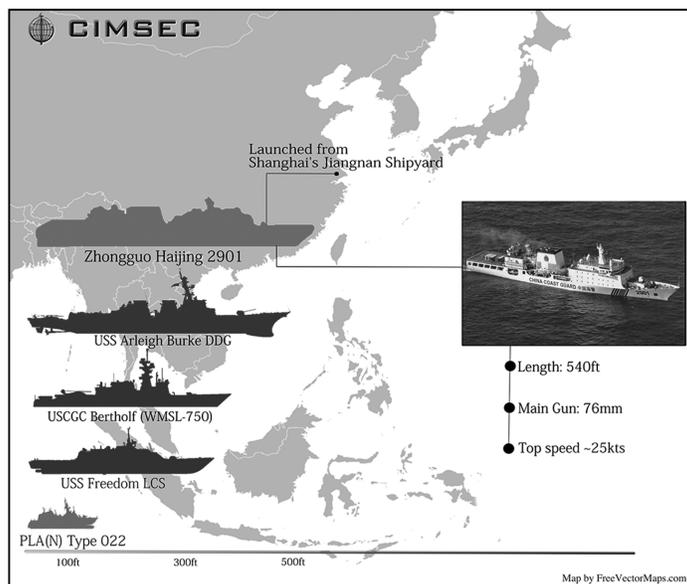


Source: *Economist*, "China, Japan, and America: Face-off," November 30, 2013.

Since September 2012, Chinese civilian government and fishing vessels have had a large presence in the territorial seas (a 12-nautical mi [nm] area surrounding an island or rock) and contiguous zones (a 12-nm area adjacent to the territorial sea) of the Senkakus.\* The China Coast Guard (CCG), a civilian law enforcement agency, conducts most official Chinese maritime activity near the Senkakus. During the Commission's May 2017 trip to Japan, a senior U.S. military official told the Commission the CCG's operations are "very predictable";<sup>214</sup> a Japanese defense official called them "checkbox incursions."<sup>215</sup> Although the CCG has acted predictably, and reportedly keeps in radio contact with its Japan Coast Guard counterparts, its ability to exert force in a contingency is growing.<sup>216</sup>

China's ability to ram, out-gun, and out-number Japan Coast Guard vessels will increase as the CCG rapidly produces larger, more heavily-armed vessels, such as its new 12,000-ton cutters. Two of these ships, the Type 818s, adapted from the hull of the Type 054A frigate, are armed with 76-millimeter guns.<sup>217</sup> Another, *Zhongguo Haijing* 3901, is the world's largest coast guard cutter; both the 3901 and its sister ship, the 2901, are larger than a U.S. Navy Arleigh Burke-class guided-missile destroyer (see Figure 6).<sup>218</sup>

\*In its territorial sea, a state has full sovereignty, subject to the right of innocent passage. In its contiguous zone, a state can enforce customs-related laws. Under the UN Convention on the Law of the Sea, foreign civilian and military ships may transit through a country's territorial sea according to the principle of innocent passage, which prohibits activities that are "prejudicial to the peace, good order or security of the coastal State," such as military exercises or intelligence gathering. UN Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone."

**Figure 6: Comparison of China Coast Guard Cutter and U.S. Naval Vessels**

Source: Ryan Martinson, “East Asian Security in the Age of the Chinese Mega-Cutter,” *Center for International Maritime Security*, July 3, 2015.

While the CCG’s capabilities have grown, the People’s Liberation Army (PLA) Navy has ventured closer to the islands, ratcheting up tensions. In 2016, a PLA Navy frigate entered the contiguous zone around the Senkakus for the first time.

Commercial and semiofficial Chinese actors, such as fishing boats and vessels that are part of China’s maritime militia,\* have accounted for the majority of China’s maritime activity near the Senkakus.<sup>219</sup> In August 2016, China deployed roughly 230 fishing boats and 15 CCG vessels within 24 nm of the Senkakus—the largest number of vessels China has deployed to the area since tensions spiked in September 2012.<sup>220</sup> More than 100 maritime militiamen reportedly were identified on these fishing boats, many of them apparently commanding fishing boats while dressed in Chinese military fatigues.<sup>221</sup> With this operation, China demonstrated it can control these vessels and integrate them into operations with law enforcement. This capability has been enabled by multiple joint drills involving Chinese military, law enforcement, and civilian agencies in recent years.<sup>222</sup>

The huge number of nongovernment vessels at China’s disposal—including roughly 200,000 fishing boats—and the CCG’s growing capabilities increase the possibility that China could swarm and overwhelm the Japan Coast Guard near the Senkakus.<sup>223</sup> During the Commission’s trip to Japan, a Japanese defense official told the

\*China has the world’s largest maritime militia, a quasi-military force of fishermen that are tasked by and report to the PLA. They are trained to participate in a variety of missions, including search and rescue, reconnaissance, deception operations, law enforcement, and “rights protection,” which often entails activities like harassing foreign vessels in China’s claimed waters. Andrew Erickson and Conor M. Kennedy, “China’s Fishing Militia Is a Military Force in All but Name,” *War Is Boring*, July 9, 2016.

Commission that PLA Navy ships and Japan Maritime Self-Defense Force ships always “hover over the horizon” as Chinese civilian vessels enter waters near the Senkakus.<sup>224</sup>

Meanwhile, China’s military presence in disputed East China Sea airspace has continued to rise. The China-Japan contest over airspace sovereignty reflects disagreement about each country’s claim to a large portion of the waters of the East China Sea and their overlapping air defense identification zones (ADIZs) in the area.\* According to Japan’s Ministry of Defense, Japanese scrambles † against Chinese aircraft—a useful though imperfect indicator of Chinese activity in airspace over the East China Sea—increased from 571 in fiscal year 2015 to a record-high 851 in fiscal year 2016.‡<sup>225</sup> The likelihood of miscalculations and mid-air collisions increases with the frequency of these scrambles.

As encounters between Chinese and Japanese forces in the East China Sea become more frequent, the likelihood of a confrontation between China and Japan and the chance that such a confrontation would escalate to military conflict grows. (For more information on how a China-Japan East China Sea conflict might arise and unfold, see Chapter 2, Section 3, “Hotspots along China’s Maritime Periphery.”)

Military and paramilitary forces are not the only means by which China advances its objectives in the East China Sea. In July, China deployed its 17th mobile natural gas drilling rig to a gas field near the so-called “median line” dividing the East China Sea between China and Japan.<sup>226</sup> China began deploying the rigs in 2015. Although they are located on the Chinese side of the line, they could tap into a natural gas field that extends into Japanese waters.<sup>227</sup> Japan has protested the deployment of the rigs, but China has not relocated any of them.<sup>228</sup>

### **Tensions over Yonaguni Island**

In May 2017, Admiral Harry B. Harris, Jr., Commander, U.S. Pacific Command, visited a new Japan Self-Defense Force radar station on Yonaguni Island,<sup>229</sup> Japan’s southernmost island, and part of Okinawa Prefecture in the East China Sea. The new radar facility will enhance Japan’s maritime domain awareness in the East China Sea as China’s naval and air presence there grow; China’s response to the facility’s establishment in 2016 was negative but muted.<sup>230</sup> One Japanese defense scholar with whom the Commission met in Tokyo opined that China may one day challenge Japan’s control over Yonaguni and other nearby islands, saying “it is 15 years too early” for China to claim sovereignty over Yonaguni, but that eventually it will have the power to do so.<sup>231</sup>

\*An ADIZ is a publicly declared area, established in international airspace adjacent to a state’s national airspace, in which the state requires that civil aircraft provide aircraft identifiers and location. Its purpose is to allow a state the time and space to identify the nature of approaching aircraft before those aircraft enter national airspace in order to prepare defensive measures if necessary. In November 2013, China established an ADIZ in the East China Sea that encompasses the Senkakus. An ADIZ does not have any legal bearing on sovereignty claims. Michael Pilger, “ADIZ Update: Enforcement in the East China Sea, Prospects for the South China Sea, and Implications for the United States,” *U.S.-China Economic and Security Review Commission*, March 2, 2016.

†In military aviation, scrambling refers to directing the immediate takeoff of aircraft from a ground alert condition of readiness to react to a potential air threat.

‡Japan’s fiscal year 2016 ran from April 1, 2016 to March 31, 2017.

### ***The North Korean Missile Threat to Japan***

The number and variety of North Korean missiles capable of reaching Japan is large and expanding.<sup>232</sup> Dr. Smith testified to the Commission that “even short of the ability to put a nuclear warhead on a missile, Pyongyang could wreak considerable damage on the Japanese people or on U.S. military forces stationed in Japan.”<sup>233</sup> North Korean missiles frequently land in Japan’s EEZ and in the past five years two North Korean rockets flew over Japanese territory on a trajectory to enter outer space.<sup>234</sup> In an unusually grave provocation, North Korea launched a ballistic missile over the Japanese island of Hokkaido in August 2017, the first time a North Korean missile crossed a main Japanese island since 2009.<sup>235</sup> If North Korea is capable of mounting an operational nuclear warhead on its medium-range ballistic missiles, then Japan is within range of a North Korean nuclear strike.

### ***Japan’s Military Modernization***

Military challenges from China and North Korea are creating political momentum for a more robust Japanese military. Under Japanese Prime Minister Shinzo Abe, Japan has increased its defense spending, expanded Japan’s right to exercise “collective self-defense,”\* reversed its ban on weapons exports, expanded security cooperation with Southeast Asian countries, and for the first time invoked the principle of collective self-defense to escort U.S. naval vessels near Japan.<sup>236</sup> Prime Minister Abe hopes to enshrine and further legitimize Japan’s military modernization by amending Article 9 of the Japanese Constitution to allow the military to conduct offensive operations, which the constitution currently strictly limits.<sup>237</sup>

The Japanese public has been ambivalent about whether to amend the constitution to expand the Japan Self-Defense Forces’ mandate to use force. A May 2017 poll of public opinion showed the public almost evenly split on the issue.<sup>238</sup> On its fact-finding trip to Japan, U.S. government officials told the Commission that North Korean nuclear and missile advances were “giving [Prime Minister] Abe the political green light” to pursue constitutional reforms, but the path to reform will be “slow and sensitive.”<sup>239</sup> In March 2017, a panel of defense experts of Japan’s ruling Liberal Democratic Party said Japan should consider acquiring cruise missiles, among other weapons, to build a long-range strike capability that would allow Japan to fire back at North Korea if attacked.<sup>240</sup> China’s growing offensive strike capabilities are another factor in Japan’s consideration of its defense needs. In May 2017, Japan Self-Defense Force Lieutenant General Osamu Onoda (Ret.) told the Commission that China’s missiles pose a greater threat to Japan than North Korea’s missiles do.<sup>241</sup>

Japan is acquiring advanced platforms that could be adapted for offensive strike operations, including the F-35 joint strike fighter. Japan received its first F-35 in December 2016,<sup>242</sup> and its first domestically assembled F-35 was unveiled in June 2017.<sup>243</sup> Japan has agreed to purchase a total of 42 F-35s from Lockheed Martin and

\*The right to collective self-defense is enshrined in the 1945 UN Charter, but Japan’s pacifist constitution precluded Japan from exercising this right until 2014, when Prime Minister Abe’s cabinet reinterpreted Article 9 of the constitution to allow for the limited use of force “when an armed attack against a foreign country that is in a close relationship with Japan occurs.” This reinterpretation was codified in a series of legislative actions in 2015. Sasakawa Foundation, “Collective Self-Defense,” October 27, 2017.

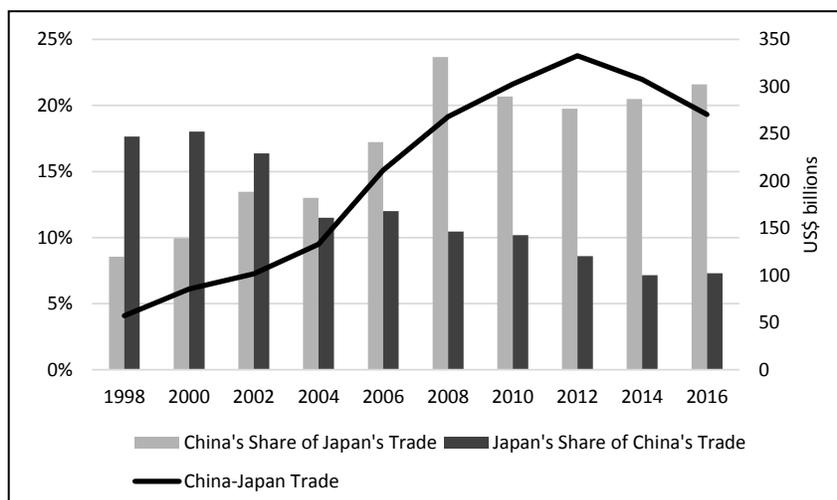
its Japanese partner, Mitsubishi Heavy Industries.<sup>244</sup> In June 2017, the *Yomiuri Shimbun* reported that the Japanese government was considering equipping Japan's F-35s with air-to-surface missiles, which Japan Self-Defense Force planes have never carried.<sup>245</sup>

Japan is also considering the acquisition of missile defense systems to supplement its existing network of Aegis destroyers and Patriot III land-based interceptors.<sup>246</sup> Japan reportedly is interested in acquiring the Aegis ashore missile defense system from the United States.\*<sup>247</sup>

### **China-Japan Trade Relationship**

Since joining the WTO, China's share of Japan's total trade has grown, while Japan's share of China's trade has declined (see Figure 7).<sup>248</sup> Although overall China-Japan trade has declined in recent years, a high degree of economic dependence prevails, despite political and security tensions, leading to a similar dynamic as in China's trade with South Korea. For example, in 2016, China was Japan's top source of imports (accounting for a quarter of Japanese imports) and second highest export destination (17.6 percent of Japanese exports) after the United States (20.2 percent). In contrast, while Japan is China's third largest trading partner, it accounts for a relatively minor share of China's trade: only 6.1 percent of China's exports, and 9.2 percent of China's imports.<sup>249</sup>

**Figure 7: China-Japan Trade in Goods, 2000–2016**



Source: United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>.

\*There is occasional debate in Japan about the utility of acquiring nuclear weapons in order to preserve Japan's national defense, although this debate is generally downplayed by national security elites. Calls for the acquisition of nuclear weapons generally emerge in times of increased tension with North Korea. Calls to reintroduce nuclear weapons are more common in South Korea; in August 2017, the country's main opposition party called for discussions to redeploy U.S. tactical nuclear weapons in South Korea, though President Moon has dismissed the possibility (U.S. nuclear weapons were withdrawn from the Peninsula in 1991). Paula Hancocks and James Griffiths, "No Nuclear Weapons in South Korea, Says President Moon," CNN, September 14, 2017; Yonhap News Agency, "Main Opposition Party Adopts U.S. Tactical Nuke Redeployment as Official Party Line," August 16, 2017; Mina Pollman, "Japan's Nuclear Weapons Conundrum," *Diplomat*, April 6, 2016; Eric Johnston, "Osaka Governor Says Japan Should Debate Need for Nuclear Weapons," *Japan Times*, March 30, 2016.

China has attempted to use its growing economic leverage over Japan in its territorial disputes with Japan in the East China Sea. In 2010, after Japan detained the captain of a Chinese fishing boat that collided with a Japan Coast Guard vessel off the Senkaku Islands, China enacted an unofficial ban on shipment to Japan of rare earth minerals necessary for the production of many high-tech electronic products.\* In 2012, after the Japanese government announced it would purchase the Senkaku Islands chain from a Japanese citizen, Chinese protestors boycotted Japanese products, protests closed Japanese automobile factories in China, and Chinese authorities asked booksellers to stop selling Japanese works.<sup>250</sup> Some Japanese carmakers had to temporarily shut down Chinese plants amid anti-Japan protests, leading to at least \$250 million in losses due to suspended operations in China.<sup>251</sup> Jun Saito, senior research fellow at the Japan Center for Economic Research, told the Commission on its fact-finding trip to Japan that in recent years, Japan has been working to reduce its economic dependence on China and diversify its trading partners to include more Southeast Asian countries.<sup>252</sup>

### **South Korea-Japan Relations and Trilateral Security Cooperation**

Although South Korea-Japan relations are generally positive, the relationship is plagued by nationalistic tendencies, lingering historical challenges related to Japan's occupation of the Korean Peninsula in the first half of the 20th century, and competing claims for maritime territory. These longstanding grievances often stand in the way of deeper cooperation, particularly on defense issues.<sup>253</sup> In each country, some politicians stoke public outrage toward the other country in order to garner support. Consequently, negative sentiments persist and efforts by both governments to take steps toward collaboration are hamstrung by domestic opposition. These limitations benefit China, which would rather see the United States' two Northeast Asian allies at cross-purposes than strengthening cooperation and advancing U.S. objectives in the region.

Persistent grievances and disagreements about the enslavement of South Korean "comfort women" by the Japanese military during World War II present recurring challenges to bilateral and trilateral cooperation.<sup>254</sup> In December 2015, Japan and South Korea formally settled the issue "finally and irreversibly" with an apology from Prime Minister Abe and the Japanese government's transfer of approximately \$8 million for the establishment of a fund in South Korea for surviving comfort women.<sup>255</sup> The dispute reopened in January 2017, when Japan recalled its ambassador to South Korea and its consul general in Busan, South Korea, after activists installed a statue near the Japanese Consulate in Busan commemorating comfort women.<sup>256</sup> In June 2017, President Moon said, "The candid reality is the South Korean people don't accept the agreement on the comfort women, and, more than anything else, those comfort women don't accept the deal."<sup>257</sup> President

\*Rare earth minerals are used in several products, including solar panels, batteries, electric motors, and automobile engines. At the time, China was the source of 93 percent of the world's rare earth minerals. For more background on China's rare earths production see Lee Levkowitz and Nathan Beauchamp-Mustafaga, "China's Rare Earths Industry and Its Role in the International Market," *U.S.-China Economic and Security Review Commission*, November 3, 2010. Keith Bradsher, "Amid Tension, China Blocks Vital Exports to Japan," *New York Times*, September 22, 2010.

Moon has said the issue should be revisited, but should not affect other aspects of the South Korea-Japan relationship.<sup>258</sup> At times, China has appeared to use South Korea-Japan historical grievances to attempt to drive a wedge between them.<sup>259</sup>

South Korea and Japan are also embroiled in a territorial dispute over the Liancourt Rocks (called the Dokdo Islands in South Korea and the Takeshima Islands in Japan), a group of islets in the Sea of Japan.\* Both countries claim sovereignty over the islets, though they are controlled by South Korea. The dispute has been ongoing for several decades, but is less tumultuous than disputes in the East and South China seas. Nevertheless, periodic attempts by both countries to consolidate their respective claims raise tensions and contribute to mutual distrust in the broader relationship.<sup>260</sup>

Hideaki Kaneda, adjunct fellow at the Japan Institute for International Affairs, told the Commission on its 2017 fact-finding trip to Japan that the U.S.-South Korea-Japan trilateral relationship remains at a “very primitive level.”<sup>261</sup> Japan and South Korea took a significant step to expand their strategic cooperation when in November 2016, in the wake of North Korea’s fifth nuclear test, they entered a bilateral agreement to share military intelligence on North Korea’s nuclear and missile programs. South Korean public opposition had delayed the agreement since its proposal in 2012.<sup>262</sup> In March 2017, shortly after North Korea conducted four tests of its Extended Range Scud missile that terminated in the Sea of Japan, the United States, South Korea, and Japan conducted a joint missile defense drill in the Sea of Japan with Aegis warships, and in April 2017 the three navies conducted their first-ever joint antisubmarine warfare exercise.<sup>263</sup> Beyond these developments, cooperation has been limited and rising bilateral tension over historical grievances will dampen the possibility of closer cooperation. However, advances in North Korea’s nuclear and missile programs could spur warmer relations. According to a Japanese defense official who spoke to the Commission on its 2017 trip to Japan, “North Korea is helping [Japan and South Korea] overcome” their differences.<sup>264</sup>

#### **U.S. and Allied Preparedness for a Military Contingency in Northeast Asia**

In the event of a military contingency in Northeast Asia, the United States and its allies and UN partners would execute military operations to advance U.S. interests and protect U.S. and allied citizens and troops. Capability gaps and insufficiently integrated command and control networks could hamper such operations.

A U.S.-Japan joint or combined operation responding to a contingency in the East China Sea or on the Korean Peninsula would be hampered by the absence of a standing joint task force by which to coordinate the two forces. Michael J. Green, senior vice president for Asia and Japan Chair for the Center for Strategic and International Studies, testified to the Commission that the

\*North Korea also claims the Liancourt Rocks. The United States does not take a position on the sovereignty of the islets.

### **U.S. and Allied Preparedness for a Military Contingency in Northeast Asia—Continued**

2015 U.S.-Japan Alliance Coordination Mechanism\* “has been used effectively to share information and coordinate responses [in peacetime]. . . . Whether the mechanism is adequate for a full-blown military crisis is another question. The United States and Japan do not currently have a joint and combined command structure like NATO or the Combined Forces Command in Korea. . . . [The Center for Strategic and International Studies] warned that the United States and Japan would not be fully prepared to respond to a military crisis in the Western Pacific without some form of well-established bilateral command and control relationships. . . . U.S. Forces Japan are not currently joint task force capable.”<sup>265</sup> Japanese defense scholars echoed this concern in meetings with the Commission in Tokyo in May 2017.<sup>266</sup>

On the Korean Peninsula, a central challenge in a military conflict involving North Korea will be to evacuate U.S. citizens and other foreign nationals, as well as military personnel. Currently, 250,000 U.S. citizens, 899,000 Chinese citizens, and 60,000 Japanese citizens live in South Korea.<sup>267</sup> Because a noncombatant evacuation from the Korean Peninsula would involve relocating citizens to Japan, extensive U.S.-South Korea-Japan coordination would be necessary. Noncombatant evacuation operations are difficult to rehearse. Although the U.S. Eighth Army (which commands all U.S. Army personnel in South Korea) regularly stages evacuation drills for U.S. personnel and their families,<sup>268</sup> U.S.-South Korea planning and coordination for noncombatant evacuation operations is less robust.<sup>269</sup> South Korea-Japan talks on planning for such operations, plagued by mutual distrust, are even less productive.<sup>270</sup>

### **Implications for the United States**

Tensions in Northeast Asia reached alarming levels in 2017. With some exceptions, China has not been constructive in mitigating these tensions, and in many cases, has actively stoked them.

With North Korea, China has taken some steps to implement the strictest sanctions on Pyongyang to date. It is too soon to measure China’s compliance with the latest rounds of sanctions, which, if implemented fully, would significantly constrain the North Korean regime’s ability to fund its nuclear and conventional weapons programs. If China’s lackluster record of previous sanctions enforcement is any guide, however, the United States and the international community should keep their expectations low. Because China is North Korea’s dominant economic partner and sole ally, its fulfillment of these sanctions is essential to their efficacy. However, even

\*In 2015, the United States and Japan established the Alliance Coordination Mechanism, which aims to “strengthen policy and operational coordination related to activities conducted by the Self-Defense Forces and the United States Armed Forces in all phases from peacetime to contingencies. This mechanism also will contribute to timely information sharing as well as the development and maintenance of common situational awareness.” Japan’s Ministry of Foreign Affairs, *The Guidelines for Japan-U.S. Defense Cooperation*, April 27, 2015. <http://www.mofa.go.jp/files/000078188.pdf>.

with China's full compliance with sanctions, its larger trade relationship with North Korea allows it to deliver crucial economic inputs to North Korea.

Despite the inflammatory actions North Korea has taken in testing missiles capable of reaching U.S. territory and developing nuclear weapons to mount on these and other missiles, as well as the international condemnation North Korea has drawn, China still prefers the status quo to taking decisive actions to denuclearize North Korea, possibly because it is willing to accept a nuclear North Korea or perceives that exerting significant pressure on North Korea could backfire. If these developments have not changed China's perception of its interests and best policy options in North Korea, it is unclear what further North Korean actions would.

China's adoption of bullying and economic coercion tactics in its relations with South Korea in response to the THAAD deployment marked a sharp departure from the generally positive relations enjoyed by Beijing and Seoul in previous years. Comparing China's rhetorical and policy responses to the THAAD deployment on the one hand and North Korea's numerous dangerous provocations on the other, it appears Beijing finds U.S.-South Korea missile defense cooperation to be a greater threat to Chinese security interests than a nuclear-armed North Korea. China has clearly signaled to South Korea that cooperation with the United States will be met with punishment from Beijing. This puts South Korea, which already struggles to balance its relations with the United States and China, in a strategically difficult position, and will necessarily complicate U.S. efforts to enhance cooperation with South Korea going forward.

With Japan, China has gradually but decisively moved to consolidate its claims in the East China Sea, with its coast guard and maritime militia forces leading the charge. China's use of nonmilitary actors to advance its claims handicaps Japan's ability to mount an effective countervailing force; the Japan Coast Guard is highly capable, but will meet significant difficulties engaging China's maritime forces. China's growing competence in conducting "gray zone" operations below the threshold of kinetic military conflict could also complicate the United States' ability to fulfil its treaty obligation to defend Japan from an armed attack.

In the near term, China's aggressive actions toward Japan and economic coercion campaign against South Korea seem to be driving both countries toward closer security cooperation with the United States. Prospects for enhanced South Korea-Japan security cooperation are less certain, however, and longstanding tensions between the two countries complicate U.S. efforts to evolve Northeast Asia's security architecture from a "hub and spokes" model to a more integrated trilateral cooperative structure.<sup>271</sup> China can be expected to thwart efforts by the United States to build a stronger U.S.-South Korea-Japan trilateral security architecture and to use its economic leverage to raise the costs of cooperation with Washington for Seoul and Tokyo.

## ENDNOTES FOR SECTION 2

1. House Armed Services Committee, *Hearing on the Fiscal Year 2018 National Defense Authorization Budget Request from the Department of Defense*, written testimony of James Mattis, June 12, 2017.
2. Andrew Scobell and Mark Cozad, "The Foreign Policy Essay: China's North Korean Challenge," *Lawfare*, March 29, 2015; China's Ministry of Foreign Affairs, *Gathering Good Timing, Geographical Convenience and Harmonious Human Relations, Seeking Peace, Development and Cooperation*, July 4, 2014.
3. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Abraham Denmark, June 8, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Andrew Scobell, June 8, 2017; Andrew Scobell and Mark Cozad, "The Foreign Policy Essay: China's North Korean Challenge," *Lawfare*, March 29, 2015; China's Ministry of Foreign Affairs, *Gathering Good Timing, Geographical Convenience and Harmonious Human Relations, Seeking Peace, Development and Cooperation*, July 4, 2014.
4. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Andrew Scobell, June 8, 2017.
5. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Andrew Scobell, June 8, 2017.
6. Andrei Lankov, professor, Kookmin University, meeting with Commission, Seoul, South Korea, May 23, 2017.
7. U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017; Andrei Lankov, professor, Kookmin University, meeting with Commission, Seoul, South Korea, May 23, 2017.
8. Andrei Lankov, "China Does Not Want the Korean Peninsula to Be Unified," *Radio Free Asia*, February 24, 2014.
9. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Abraham Denmark, June 8, 2017.
10. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Abraham Denmark, June 8, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Andrew Scobell, June 8, 2017; U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017; Andrew S. Erickson and Michael Monti, "Trouble Ahead? Chinese-Korean Disputes May Intensify," *National Interest*, February 20, 2015; Drew Thompson and Carla Freeman, "Flood across the Border: China's Disaster Relief Operations and Potential Response to a North Korean Refugee Crisis," *Johns Hopkins School of Advanced International Studies*, April 1, 2009, 16.
11. U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017; Drew Thompson and Carla Freeman, "Flood across the Border: China's Disaster Relief Operations and Potential Response to a North Korean Refugee Crisis," *Johns Hopkins School of Advanced International Studies*, April 1, 2009, 22.
12. U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017.
13. Drew Thompson and Carla Freeman, "Flood across the Border: China's Disaster Relief Operations and Potential Response to a North Korean Refugee Crisis," *Johns Hopkins School of Advanced International Studies*, April 1, 2009, 24.
14. Andrew Scobell, senior political scientist, RAND, interview with Commission staff, July 31, 2017; Anna Fifield, "North Korean Tuberculosis Patients at Risk as Sanctions Hamper Medicine Shipments," *Washington Post*, March 9, 2016; Drew Thompson and Carla Freeman, "Flood across the Border: China's Disaster Relief Operations and Potential Response to a North Korean Refugee Crisis," *Johns Hopkins School of Advanced International Studies*, April 1, 2009, 24.
15. Michelle Ye Hee Lee, Anna Fifield, and Ellen Nakashima, "North Korea Nuclear Test may have been Twice as Strong as First Thought," *Washington Post*, September 13, 2017.
16. Nuclear Threat Initiative, "The CNS North Korea Missile Test Database"; Anna Fifield, "North Korea Launches Three Missiles into Sea, Heightening Tensions," *Washington Post*, August 26, 2017.

17. Hawaii Emergency Management Agency, *Frequently Asked Questions with Answers: Ballistic Missile Preparedness*, August 11, 2017; Hawaii Emergency Management Agency, *Guidance Summary for Coordinated Public Messaging: Nuclear Detonation*, July 21, 2017; Teppei Kasai, "Japan Holds Evacuation Drills and North Korea Presses on with Missile Tests," Reuters, July 4, 2017; Ivan Watson, Yoko Wakatsuki, Hidetaka Sato, "Japan Holds First Evacuation Drill to Prepare for North Korean Missile," CNN, March 19, 2017.
18. Kambiz Foroohar, "Push for UN Sanctions on North Korea Hung Up on Definition of an ICBM," Bloomberg, July 20, 2017; Joby Warrick, "Experts: North Korea's Missile Was a 'Real ICBM' — and a Grave Milestone," *Washington Post*, July 4, 2017; David Wright, "North Korea Appears to Launch Missile with 6,700 km Range," *Union of Concerned Scientists*, July 3, 2017.
19. Ankit Panda, "Why Is Russia Denying That North Korea Launched an ICBM?" *Diplomat*, July 11, 2017; John Schilling, "What Is True and Not True about North Korea's Hwasong-14 ICBM: A Technical Evaluation," *38 North*, July 10, 2017; Tobin Harshaw, "Scared about North Korea? You Aren't Scared Enough," Bloomberg, July 8, 2017; Jeffrey Lewis, "Forget Alaska. North Korea Might Soon Be Able to Nuke New York," *Daily Beast*, July 6, 2017.
20. Ankit Panda, "North Korea Just Tested a Missile that Could Likely Reach Washington DC with a Nuclear Weapon," *Diplomat*, July 29, 2017.
21. David Wright, "North Korean ICBM Appears Able to Reach Major U.S. Cities," *Union of Concerned Scientists*, July 28, 2017.
22. David E. Sanger, Choe Sang-hun, and William J. Broad, "North Korea Tests a Ballistic Missile that Experts Say Could Hit California," *New York Times*, July 28, 2017.
23. Ellen Nakashima, Anna Fifield, and Joby Warrick, "North Korea Could Cross ICBM Threshold Next Year, U.S. Officials Warn in New Assessment," *Washington Post*, July 25, 2017.
24. Joshua Pollack, "The Range of North Korean ICBMs," *Arms Control Wonk*, September 17, 2016.
25. CSIS Missile Defense Project, "Taepodong-2 (Unha-3)," *Center for Strategic and International Studies*, August 8, 2016.
26. Ian Williams and Thomas Karako, "North Korea's New Missiles on Parade," *Center for Strategic and International Studies*, April 18, 2017; CSIS Missile Defense Project, "KN-08 / Hwasong 13," *Center for Strategic and International Studies*, August 8, 2016.
27. Reuters, "North Korea's Kim says Country has Miniaturized Nuclear Warhead," March 8, 2016.
28. Paul Alexander, "Experts Doubt N. Korea's Claim of Having Miniaturized Nukes," *Stars and Stripes*, March 8, 2016.
29. Andrea Mitchell and Ken Dilanian, "CIA, Other Spy Agencies Agree North Korea can fit Nuclear Weapon on Missile," August 10, 2017.
30. Matt Clinch, "Here's the Full Statement from North Korea on Nuclear Test," CNBC, September 9, 2016.
31. Nuclear Threat Initiative, "The CNS North Korea Missile Test Database."
32. CSIS Missile Defense Project, "Hwasong-12," *Center for Strategic and International Studies*, May 16, 2017.
33. CSIS Missile Defense Project, "Hwasong-12," *Center for Strategic and International Studies*, May 16, 2017.
34. CSIS Missile Defense Project, "KN-15 (Pukkuksong-2)," *Center for Strategic and International Studies*, March 5, 2017.
35. CSIS Missile Defense Project, "KN-18 at a Glance," *Center for Strategic and International Studies*.
36. Nuclear Threat Initiative, "The CNS North Korea Missile Test Database," May 22, 2017.
37. Jeffrey Lewis, "A First Glimpse of North Korea's Elusive ER SCUD," *Nuclear Transparency Initiative*, September 8, 2016.
38. Melissa Hanham, "Latest Test Shows How North Korea Is Hiding Its Missiles from Us," *Daily Beast*, April 5, 2017.
39. Young-keun Chang, "A Paradigm Shift in North Korea's Ballistic Missile Development?" *38 North*, April 25, 2017; Dagyum Ji, "N. Korea Tested Solid-Fuel IRBM Using 'Cold Launch' Technology: JCS," *NK News*, February 13, 2017.
40. David Wright, "North Korea Launches Four Missiles 'Simultaneously,'" *Union of Concerned Scientists*, March 6, 2017; Motoko Rich, "North Korea Launch Could Be Test of New Attack Strategy, Japan Analysts Say," *New York Times*, March 6, 2017.
41. Motoko Rich, "North Korea Launch Could Be Test of New Attack Strategy, Japan Analysts Say," *New York Times*, March 6, 2017.

42. U.S. Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea 2015*, January 5, 2016, 21–22.
43. Nuclear Threat Initiative, “North Korea: Chemical,” December 2015; Joseph S. Bermudez, Jr., “North Korea’s Chemical Warfare Capabilities,” *38 North*, October 10, 2013.
44. Lauren Suk and Ben Westcott, “North Korea Marks Anniversary with Massive Artillery Drill,” CNN, April 25, 2017; U.S. Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea 2015*, January 5, 2016, 22.
45. Balbina Hwang, visiting professor, American University, interview with Commission staff, July 28, 2017.
46. Marcus Fichtl, “U.S., South Korean Soldiers Practice Taking out Chemical-Weapons Labs,” *Stars and Stripes*, March 23, 2017; Anna Fifield, “Chemical-Weapons Drill Has One Perpetrator in Mind: North Korea,” *Washington Post*, March 14, 2016.
47. Motoko Rich, “In North Korea, ‘Surgical Strike’ Could Spin into ‘Worst Kind of Fighting,’” *New York Times*, July 5, 2017; U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017.
48. Kim Tong-Hyung, “South Korea’s Once-rigorous Civilian Air-raid Drills Grow Lax,” Associated Press, August 23, 2017.
49. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 455–457.
50. UN Security Council, *Resolution 2270 (2016)*, March 2, 2016.
51. UN Security Council, *Resolution 2270 (2016)*, March 2, 2016.
52. People’s Bank of China via CEIC database.
53. UN Security Council, *Resolution 2321 (2016)*, November 30, 2016.
54. UN Security Council, *Report of the Security Council Committee Established Pursuant to Resolution 1718 (2006) Prepared in Accordance with Paragraph 7 of Resolution 2321 (2016)*, December 16, 2016.
55. UN Security Council, *Resolution 2356 (2017)*, June 2, 2017; U.S. Department of the Treasury, *Treasury Sanctions Suppliers of North Korea’s Nuclear and Weapons Proliferation Programs*, June 1, 2017.
56. Kelsey Davenport, “UN Security Council Resolutions on North Korea,” *Arms Control Association*, August 9, 2017.
57. UN Security Council, *Resolution 2375 (2017)*, September 11, 2017.
58. U.S. Department of the Treasury, *Treasury Targets Chinese and Russian Entities and Individuals Supporting the North Korean Regime*, August 22, 2017.
59. China’s Ministry of Commerce, *MOFCOM and GACC Announcement No. 12 of 2017*, February 18, 2017.
60. Chun Han Wong, “Before U.N. Deadline, China again Buys North Korean Coal,” *Wall Street Journal*, September 26, 2017; Reuters, “China Imports 1.6 Billion Tonnes of Coal from North Korea in August despite Ban,” September 27, 2017.
61. Liu Zhen, “China Insists Coal Imports Do Not Breach North Korea Nuclear Sanctions,” Reuters, September 28, 2017.
62. Reuters, “China Imports 1.6 Billion Tonnes of Coal from North Korea in August despite Ban,” September 27, 2017.
63. U.S. Department of the Treasury, *Treasury Targets Chinese and Russian Entities and Individuals Supporting the North Korean Regime*, August 22, 2017.
64. Peter Whorisky, “Chinese Entrepreneur Aided North Korean Efforts to Develop Nuclear Weapons, U.S. Lawsuit Says,” *Washington Post*, August 23, 2017.
65. Peter Whorisky, “Chinese Entrepreneur Aided North Korean Efforts to Develop Nuclear Weapons, U.S. Lawsuit Says,” *Washington Post*, August 23, 2017.
66. BBC, “China Limits Oil Trade to North Korea and Bans Textile Trade,” September 23, 2017; Chen Aizhu, “How North Korea Gets Its Oil from China: Lifeline in Question at UN Meeting,” Reuters, April 28, 2017.
67. BBC, “China Limits Oil Trade to North Korea and Bans Textile Trade,” September 23, 2017.
68. BBC, “China Limits Oil Trade to North Korea and Bans Textile Trade,” September 23, 2017.
69. Dagyum Ji, “China Releases New Export Ban List to N. Korea, Prohibits Dual-Use Items,” *NK News*, January 26, 2017; China’s Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hua Chunying’s Regular Press Conference on January 26, 2017*, January 26, 2017; *Global Times*, “Chinese Ministries Ban Military Type Exports to N. Korea,” January 25, 2017.
70. Jeremy Page and Alastair Gale, “Behind North Korea’s Nuclear Advance: Scientists who Bring Technology Home,” *Wall Street Journal*, September 6, 2017.

71. U.S. Department of the Treasury, *Treasury Targets Chinese and Russian Entities and Individuals Supporting the North Korean Regime*, August 22, 2017.
72. Jeremy Page and Jay Solomon, "Chinese-North Korean Venture Shows How Much Sanctions Can Miss," *Wall Street Journal*, May 7, 2017; Louis Charbonneau, "U.N. Committee Puts 3 North Korea Firms on Blacklist," Reuters, April 24, 2009.
73. James Pearson, "China-Made Truck Used in North Korea Parade to Show Submarine-Launched Missile," Reuters, April 18, 2017.
74. UN Security Council, *Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009)*, June 11, 2013, 26–27.
75. James Pearson and Jack Kim, "North Korea Appeared to Use China Truck in Its First Claimed ICBM Test," Reuters, July 4, 2017; UN Security Council, *Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009)*, June 11, 2013, 26–27.
76. UN, *Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009)*, February 27, 2017, 27–28; UN Security Council, *Resolution 2094 (2013)*, 4–5.
77. Asan Institute and Center for Advanced Defense Studies, "In China's Shadow: Exposing North Korean Overseas Networks," August 2016, 26, 34–36.
78. Joby Warrick, "Kim Jong Un's Rockets Are Getting an Important Boost — from China," *Washington Post*, April 13, 2017; David Thompson, "Risky Business: A System-Level Analysis of the North Korean Proliferation Financing System," *Center for Advanced Defense Studies*, June 2017.
79. Yonhap News Agency, "China Continues to Buy N. Korean Minerals Despite U.N. Ban: Report," April 29, 2017.
80. People's Bank of China via CEIC database.
81. Jane Perlez, "China's Crackdown on North Korea over U.N. Sanctions Starts to Pinch," *New York Times*, August 16, 2017.
82. Jane Perlez, "China's Crackdown on North Korea over U.N. Sanctions Starts to Pinch," *New York Times*, August 16, 2017.
83. Jane Perlez, "China's Crackdown on North Korea over U.N. Sanctions Starts to Pinch," *New York Times*, August 16, 2017.
84. Bloomberg, "Smuggled North Korea Clams Show China's Struggle to Stop Kim," September 15, 2017; Justin Hastings, "New Sanctions Seeing Impact, Setting off a Diplomatic Row between China, North Korea," Channel News Asia, August 14, 2017; Jane Perlez, "China's Crackdown on North Korea over U.N. Sanctions Starts to Pinch," *New York Times*, August 16, 2017.
85. Bloomberg, "Smuggled North Korea Clams Show China's Struggle to Stop Kim," September 15, 2017.
86. Elizabeth Shim, "North Korea Workers Being Forced out of China, Report Says," UPI, August 28, 2017; Kim Ga Young, "Chinese Factories Suspending North Korean Labor Imports," *DailyNK*, August 18, 2017.
87. Sue-Lin Wong, "Fewer North Korean Workers Come to China as Border Trade Tightens," Reuters, November 28, 2017; Associated Press, "North Korea Putting Thousands into Forced Labor Abroad, UN Says," October 29, 2015.
88. Kim Byung-yeon, professor, Seoul National University, meeting with the Commission, May 22, 2017.
89. Kim Byung-yeon, professor, Seoul National University, meeting with the Commission, May 22, 2017.
90. Andrei Lankov, professor, Kookmin University, meeting with Commission, May 23, 2017.
91. Anna Fifield, "China Says It Hasn't Imported Any Coal from North Korea for Two Months," *Washington Post*, May 23, 2017.
92. People's Bank of China via CEIC database.
93. People's Bank of China via CEIC database.
94. Timothy W. Martin, "North Korea's Army of Hackers Has a New Target: Bank Accounts," *Wall Street Journal*, July 27, 2017; Stephan Haggard, "North Korea's Current Account Deficit with China: Crisis Coming?" *Peterson Institute for International Economics*, July 17, 2017; David Thompson, "Risky Business: A System-Level Analysis of the North Korean Proliferation Financing System," *Center for Advanced Defense Studies*, June 2017; Anna Fifield, "China Says It Hasn't Imported Any Coal from North Korea for Two Months," *Washington Post*, May 23, 2017.
95. Christine Kim and Jane Chung, "North Korea 2016 Economic Growth at 17-Year High Despite Sanctions: South Korea," Reuters, July 20, 2017.
96. Kent Boydston, "Slave to the Blog: North Korea and the Borderlands," *Peterson Institute for International Economics*, June 23, 2017.
97. Andrei Lankov, professor, Kookmin University, meeting with Commission, Seoul, South Korea, May 23, 2017.

98. Mark Robertson, "Mushrooms, Liquor, and Special Water: N. Korean Goods on Sale in China," *NK News*, July 24, 2017; Sue-Lin Wong, "From Bricks to Smuggled Wigs: China's Border Trade with North Korea," Reuters, September 12, 2016; Daniel Tudor and James Pearson, *North Korea Confidential: Private Markets, Fashion Trends, Prison Camps, Dissenters and Defectors*, Tuttle Publishing, 2015, 27, 32.
99. Daniel Tudor and James Pearson, *North Korea Confidential: Private Markets, Fashion Trends, Prison Camps, Dissenters and Defectors*, Tuttle Publishing, 2015, 32–33.
100. Christine Kim and Jane Chung, "North Korea 2016 Economic Growth at 17-Year High Despite Sanctions: South Korea," Reuters, July 20, 2017; Food and Agriculture Organization of the United Nations, *DPR Korea's Food Production Hit by the Worst Drought since 2001*, July 20, 2017; Andy Dinville, "Assessing Agricultural Conditions in North Korea: A Satellite Imagery Case Study," *38 North*, January 5, 2017.
101. Byung-yeon Kim, *Unveiling the North Korean Economy: Collapse and Transition*, Cambridge University Press, 2017, 132–136.
102. Sue-Lin Wong, Philip Wen, "North Korean Factories Humming with 'Made in China' Clothes, Traders Say," Reuters, August 12, 2017.
103. Andrei Lankov, professor, Kookmin University, meeting with Commission, Seoul, South Korea, May 23, 2017; South Korean government officials, meeting with Commission, Seoul, South Korea, May 23, 2017; Kim Byung-yeon, professor, Seoul National University, meeting with Commission, Seoul, South Korea, May 22, 2017; Jane Perlez, Yufan Huang, and Paul Mozur, "How North Korea Managed to Defy Years of Sanctions," *New York Times*, May 12, 2017; Jessica Phelan, "Made in North Korea: \$300 Ski Jackets, and a Whole Lot More," PRI, February 26, 2016.
104. Sue-Lin Wong, Philip Wen, "North Korean Factories Humming with 'Made in China' Clothes, Traders Say," Reuters, August 12, 2017.
105. Jane Perlez, Yufan Huang, and Paul Mozur, "How North Korea Managed to Defy Years of Sanctions," *New York Times*, May 12, 2017.
106. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 441.
107. Richard C. Paddock, "Lawyers for Women in Kim Jong-nam Case Say They Were Scapegoated," *New York Times*, April 13, 2017.
108. James Griffiths, "Kim Jong Nam: Why Would North Korea Want Him Dead?" CNN, February 22, 2017; Marcus Noland and Stephan Haggard, "The Assassination of Kim Jong-nam," *Peterson Institute for International Economics*, February 16, 2017.
109. Simon Denyer, "In China, a Sense of Betrayal after the Assassination of Kim Jong Nam," *Washington Post*, February 17, 2017.
110. John Power, "North Korean Murder: Did Kim Jong-nam's Ties to China Play a Role?" *Christian Science Monitor*, February 15, 2017.
111. James Pomfret, "Kim Jong Un's Murdered Half Brother Lived Quiet, Open Life in Macau," Reuters, February 16, 2017; Jonathan Cheng, James Hookway, and Celine Fernandez, "Malaysia, North Korea Ties Run Deep," *Wall Street Journal*, February 15, 2017; Choe Sang-hun and Richard C. Paddock, "Kim Jong-nam, the Hunted Heir to a Dictator Who Met Death in Exile," *New York Times*, February 15, 2017.
112. John Power, "North Korean Murder: Did Kim Jong-nam's Ties to China Play a Role?" *Christian Science Monitor*, February 15, 2017.
113. Marcus Noland and Stephan Haggard, "The Assassination of Kim Jong-nam," *Peterson Institute for International Economics*, February 16, 2017.
114. Zhong Sheng, "The Korean Peninsula Requires Responsible Action," *People's Daily*, April 30, 2017.
115. *Global Times*, "Is Breakthrough Likely on NK Nuke Issue?" May 1, 2017.
116. Kim Ch'o'l, "[China] Must Not Continue Its Reckless Behavior of Chopping down the Pillar of [North] Korea-China Relations Any Longer," Korean Central News Agency, May 3, 2017.
117. *Global Times*, "KCNA Critique Won't Ease Mounting Nuke Tension," May 4, 2017.
118. James Palmer, "North Korean Nuclear Test Spites both Washington and Beijing," *Foreign Policy*, September 3, 2017.
119. Chris Buckley, "Criticism of Beijing's North Korea Policy Comes from Unlikely Place: China," *New York Times*, April 18, 2017; Adam Cathcart, "Incinerated Fantasy: Kim Jong-un, Zhu Feng, and a Censored Article in Beijing," *Sino NK*, February 9, 2013.
120. Chris Buckley, "Excerpts from a Chinese Historian's Speech on North Korea," *New York Times*, April 18, 2017.
121. Chris Buckley, "Criticism of Beijing's North Korea Policy Comes from Unlikely Place: China," *New York Times*, April 18, 2017.
122. Zhu Feng, "China's North Korean Liability," *Foreign Affairs*, July 11, 2017.

123. *Global Times*, “Is North Korea Nuclear Crisis Reaching a Showdown?” April 12, 2017.
124. James Martin Center for Nonproliferation Studies, “The CNS North Korea Missile Test Database,” May 29, 2017; Anna Fifield, “N. Korea Didn’t Test a Nuclear Weapon, But It Did Try to Launch Another Missile,” *Washington Post*, April 16, 2017.
125. U.S. Department of State, *Joint Statement by Secretary of State Rex Tillerson, Secretary of Defense James Mattis, Director of National Intelligence Dan Coats*, April 26, 2017.
126. U.S. Department of State, *Secretary of State Rex Tillerson and Secretary of Defense Jim Mattis at a Joint Press Availability*, June 21, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China’s Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Andrew Scobell, June 8, 2017; Chang Jae-soon and Roh Hyo-dong, “N.K. Denuclearization Top U.S. Goal, No Secret Dealing with China on Peace Treaty: Amb. Sung Kim,” Yonhap News Agency, March 9, 2016.
127. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 459.
128. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 458.
129. U.S. Department of State, *Statement by Secretary Tillerson*, July 4, 2017.
130. China’s Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Geng Shuang’s Regular Press Conference on July 11, 2017*, July 11, 2017.
131. Xinhua, “Full Text of Joint Statement of the Chinese Ministry of Foreign Affairs and the Russian Ministry of Foreign Affairs on the Korean Peninsula Issue,” July 4, 2017.
132. Moon Jae-in, “Global Leaders Forum: His Excellency Moon Jae-in, President of the Republic of Korea,” Center for Strategic and International Studies, Washington, DC, June 30, 2017.
133. Elizabeth Shim, “U.S., South Korea Conduct Ballistic Missile Drill Following Provocation,” UPI, July 5, 2017.
134. Pacific Air Forces Public Affairs, *U.S. B-1B Bomber Flights Demonstrate Ironclad Commitment to South Korea, Japan*, July 7, 2017.
135. Jesse Johnson, “PACOM Chief Harris Arrives in South Korea as North Likens Joint War Game to ‘Pouring Gasoline on Fire,’” *Japan Times*, August 20, 2017.
136. U.S. Department of Defense, *DoD Announces Start of Exercise Ulchi Freedom Guardian*, August 18, 2017.
137. U.S. Department of Treasury, *Treasury Acts to Increase Economic Pressure on North Korea and Protect the U.S. Financial System*, June 29, 2017.
138. U.S. Department of Treasury, *Treasury Acts to Increase Economic Pressure on North Korea and Protect the U.S. Financial System*, June 29, 2017.
139. Jenna Johnson and David Nakamura, “U.S. Treasury Department Announces New Sanctions to Increase Pressure on North Korea,” *Washington Post*, June 29, 2017.
140. China’s Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang’s Regular Press Conference on June 30, 2017*, June 30, 2017.
141. Stephan Haggard, “Sanctions: Things Are about to Get Interesting. Really Interesting,” *Peterson Institute for International Economics*, September 21, 2017; White House Office of the Press Secretary, *Presidential Executive Order on Imposing Additional Sanctions with Respect to North Korea*, September 21, 2017.
142. U.S. Department of the Treasury Press Center, *Treasury Sanctions Banks and Representatives Linked to North Korean Financial Networks*, September 26, 2017.
143. Stephan Haggard, “Sanctions: Things Are about to Get Interesting. Really Interesting,” *Peterson Institute for International Economics*, September 21, 2017.
144. Pew Research Center, *Global Indicators Database: “South Korean Opinions of China,”* August 2017; Hahm Chaibong, president, Asan Institute, meeting with the Commission, Seoul, South Korea, May 23, 2017; Scholars, East Asia Institute, Seoul, South Korea, meeting with Commission, May 22, 2017.
145. Sarah Kim, “Korea Coming around to THAAD Idea,” *Korea JoongAng Daily*, July 22, 2014; Samuel Songhoon Lee, “Why Wouldn’t S. Korea Want U.S. Missile Defenses?” CBS News, June 3, 2014; Julian E. Barnes, “Washington Considers Missile-Defense System in South Korea,” *Wall Street Journal*, May 27, 2014.
146. Ian E. Rinehart, Steven A. Hildreth, and Susan V. Lawrence, “Ballistic Missile Defense in the Asia-Pacific Region: Cooperation and Opposition,” *Congressional Research Service*, April 3, 2015, 11–12; Sarah Kim, “Korea Coming around to THAAD Idea,” *Korea JoongAng Daily*, July 22, 2014; Samuel Songhoon Lee, “Why Wouldn’t S. Korea Want U.S. Missile Defenses?” CBS News, June 3, 2014; Julian E. Barnes,

“Washington Considers Missile-Defense System in South Korea,” *Wall Street Journal*, May 27, 2014.

147. Anna Fifield, “South Korea, U.S. to Start Talks on Anti-Missile System,” *Washington Post*, February 7, 2016.

148. U.S. Forces Korea, *ROK & U.S. Joint Statement: ROK-U.S. Alliance Agrees to Deploy THAAD*, July 7, 2016; Jung Sung-Ki, “South Korea Eyes THAAD despite China’s Fear,” *Defense News*, February 14, 2016.

149. Chang May Choon, “China Fumes as US, S. Korea Speed up THAAD Deployment,” *Straits Times*, March 8, 2017; Gabriel Dominguez, “First Elements of THAAD Arrive in South Korea,” *IHS Jane’s*, March 8, 2017; U.S. Pacific Command, *U.S. Pacific Command Deploys THAAD to Korean Peninsula*, March 6, 2017.

150. *Korea JoongAng Daily*, “THAAD Battery Installed in Dead of Night,” April 27, 2017.

151. Reuters, “South Korea Deploys U.S. Anti-Missile Launchers amid Clashes with Protesters,” September 6, 2017.

152. China’s Ministry of Foreign Affairs spokesperson’s regular press conference on the following dates: June 1, 7, and 8, 2017; May 2 and 31, 2017; April 5, 17, 14, and 26, 2017; March 1–3, 6, 7, 10, 17, 20, 22, 27, and 29, 2017; February 3, 6–8, 27, and 28, 2017; January 3, 5, 6, 11, 13, and 25, 2017; December 1, 9, 16, and 22, 2016; November 4, 16, 21, and 28, 2016; September 2, 5, 7, 13, and 30, 2016; and July 8, 11, and 13, 2016.

153. Li Bin, “The Security Dilemma and THAAD Deployment in the ROK,” *China-US Focus*, March 6, 2017; China’s Ministry of Foreign Affairs, *Wang Yi Talks about US’s Plan to Deploy THAAD Missile Defense System in ROK*, February 13, 2016.

154. China’s Ministry of Foreign Affairs, *Wang Yi Talks about US’s Plan to Deploy THAAD Missile Defense System in ROK*, February 13, 2016.

155. Li Bin, “The Security Dilemma and THAAD Deployment in the ROK,” *China-US Focus*, March 6, 2017; Wu Riqiang, “South Korea’s THAAD: Impact on China’s Nuclear Deterrent,” *S. Rajaratnam School of International Studies Commentary*, July 27, 2016.

156. Li Bin, “The Security Dilemma and THAAD Deployment in the ROK,” *China-US Focus*, March 6, 2017.

157. Jaganath Sankaran and Bryan L. Fearey, “Missile Defense and Strategic Stability: Terminal High Altitude Area Defense (THAAD) in South Korea,” *Contemporary Security Policy* (2017): 9–10, 21–24.

158. Michael D. Swaine, “Chinese Views on South Korea’s Deployment of THAAD,” *Carnegie Endowment for International Peace*, February 2, 2017, 6.

159. U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017; Elizabeth Shim, “Report: U.S. Military Upgrading Patriot Missile System in Korea,” UPI, February 23, 2017; U.S. Department of Defense, *Republic of Korea and the United States Make Alliance Decision to Deploy THAAD to Korea*, July 7, 2016; Michael Elleman and Michael J. Zagurek, Jr., “THAAD: What It Can Do and Can’t Do,” *38 North*, March 10, 2016, 5–7; U.S. Department of Defense, *Department of Defense Press Briefing by Pentagon Press Secretary Peter Cook in the Pentagon Briefing Room*, February 8, 2016; Bruce Klingner, “Backgrounder: South Korea Needs THAAD Missile Defense,” *Heritage Foundation*, June 12, 2015, 3–6.

160. China’s Ministry of Foreign Affairs, *Statement by Ambassador Wang Qun, Director General of the Arms Control Department of the Ministry of Foreign Affairs of China, at the General Debate of the First Committee of the 71st Session of the UNGA*, October 13, 2016.

161. Nan Tian et al., “Trends in World Military Expenditure, 2016,” *Stockholm International Peace Research Institute*, April 2017, 2; Michael D. Swaine, “Chinese Views on South Korea’s Deployment of THAAD,” *Carnegie Endowment for International Peace*, February 2, 2017, 8–9.

162. China’s Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang’s Regular Press Conference on March 29, 2017*, March 29, 2017; Michael D. Swaine, “Chinese Views on South Korea’s Deployment of THAAD,” *Carnegie Endowment for International Peace*, February 2, 2017, 8; Kristien Bergerson, “China’s Efforts to Counter U.S. Forward Presence in the Asia Pacific,” *U.S.-China Economic and Security Review Commission*, March 15, 2016, 3–5.

163. Kim Gamel and Yoo Kyong Chang, “Land-swap Deal Reached for THAAD Battery Site in S. Korea,” *Stars and Stripes*, November 16, 2016; Yonhap News Agency, “Military, Lotte Sign Land-Swap Deal for THAAD Deployment,” February 28, 2017.

164. Bryan Harris and Charles Clover, “China Takes Aim at South Korea’s Lotte after Missile Move,” *Financial Times*, December 8, 2016.

165. Chun Han Wong, “Conglomerate Feels Heat from China’s Anger at South Korea,” *Wall Street Journal*, March 10, 2017.

166. Laura Zhou, "China Fires BroadSides at South Korea's Lotte Group for Providing Land to Host Anti-Missile System," *South China Morning Post*, March 2, 2017.
167. Chosun Ilbo, "Lotte Mart's Chinese Website Back Online after 2 Months Blackout," May 18, 2017.
168. Jethro Mullen and Paula Hancocks, "South Korean Company to China: Don't Blame Us for THAAD Missiles," CNN, April 4, 2017.
169. Kim Hee-sang, deputy director, South Korea Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, meeting with Commission, Seoul, South Korea, May 22, 2017.
170. Yue Wang, "How China's South Korea Boycott Will Play out, Politically and Economically," *Forbes*, March 20, 2017; Laura Zhou, "China Fires BroadSides at South Korea's Lotte Group for Providing Land to Host Anti-Missile System," *South China Morning Post*, March 2, 2017; Xinhua, "Commentary: Lotte Should Avoid Playing with Fire in Letting THAAD in," February 19, 2016.
171. Yonhap News Agency, "Lotte Facing Huge Loss in China over THAAD Retaliation," May 5, 2017; *Chosun Ilbo*, "Lotte Faces W1 Trillion Losses in Chinese THAAD Retaliation," April 17, 2017.
172. Eun-Young Jeong, "Lotte Retreats from China as Beijing-Seoul Dispute Dents Business," *Wall Street Journal*, September 14, 2017.
173. Park Hyong-ki, "China Ups THAAD Retaliation against Korean Products," *Korea Times*, January 20, 2017; Yoon Ja-young, "China Bans Imports of 19 Korean Cosmetics," *Korea Times*, January 11, 2017.
174. Korea Tourism Organization, Korea, Monthly Statistics of Tourism, June 2017.
175. Coco Feng and An Limin, "South Korea, China Businesses Can't Find Cover in Spat over Missile Defense," *Caixin*, April 5, 2017; Sohn Ji-young, "Tourism Industry on Alert Over China's Trip Ban," *Korea Herald*, March 3, 2017.
176. Song Jung-a, "Seoul Missile Move Sparks Fears for Pop Culture Exports to China," *Financial Times*, August 8, 2016; Amy Qin and Choe Sang-Hun, "South Korean Missile Defense Deal Appears to Sour China's Taste for K-Pop," *New York Times*, August 7, 2016.
177. Christine Kim and Jane Chung, "South Korea Complains to WTO over China Response to Missile System," Reuters, March 20, 2017.
178. Kim Hee-sang, deputy director, South Korea Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, meeting with Commission, Seoul, South Korea, May 22, 2017.
179. Huh Seung-jae, director general, South Korea Ministry of Foreign Affairs, Northeast Asian Affairs Bureau, meeting with Commission, Seoul, South Korea, May 23, 2017.
180. Kim Hee-sang, Deputy Director, South Korea Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, meeting with Commission, Seoul, South Korea, May 22, 2017; Kim Jiyeon and John J. Lee, "Changing Tides: THAAD and Shifting Korean Public Opinion toward the United States and China," *Asan Institute*, March 20, 2017.
181. Lee Sook-jung, president, and Chun Chae-sung, chair, Asia Security Initiative Research Center, East Asia Institute, meeting with Commission, Seoul, South Korea, May 22, 2017.
182. Kim Hee-sang, deputy director, South Korea Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, meeting with Commission, Seoul, South Korea, May 22, 2017.
183. Brian Padden, "THAAD Is Becoming a South Korean Election Issue," *Voice of America*, January 16, 2017.
184. Anna Fifield, "Interview with Moon Jae-in, Set to Become South Korea's Next President," *Washington Post*, May 2, 2017; Kang Yoon-seung, "Democratic Party Steps up Pressure against THAAD Deployment," *Yonhap*, March 17, 2017.
185. Choi He-suk, "Moon Presses Unexpected Advantage over THAAD," *Korea Herald*, May 2, 2017.
186. Jean Yoon and Soyoun Kim, "Exclusive: South Korea President Calls on China's Xi to Do More in North Korea Nuclear Program," Reuters, June 22, 2017.
187. Sotaro Suzuki, "South Korea's Moon 'Shocked' by Undisclosed THAAD Launchers," *Nikkei Asian Review*, May 31, 2017; Yonhap News Agency, "Presidential Office Confirms Ministry's Deliberate Omission of THAAD Launcher Delivery," May 31, 2017.
188. *NK News*, "Full THAAD Deployment in S. Korea Delayed Pending 'Environmental Assessment,'" June 7, 2017; Yonhap News Agency, "Moon Says Missile Defense Probe Not Aimed to Reverse Deployment," May 31, 2017.
189. Choi Kyung-woon, "7 out of 10 S. Koreans Support Full THAAD Deployment," *Chosun Ilbo*, August 4, 2017.

190. J. Weston Phippen, "South Korea Asks to Increase Its Firepower," *Atlantic*, July 29, 2017; Reuters, "South Korea's Moon Orders Talks with U.S. to Deploy More THAAD Units after North Korea ICBM Test," July 28, 2017.

191. Kim Hee-sang, Deputy Director, South Korea Ministry of Foreign Affairs Bilateral Economic Affairs Bureau, meeting with Commission, Seoul, South Korea, May 22, 2017; Kim Jiyeon, "Changing Tides: THAAD and Shifting Korean Public Opinion toward the United States and China," *Asan Institute for Policy Studies*, March 20, 2017.

192. Moon Jae-in, "Global Leaders Forum: His Excellency Moon Jae-in, President of the Republic of Korea," Center for Strategic and International Studies, Washington, DC, June 30, 2017.

193. Hahm Chaibong, president, Asan Institute for Policy Studies, meeting with Commission, Seoul, South Korea, May 23, 2017.

194. Ju-min Park, "Three Chinese Fishermen Killed in Confrontation with South Korea Coastguard," Reuters, September 29, 2016.

195. Agence France-Presse, "Beijing 'Strongly Dissatisfied' after South Korean Coastguard Fires Machine Guns at Chinese Trawlers," November 2, 2016; *South China Morning Post*, "South Korea Vows Armed Crackdown against Chinese Fishing Boats after Sinking of Coast Guard Ship," October 11, 2016.

196. Huh Seung-jae, director general, South Korea Ministry of Foreign Affairs, Northeast Asian Affairs Bureau, meeting with Commission, Seoul, South Korea, May 23, 2017; U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017.

197. Huh Seung-jae, director general, South Korea Ministry of Foreign Affairs, Northeast Asian Affairs Bureau, meeting with Commission, Seoul, South Korea, May 23, 2017; U.S. military officials, meeting with Commission, Seoul, South Korea, May 22, 2017; James Pearson and Ju-min Park, "The War that Never Ends between the Koreas," Reuters, June 16, 2014.

198. Evan Ramstad, "Korean Officer Killed in Chinese Sea Clash," *Wall Street Journal*, December 13, 2011.

199. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>; World Bank, "GDP (current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.

200. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>; World Bank, "GDP (current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.

201. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>; World Bank, "GDP (current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.

202. Jennifer McKeivitt, "South Korean Shipbuilder Files for U.S. Bankruptcy," *Supply Chain Dive*, October 21, 2016; Thomas Thompson, "China's Subsidized Shipbuilding," *Diplomat*, October 22, 2014; Nyska Chandran, "Bankruptcy in Sight for South Korean Shipbuilders," CNBC, May 29, 2016.

203. Amy Forni, "Gartner Says Worldwide Sales of Smartphones Grew 9 Percent in First Quarter of 2017," *Gartner*, May 23, 2017; Rob van der Meulen and Amy Forni, "Gartner Says Demand for 4G Smartphones in Emerging Markets Spurred Growth in Second Quarter of 2017," *Gartner*, August 22, 2017.

204. Yonhap News Agency, "Competition between Korea, China Intensifies in ASEAN Market," September 25, 2016.

205. Shannon Tiezzi, "It's Official: China, South Korea Sign Free Trade Agreement," *Diplomat*, June 2, 2015.

206. Japan's Ministry of Foreign Affairs, *Japan-China-Republic of Korea Free Trade Agreement*.

207. World Bank, "GDP (current US\$)." <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>; World Bank, "Population, Total."

208. Shefali Rekhi, "Will RCEP Be a Reality by the End of 2017?" *Straits Times*, April 23, 2017.

209. South Korean Foreign Ministry official, meeting with Commission, Seoul, South Korea, May 22, 2017.

210. Scott A. Snyder, Darcie Draught, and Sungtae Park, "The Korean Pivot: Seoul's Strategic Choices and Rising Rivalries in Northeast Asia," *Council on Foreign Relations*, February 2017, 8.

211. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, oral testimony of Sheila Smith, June 8, 2017.

212. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Sheila Smith, June 8, 2017.

213. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Michael J. Green, April 13, 2017.

214. Senior U.S. military official, meeting with Commission, Tokyo, Japan, May 25, 2017.

215. Japanese military official, meeting with Commission, Tokyo, Japan, May 25, 2017.

216. Japanese law enforcement official, meeting with Commission, Tokyo, Japan, May 25, 2017.

217. Jeffrey Lin and P.W. Singer, "China's Coast Guard Arms up with a New Warship," *Popular Science*, June 1, 2016; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, May 15, 2017, 56; Ryan Martinson, "East Asian Security in the Age of the Chinese Mega-Cutter," *Center for International Maritime Security*, July 3, 2015.

218. Ryan Martinson, "East Asian Security in the Age of the Chinese Mega-Cutter," *Center for International Maritime Security*, July 3, 2015; GlobalSecurity.org, "Haijing 2901."

219. Ayako Mie, "Chinese Spy Ship Enters Japan's Territorial Waters for Second Time since End of WWII," *Japan Times*, June 15, 2016; Ayako Mie, "First Chinese Warship to Skirt Senkakus Triggers Protest from Tokyo," *Japan Times*, June 9, 2016.

220. Lyle J. Morris, "The New 'Normal' in the East China Sea," *RAND Corporation*, February 27, 2017; Japan's Ministry of Foreign Affairs, *Protest Against the Intrusion of Chinese Coast Guard into Japan's Territorial Waters Surrounding the Senkaku Islands*, August 6, 2016.

221. Lyle J. Morris, "The New 'Normal' in the East China Sea," *RAND Corporation*, February 27, 2017.

222. Hu Kaiyang, Zhang Bin, and Li Zhengsong, "China Conducts Large-Scale Sovereignty Defense Exercise in South China Sea: Three Services Mobilize H-6 for Air Support," *Dangdai Haijun*, August 30, 2016.

223. Lyle J. Morris, "The New 'Normal' in the East China Sea," *RAND Corporation*, February 27, 2017; Zhang Hongzhou, "China's Fishing Industry: Current Status, Government Policies, and Future Prospects," *CNA*, July 9, 2015.

224. Japanese defense official, meeting with Commission, Tokyo, Japan, May 25, 2017.

225. Japan's Ministry of Defense, *Scrambles by Country/Region (Past Five Years)*. [http://www.mod.go.jp/js/Press/press2017/press\\_pdf/p20170413\\_01.pdf](http://www.mod.go.jp/js/Press/press2017/press_pdf/p20170413_01.pdf)

226. Japan News, "New China Rig Found Near Japan-China Median Line," August 1, 2017.

227. *South China Morning Post*, "Japan Lodges Protest against China's Activity in Disputed Gas Field," August 1, 2017; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 233-234.

228. *South China Morning Post*, "Japan Lodges Protest against China's Activity in Disputed Sea Gas Field," August 1, 2017; Danielle Demetriou, "Japan Releases Photographs of Chinese Offshore Rigs," *Telegraph*, July 23, 2015.

229. U.S. Pacific Command, *The Chief of Staff, Japan Joint Staff-Commander, U.S. Pacific Commander Conference and Tour*, May 17, 2017.

230. Nobuhiro Kubo and Tim Kelly, "Japan Opens Radar Station Close to Disputed Isles, Drawing Angry China Response," *Reuters*, March 27, 2016.

231. Noburo Yamaguchi, senior fellow, Tokyo Foundation, meeting with Commission, Tokyo, Japan, May 24, 2017.

232. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Abraham Denmark, June 8, 2017; Hiroyasu Akutsu, "Assessing North Korean Security and Military Threats: A Japanese Perspective," *Carnegie Endowment for International Peace*, December 15, 2016; U.S. Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea 2015*, January 5, 2016, 19.

233. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Sheila Smith, June 8, 2017.

234. Reiji Yoshida and Ayako Mie, "North Korea Defies U.N. by Firing Long-Range Rocket over Okinawa," *Japan Times*, February 7, 2016; Jethro Mullen and Paul Armstrong, "North Korea Carries out Controversial Rocket Launch," *CNN*, December 12, 2012.

235. Jonathan Cheng, Peter Landers, "North Korea Launches Missile over Japan," *Wall Street Journal*, August 29, 2017.
236. Reuters, "ASEAN Officers Take South China Sea Tour aboard MSDF's Izumo Helicopter Carrier," June 20, 2017; Robin Harding, "Japan Uses New Defense Law to Escort US Vessel," *Financial Times*, May 1, 2017; Reuters, "Japan PM Abe Says No Defense Budget Ceiling as 1 Percent of GDP," March 1, 2017; Ayako Mie, "Security Laws Usher in New Era for Pacifist Japan," *Japan Times*, March 29, 2016; Satoru Mori, "The New Security Legislation and Japanese Public Reaction," *Tokyo Foundation*, December 2, 2015; Martin Fackler, "Japan Ends Decades-Long Ban on Export of Weapons," *New York Times*, April 1, 2014.
237. Motoko Rich, "Japanese Government Urges Another Increase in Military Spending," *New York Times*, August 30, 2016; Prime Minister Abe and His Cabinet, *The Constitution of Japan*. [http://japan.kantei.go.jp/constitution\\_and\\_government\\_of\\_japan/constitution\\_e.html](http://japan.kantei.go.jp/constitution_and_government_of_japan/constitution_e.html).
238. *Nikkei Asian Review*, "Japanese Split down the Middle on Constitutional Change: Poll," May 3, 2017.
239. U.S. government officials, meeting with Commission, Tokyo, Japan, May 26, 2017.
240. Isabel Reynolds and Yuki Hagiwara, "Japan Ruling Party Weighs First Offensive Weapons Since War," Bloomberg, March 28, 2017.
241. Lieutenant General Osamu Onoda, meeting with Commission, Tokyo, Japan, May 25, 2017.
242. Elizabeth Magnusson, "First Japanese F-35A Arrives at Luke," *United States Air Force*, November 29, 2016.
243. U.S. Defense Contract Management Agency, *First Japan Built F-35 Prepares for Take Off*, June 9, 2017.
244. U.S. Defense Contract Management Agency, *First Japan Built F-35 Prepares for Take Off*, June 9, 2017; Tim Kelly and Nobuhiro Kubo, "Exclusive: Japan Secures Extra Cost Cuts on U.S. F-35 Fighter Jet Package—Sources," Reuters, February 1, 2017.
245. Yomiuri Shimbun, "Japan Mulls Equipping F-35s with Air-to-Surface Missiles," June 26, 2017.
246. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Northeast Asia and Continental Southeast Asia*, written testimony of Sheila Smith, June 8, 2017.
247. Lieutenant General Osamu Onoda (Ret.), meeting with Commission, Tokyo, Japan, May 25, 2017; Reuters, "Japan Favors Aegis Ashore over THAAD to Boost Missile Defense: Sources," May 13, 2017.
248. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>.
249. United Nations Comtrade, "International Trade Statistics Database." <https://comtrade.un.org/>.
250. Kazunori Takada, "Discretion Pays for Japanese Brands in China amid Territorial Dispute," Reuters, May 21, 2014; Hunsu Haq, "Chinese Authorities Ask Booksellers to Ban Japanese Works," *Christian Science Monitor*, September 25, 2012; Yoko Kubota, "Japan Carmakers Face \$250 Million in Lost China Output, New Risk," Reuters, September 20, 2012.
251. Yoko Kubota, "Japan Carmakers Face \$250 Million in Lost China Output, New Risk," Reuters, September 20, 2012.
252. Jun Saito, senior research fellow, Japan Center for Economic Research, meeting with Commission, Tokyo, Japan, May 26, 2017.
253. Jonathan D. Pollack, "Order at Risk: Japan, Korea, and the Northeast Asian Paradox," *Brookings Institution*, September 2016, 19.
254. Motoko Rich, "Japan Envoy, Recalled over 'Comfort Woman' Statue, Is Returning to Seoul," *New York Times*, April 3, 2017.
255. Choe Sang-hun, "Japan and South Korea Settle Dispute over Wartime 'Comfort Women,'" *New York Times*, December 28, 2015; Japan's Ministry of Foreign Affairs, *Announcement by Foreign Ministers of Japan and the Republic of Korea at the Joint Press Occasion*, December 28, 2015.
256. Choe Sang-hun and Motoko Rich, "Japan Recalls Ambassador to South Korea to Protest 'Comfort Woman' Statue," *New York Times*, January 6, 2017; Prime Minister of Japan and His Cabinet, *Press Conference by the Chief Cabinet Secretary (Excerpt)*, January 5, 2017.
257. Kyodo, "Historical Issues Should Not Impede Ties with Japan, South Korean President Moon Jae-in Says," June 12, 2017; James Griffiths, "South Korea's New President Questions Japan 'Comfort Women' Deal," CNN, June 5, 2017.
258. Kyodo, "Historical Issues Should Not Impede Ties with Japan, South Korean President Moon Jae-in Says," June 12, 2017.

259. Robert E. Kelly, "The Complex China-South Korea Relationship," *Diplomat*, June 18, 2014; Andrew Browne, "South Korea-Japan Rift on Exhibit in China," *Wall Street Journal*, March 5, 2014.
260. Michael Hart, "Dokdo-Takeshima Islands: South Korea and Japan's Intractable Maritime Dispute—Analysis," *Eurasia Review*, July 21, 2017.
261. Hideaki Kaneda, adjunct fellow, Japan Institute for International Affairs, meeting with Commission, Tokyo, Japan, May 24, 2017.
262. Anna Fifield, "Japan and South Korea Sign Long-Awaited Intelligence-Sharing Deal," *Washington Post*, November 23, 2016.
263. Franz-Stefan Gady, "U.S., ROK, Japan Navies Conduct First Joint Anti-Submarine Warfare Drill," *Diplomat*, April 5, 2017; Brad Lendon, "US, South Korea, Japan Start Drills off North Korea," CNN, March 14, 2017.
264. Japanese defense official, meeting with Commission, Tokyo, Japan, May 25, 2017.
265. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, testimony of Michael J. Green, April 13, 2017.
266. Hideaki Kaneda, adjunct fellow, Japan Institute for International Affairs, meeting with the Commission, Tokyo, Japan, May 24, 2017; Noburo Yamaguchi, senior fellow, Tokyo Foundation, meeting with the Commission, Tokyo, Japan, May 24, 2017.
267. Official, U.S. Embassy Seoul, interview with Commission staff, September 27, 2017; Reuters, "Japan Discusses How to Evacuate Citizens from South Korea if Crisis Hits," April 14, 2017; Kim Chul-soo, "Number of U.S. Citizens Living in South Korea Rises 30 Percent in 10 Years," *Korea Times*, July 2, 2015.
268. John C. Severns, "U.S. Forces Japan Participates in Annual Non-Combatant Evacuation Operation Exercise," *U.S. Forces Japan*, June 16, 2017.
269. U.S. defense official, meeting with Commission, Seoul, South Korea, May 22, 2017.
270. Brian Moore, "The US, Japan, and South Korea Need to Get on the Same Page," *Defense One*, May 1, 2017.
271. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 425.

## SECTION 3: CHINA AND TAIWAN

### Key Findings

- Taiwan President Tsai Ing-wen has pursued a cross-Strait policy of “maintaining the status quo,” demonstrating goodwill toward Beijing, and reassuring her counterparts across the Taiwan Strait. However, Beijing insists she endorse the “1992 Consensus” and continues to increase its pressure on Taipei in response to her refusal to do so. At the same time, Beijing is bypassing the government of Taiwan in its pursuit of “deepening economic and social integrated development” across the Taiwan Strait. It is doing so through efforts to enhance its economic leverage over Taiwan and increase the number of young people from Taiwan traveling, studying, and working in China.
- China remains Taiwan’s largest trading partner and largest source of foreign direct investment. Taiwan’s continued economic reliance on China makes it vulnerable to political pressure from Beijing and susceptible to fluctuations in China’s economy. To help reduce this dependence, President Tsai is pursuing an agenda, referred to as the New Southbound Policy, to diversify Taiwan’s economic ties, particularly with Southeast Asia, Australia, India, New Zealand, and other South Asian countries.
- The threat to Taiwan posed by Chinese military modernization continues to grow as the cross-Strait military balance has shifted toward China. Taiwan is engaged in a robust program to enhance its defensive capabilities through its domestic defense industrial production, the procurement of U.S. weapons systems, and its transition to an all-volunteer force. However, these efforts face a major challenge from the scope and speed of the modernization of the People’s Liberation Army.
- In an attempt to delegitimize Taiwan on the global stage, Beijing’s pressure on Taipei over its participation in the international community has become more pronounced over the past year. Since December 2016, two countries have severed diplomatic relations with Taiwan and established official ties with China, and Beijing has blocked Taiwan’s participation in multiple international fora in which it has participated in recent years. Beijing has also pressured countries to downgrade unofficial ties with Taipei.
- Beijing seeks to undermine Taiwan’s democracy through collaboration with various individuals and groups in Taiwan and spreading disinformation through social media and other online tools. In July, Taiwan media reported, based on Taiwan government information, that “Chinese influence” was involved in protests and the spread of disinformation against the Tsai Administration.

- Despite uncertainties conferred by a change in administration in the United States, the trend in U.S.-Taiwan relations remains positive. President Tsai has made enhancing Taiwan's economic relations with the United States a top priority for her Administration. Nonetheless, the two sides have not made progress resolving a long-standing dispute over imports of U.S. pork. In U.S.-Taiwan security cooperation, the Trump Administration's approval of arms sales to Taiwan was a sign of continued support for Taiwan.

### **Recommendations**

The Commission recommends:

- Congress urge the Administration to invite Taiwan to participate, at least as an observer, in U.S.-led bilateral and multilateral military and security-related exercises, including the Rim of the Pacific (RIMPAC) maritime exercise, Red Flag air-to-air combat training exercises, and Cyber Storm cybersecurity exercise, in order to support Taiwan's efforts to enhance its defense capabilities, expand opportunities for Taiwan to contribute to regional and international security, and counter China's efforts to limit Taiwan's international space.
- Congress highlight the accomplishments and otherwise elevate the visibility of the Global Cooperation and Training Framework, which facilitates U.S.-Taiwan cooperation in areas such as public health and disaster relief. Such efforts possibly could include examining whether the program would benefit from additional staffing and funding.
- Congress urge the executive branch to reexamine its practice regarding reciprocal visits by senior U.S. and Taiwan military officers and civilian officials with the aim of increasing high-level exchanges, including Cabinet-level officials and senior National Security Council officials, as part of an effort to enhance U.S.-Taiwan relations.
- Congress ensure relevant U.S. military personnel are sufficiently familiar with Taiwan's defense situation by allocating funds for U.S. military personnel to take courses at Taiwan's defense educational institutions (such as Taiwan's war college, service command and staff schools, and airborne school) and other courses in Taiwan in an unofficial capacity through the American Institute in Taiwan, in order to ensure the U.S. military is prepared to act in support of Taiwan's defense if called on to do so.

### **Introduction**

Over the past year, Beijing has increased its pressure on Taipei on multiple fronts. Taiwan President Tsai Ing-wen's Administration has followed a cross-Strait policy of "maintaining the status quo." However, President Tsai has not acquiesced to Beijing's de-

mand that she endorse the “one China” framework\* for cross-Strait relations that Taipei and Beijing both endorsed during the Ma Ying-jeou Administration. One of the areas in which Beijing is pressuring Taipei is Taiwan’s diplomatic relations and participation in international fora. Most notably, Beijing established diplomatic relations with Sao Tome and Principe and Panama after they broke official ties with Taiwan.

These developments have added to the challenges facing the Tsai Administration, which include transforming Taiwan’s economy as part of reducing its dependence on cross-Strait trade and investment. The Tsai Administration also seeks to increase Taiwan’s defensive and deterrent capabilities amid the growing threat from China’s military modernization program and the resulting shift in the cross-Strait military balance toward China. U.S.-Taiwan cooperation can help Taiwan meet these challenges, and despite uncertainty surrounding Washington’s Asia policy in the wake of a change in administration, U.S.-Taiwan ties remain robust. The announcement of possible arms sales to Taiwan in June 2017 was one of several indications of continued U.S. support. The United States and Taiwan share values of democracy, rule-of-law, and respect for human rights, and Taiwan is an important economic and security partner. Notably, in 2017, Freedom House and Reporters Without Borders ranked Taiwan first in Asia for press freedom.<sup>1</sup>

This section explores developments in cross-Strait relations, cross-Strait trade and investment, Taiwan’s international engagement, Taiwan’s military and security situation, and U.S.-Taiwan relations. It is based on consultations with experts on Taiwan and cross-Strait relations, the Commission’s fact-finding trip to Taiwan in 2017, and open source research and analysis.

## **Cross-Strait Relations**

### ***Political Relations***

As the Commission noted in its *2016 Annual Report to Congress*, cross-Strait relations entered a period of increased tension after President Tsai was elected in January 2016, as Beijing steadily increased pressure on Taiwan. President Tsai † has followed a cross-Strait policy of “maintaining the status quo” of neither formal independence for Taiwan nor unification of Taiwan and China, and has repeatedly demonstrated goodwill toward Beijing and sought to reassure her counterparts across the Taiwan Strait. Nevertheless, Beijing demands that President Tsai endorse the “one China” framework for cross-Strait relations that Taipei and Beijing endorsed during the administration of her predecessor,

\*Beijing insists that cross-Strait communication and talks be based on the “1992 Consensus,” a tacit understanding reached at a meeting between representatives of Taiwan and China in 1992 that there is only “one China” but that each side may maintain its own interpretation of the meaning of “one China.”

†President Tsai is also the chairperson of the Democratic Progressive Party (DPP). In 1991, the DPP adopted a clause to its charter that called for formal independence and the establishment of the Republic of Taiwan, but this clause was obviated by the DPP’s 1999 “Resolution on Taiwan’s Future” that states that Taiwan is already a “sovereign and independent country.” Dafydd J. Fell, “Parties and Party Systems,” in Gunter Schubert, ed., *Routledge Handbook of Contemporary Taiwan*, Routledge, 2017; J. Michael Cole, “To Freeze or Not to Freeze: The DPP’s ‘Independence Clause,’” *Diplomat*, July 23, 2014.

Ma Ying-jeou. Beijing insists that cross-Strait communication and talks be based on the “1992 Consensus,” a tacit understanding reached at a meeting between representatives of Taiwan and China (when Lee Teng-hui was President of Taiwan and Jiang Zemin was General Secretary of the Chinese Communist Party) that there is only “one China” but that each side may maintain its own interpretation of the meaning of “one China.” President Tsai told Commissioners in May 2017 that Beijing has a “mental block” regarding the “1992 Consensus.”<sup>2</sup> President Tsai has refused to submit to Beijing’s pressure, as she persists in seeking to maintain stability in cross-Strait relations and rejecting a “return to the old path of confrontation.”<sup>3</sup> The 2017 China Security Report by the National Institute for Defense Studies in Japan notes, “The Xi Jinping government has not yet subjected Tsai Ing-wen to the kind of personal criticism once directed at Lee Teng-hui and Chen Shui-bian,\* a situation likely designed to leave some leeway for negotiations with her administration.”<sup>4</sup> Nonetheless, Beijing’s pressure on Taipei has increased in response to President Tsai’s refusal to endorse the “1992 Consensus.” Among the measures Beijing is employing are the following:

***Beijing suspends cross-Strait communication:*** Last year, for the first time in eight years, Beijing suspended official and semi-official † cross-Strait communication and meetings.<sup>5</sup> In June 2016, a spokesperson for China’s Taiwan Affairs Office ‡ announced “the cross-Strait contact and communication mechanisms have been suspended because the Taiwan side has not recognized the ‘1992 Consensus,’ this common political foundation that embodies the one China principle.”<sup>6</sup> During the Commission’s May 2017 trip to Taiwan, Minister of Taiwan’s Mainland Affairs Council Chang Hsiao-yueh confirmed all official channels of communication with China remain closed. She said other Taiwan ministries are still able to communicate with their Chinese counterparts on technical issues, such as managing cross-border health threats, and some unofficial communication channels exist, including academic exchanges. However, Minister Chang said the current channels of communication are insufficient.<sup>7</sup> She also said that Taipei continues to send notices to Beijing per established procedures (generally via fax, but occasionally via phone or press release). The Chinese side acknowledges receipt but will not respond.<sup>8</sup> Minister Chang pointed to the July 2016 incident in which there was a missile misfire during a routine Taiwan military exercise to illustrate the importance of reliable communication channels. She said the lack of communications prevented quick notification of Beijing.<sup>9</sup>

\*Chen Shui-bian is a former President of Taiwan.

†Beijing suspended communication and meetings between the semiofficial Straits Exchange Foundation and the Association for Relations Across the Taiwan Straits. Taiwan’s Straits Exchange Foundation and China’s Association for Relations Across the Taiwan Strait facilitate cross-Strait negotiations in the absence of formal ties between the governments of Taiwan and China. Although the two bodies are semiofficial organizations, they receive direction from their respective governments.

‡The Taiwan Affairs Office is an agency within China’s State Council that is responsible for overseeing China’s cross-Strait policies. The Mainland Affairs Council, a cabinet-level agency in Taiwan’s executive branch, is responsible for overseeing Taiwan’s cross-Strait policies.

***Beijing reduces the number of Chinese group tours to Taiwan and Chinese students at Taiwan universities:*** The Chinese government has reduced visits to Taiwan by Chinese tourists.<sup>10</sup> Between May 2016 and May 2017, the total number of Chinese tourists visiting Taiwan decreased by 38.3 percent.<sup>11</sup> According to Bonnie S. Glaser, Senior Advisor for Asia at the Center for Strategic and International Studies, “Privately, Chinese officials insist that the government is not actively discouraging tourists from visiting Taiwan. Rather, they say, it is simply no longer encouraging mainland Chinese to travel to the island.”<sup>12</sup> Beijing has not publicly acknowledged a role in the drop in Chinese tourism to Taiwan. Minister Chang told the Commission that the reduction in group tours is “severely” affecting vendors catering exclusively to Chinese visitors.<sup>13</sup> In addition to reducing group tours to Taiwan, Beijing cut the number of Chinese students allowed to study at Taiwan universities in 2017 by more than half.<sup>14</sup> Taipei continues to take steps to attract tourists from other countries, a policy that has helped to offset the economic impacts (including decreased profits of hospitality businesses, retail stores, and food vendors and restaurants) of the drop in tourists from China (for more information on this policy, see “New Southbound Policy,” later in this section). Taipei seeks to attract more students from other Asian countries.<sup>15</sup> Although Beijing has reduced the number of group tours to Taiwan and the number of Chinese citizens studying in Taiwan, it is encouraging Taiwan citizens to visit as well as to work and study in China (for more information on cross-Strait tourism, see “Cross-Strait Trade and Investment,” later in this section).

***Additional economic levers used by Beijing to pressure Taipei:*** China’s General Administration of Quality Supervision, Inspection and Quarantine has destroyed or returned imports from Taiwan to China due to what Zhi Shuping, the director of the agency, described as “political factors.”<sup>16</sup> According to Mr. Zhi, these factors inhibited the rectification process that would otherwise be in place to communicate with the Taiwan side and resolve problems with packaging or insufficient documentation.<sup>17</sup> In 2016, 722 shipments of food and cosmetics imports from Taiwan were rejected at Chinese ports, accounting for 23.7 percent of all products denied entry to China last year.<sup>18</sup> Mr. Zhi admitted the 2016 rejection rate for Taiwan products was unusually high, but maintained imports from Taiwan were subjected to the same standards as all other imports.<sup>19</sup> In January 2017, around 175 shipments of Taiwan imports were rejected, or 43 percent of all import shipments denied entry into China that month.<sup>20</sup>

During meetings with the Commission in May 2017, Minister Chang and a business representative in Taiwan said Taiwan businesspeople operating in China are under pressure from the threat of surprise inspections or audits.<sup>21</sup> It was reported in November 2016 that an entity related to the Taiwan restaurant chain Hai Pa Wang International in Chengdu was subject to an inspection that claimed to discover a food safety violation. The company was fined nearly \$60,000. Allegations about the safety of the production activities of three other branches of the company in China also surfaced. The next month, the company took out a full-page advertisement in Tai-

wan's *Want Daily* newspaper for a letter in which it pledged its support for Beijing's position, declaring "Hai Pa Wang's firm belief that the two sides of the Taiwan Strait are part of one China and in peaceful win-win has never wavered."<sup>22</sup>

***Beijing refuses to facilitate repatriation of Taiwan citizens accused of fraud in third countries:*** Between April 2016 and August 2017, 270 Taiwan citizens living in Armenia, Cambodia, Indonesia, Kenya, Malaysia, and Vietnam who were accused of committing telecommunications fraud against people in China were deported to China, rather than to Taiwan.<sup>23</sup> This constituted a break from a pattern of cross-Strait law enforcement cooperation—begun in 2011—in countries with which Taiwan does not have diplomatic relations.<sup>24</sup> Beijing's motivation for not allowing the suspects to be sent to Taiwan initially may have stemmed solely from its desire to crack down on telecommunications fraud against Chinese citizens (the first group of Taiwan citizens deported from Kenya in April 2016 had been arrested in December 2014, and Beijing requested that they be sent to China in January 2015, one year before President Tsai's election).<sup>25</sup> Subsequently, however, Beijing likely also began to view these cases as another means to pressure Taipei.<sup>\*26</sup>

***Taiwan excluded from international fora:*** Since April 2016, Taiwan officials and other citizens have been prevented from participating in numerous international fora in which they participated in preceding years. In one of the most significant of these exclusions, the Taiwan government did not receive an invitation to attend the annual UN World Health Assembly held in May 2017 after having been invited each year since 2009.<sup>27</sup> In addition, the UN's International Civil Aviation Organization did not invite Taiwan to participate in the organization's 2016 Council Assembly, a reversal from the previous assembly in 2013. In both cases, Taiwan Affairs Office spokespersons said Taiwan could not participate because the Tsai Administration had not endorsed the "1992 Consensus."<sup>28</sup> Despite being allowed to participate in recent years, individuals from Taiwan also were barred from a symposium on the steel sector organized by the Belgian government and the Organization for Economic Cooperation and Development (OECD), the annual conference of the UN's International Labor Organization, and a meeting of the Food and Agriculture Organization of the UN's Committee on Fisheries.<sup>†29</sup> In

\*In August 2016, a journalist requested that a Taiwan Affairs Office spokesperson confirm whether Taiwan's Mainland Affairs Council had protested to Beijing through cross-Strait communication channels regarding Kenya's deportation of Taiwan citizens to China. In his response, the spokesperson stated that the mechanisms for cross-Strait communication and talks had been suspended because Taipei had not endorsed the "1992 Consensus." He added that "the Taiwan side should face up to this fact and make practical efforts to resume the working of these mechanisms." China's Taiwan Affairs Office, *Taiwan Affairs Office: The People on Both Sides of the Strait Support Cracking down on Telecommunications Fraud According to Law. The Taiwan Side Should Make Practical Efforts to Resume the Working of the Cross-Strait Contacts and Communication Mechanisms*, August 8, 2016.

†In April 2016, the Belgian government barred a Taiwan government delegation from attending a meeting on the steel sector organized by the Belgian government and the OECD in Brussels. Although Taiwan is not a member of the OECD, it has been allowed to attend OECD steel committee meetings since 2005. In June 2016, a professor of labor relations from Taiwan's Chung Cheng University and a study group she was leading were blocked twice from attending an annual conference of the UN's International Labor Organization. The professor had led study groups to attend the conference in 2014 and 2015 without a problem. In July 2016, Taiwan officials were not allowed to participate in a meeting of the Food and Agriculture Organization of the UN's Committee on Fisheries, an organization in which they have been permitted to participate since 2003. Leaf Chiang, Tai Ya-chen, and Lilian Wu, "Chinese Bullying Sends Taiwan Packing from

May 2017, Taiwan's delegation was forced to leave a meeting of the Kimberly Process held in Perth, Australia, after Chinese officials at the meeting protested their participation.<sup>30</sup> In a meeting with the Commission in May 2017, Joseph Wu, then secretary general of Taiwan's National Security Council, said Beijing is "gearing up to kick Taiwan out" of more international organizations.<sup>31</sup> In addition, he said that although Taiwan continues to be able to participate in Asia Pacific Economic Cooperation (APEC) meetings, Beijing is "causing trouble" for Taiwan there as well.<sup>32</sup>

Although Beijing has increased its pressure on Taiwan's presence in certain international fora since President Tsai's election, Taiwan has long been unable to participate in many other international fora, such as the International Criminal Police Organization (INTERPOL).<sup>\*</sup> Taiwan was forced to withdraw from INTERPOL in 1984, when China applied to join.<sup>33</sup> Notably, INTERPOL's current president is Meng Hongwei, China's Vice Minister of Public Security. He was elected at the general assembly meeting in November 2016 and his term lasts until 2020.<sup>34</sup>

Since Taiwan is not a member of INTERPOL, it does not have access to the organization's I-24/7 global police communication system.<sup>35</sup> This system enables law enforcement agencies to share urgent information and access INTERPOL's criminal databases, which include information on suspected criminals and lost or stolen travel documents, among other things.<sup>36</sup> The Taiwan government requested access in preparation for Taipei's hosting of the 2017 Universiade international athletic competition, but INTERPOL refused and said it must access the system through the Chinese government.<sup>37</sup> To deal with the problem of not having access to the INTERPOL system, the Taiwan government developed bilateral counterterrorism intelligence-sharing arrangements with other countries, including the United States.<sup>38</sup>

***Beijing turns away from the cross-Strait "diplomatic truce":*** In a significant departure from the status quo of the previous eight years, Beijing established diplomatic relations with three of Taiwan's former diplomatic partners (one broke ties with Taiwan in 2013, long before President's Tsai's election, and two broke ties after her inauguration). Beijing re-established diplomatic relations with The Gambia in March 2016 and Sao Tome and Principe<sup>†</sup> in December 2016, and established diplomatic relations with Panama in June 2017. In 2008, Taipei and Beijing reached a tacit understanding to stop using financial incentives to

OECD Meeting," *Focus Taiwan*, April 19, 2016; Jamey Keaten, "Taiwan Study Group Baffled over Blocked Geneva Visit to UN," Associated Press, June 8, 2016; Christie Chen and Yang Shumin, "Taiwan Officials Forced out of UN Fisheries Meeting Allegedly by China," *Focus Taiwan*, September 21, 2016.

<sup>\*</sup>In March 2016, then President Barack Obama signed a bill (S. 2426) that mandated the Secretary of State report to Congress within 90 days on the U.S. government's strategy for supporting Taiwan's participation in INTERPOL as an observer. The U.S. Department of State submitted this report in June 2016. Despite the U.S. government's efforts, INTERPOL turned down Taiwan's request to attend its November 2016 general assembly meeting as an observer. Central News Agency, "Obama Inks Taiwan INTERPOL Bid Bill," *China Post*, March 20, 2016; Executive Communication EC5932, 114th Cong., 2nd Sess., June 28, 2016; Central News Agency, "Taiwan Barred from Interpol Assembly," November 6, 2016.

<sup>†</sup>After gaining independence from Portugal in 1975, Sao Tome and Principe established diplomatic relations with China. Then, in 1997, Sao Tome and Principe established diplomatic relations with Taiwan, and China suspended ties. Associated Press, "China Resumes Ties with Sao Tome, Which Turned away from Taiwan," December 26, 2016.

compete for recognition from each other's diplomatic partners—a “diplomatic truce.”<sup>39</sup> During the period that followed, Beijing also rejected overtures from several of Taiwan's partners to establish diplomatic relations with China to avoid harming cross-strait relations.<sup>40</sup> (For example, The Gambia severed ties with Taiwan in 2013, but the Chinese government did not re-establish relations with The Gambia for more than two years.<sup>41</sup>) The extent to which Beijing enticed Sao Tome and Principe and Panama to cut diplomatic relations with Taiwan, as opposed to merely indulging their wishes to establish diplomatic ties, is unclear. Speaking in reference to Sao Tome and Principe, Minister Chang told the Commission that Beijing “took our ally.”<sup>42</sup> After Panama established ties with China, Taiwan's Ministry of Foreign Affairs stated Panama “caved in to Beijing and decided to switch its diplomatic engagement toward the Beijing authorities for economic gain.”<sup>43</sup> Regardless, given Beijing's previous rejection of overtures from several countries to establish diplomatic relations—including from Panama in 2009 and Sao Tome and Principe in 2014<sup>44</sup>—its newfound willingness to establish relations reflects a trend of increasing pressure on Taipei.<sup>45</sup>

A January Bloomberg report found that “people and companies with links to China” offered funding to the government of Burkina Faso in exchange for ending diplomatic relations with Taiwan,\*<sup>46</sup> suggesting China has indeed resumed actively courting at least one of Taiwan's partners with financial incentives. In an interview with Bloomberg, Burkina Faso's Foreign Minister Alpha Barry said, “We get outrageous proposals telling us, ‘if you sign with Beijing we'll offer you \$50 billion or even more.’”<sup>47</sup> However, Minister Barry expressed support for the status quo, saying, “Taiwan is our friend and our partner. We're happy and we see no reason to reconsider the relationship.”<sup>48</sup>

Taiwan's diplomatic relationships, even those with small countries like Sao Tome and Principe, are important to its efforts to preserve its voice in international affairs. Symbolically, they confer legitimacy on Taiwan's position on the world stage in the face of marginalization by China.<sup>49</sup> Practically, their advocacy for Taiwan's participation in international organizations helps Taiwan in its pursuit of greater international space.<sup>50</sup> These are not Taiwan's only sources of international support, however. In fact, Taiwan almost certainly gains more from its unofficial relations with countries that have extensive international influence, such as the United States, that promote an expansion of opportunities for Taiwan to participate in the international community and support Taiwan in other ways.<sup>51</sup> Still, diplomatic relations are an important component of Taiwan's toolbox for maintaining a presence on the international stage.

Following the severing of diplomatic ties with Taipei by Sao Tome and Principe and Panama, and Beijing's establishing of diplomatic relations with them, there is a chance other countries will break ties with Taipei and establish diplomatic relations with Beijing. In June 2017, Taiwan's Foreign Minister Lee Ta-wei voiced concerns that Taiwan's diplomatic relations with two other countries, which

\*It is unclear whether these people and companies are connected to the Chinese government. Pauline Bax, Bloomberg News Journalist, interview with Commission staff, January 30, 2017.

he did not name, might also be at risk.<sup>52</sup> In 2016, reports emerged that Beijing and the Vatican—which has diplomatic relations with Taiwan\*—were in talks to address longstanding areas of disagreement.<sup>53</sup> A resolution of these issues and warming of relations between China and the Holy See could put Taiwan's relations with the Vatican at risk. Then Secretary General Wu told the Commission Taipei continues to monitor the Vatican's rapprochement with China. He said there appear to be limits on concessions either side is willing to make; China is unwilling to allow for the kind of religious freedom the Vatican seeks.<sup>54</sup>

***Beijing pressures unofficial diplomatic partners:*** In January 2017, during a visit by China's foreign minister Wang Yi to Nigeria, which does not have diplomatic relations with Taiwan, Nigeria's foreign minister Geoffrey Onyeama announced that the Nigerian government had told Taipei to move its representative office from Abuja, the capital, to Lagos.<sup>55</sup> In his comments to journalists, Minister Onyeama said the office “will be moving to Lagos to the extent that it functions as a trade mission with a skeletal staff.”<sup>56</sup> A spokesperson for China's Ministry of Foreign Affairs said Nigeria's actions “help settle the legacy issue that bears on the political mutual trust between China and Nigeria once and for all, and remove the stumbling blocks obstructing the sound development of bilateral relations.”<sup>57</sup> In June 2017, Director-General of the Taiwan Ministry of Foreign Affairs' department of West Asian and African affairs Chen Chun-shen said that, under pressure from Beijing, the Nigerian government also demanded Taiwan change the name of its representative office from Trade Mission of the ROC† (Taiwan). He also said the governments of Bahrain, Dubai, Ecuador, and Jordan—all of which have unofficial relations with Taiwan—also demanded Taiwan change its representative offices' names.<sup>58</sup> These countries comprise five of six countries in which the names of Taiwan's representative offices include “ROC” or “Taiwan.”‡<sup>59</sup> Subsequently, the Taiwan government changed the names of its representative offices in Ecuador and Dubai from “Commercial Office of ROC (Taiwan)” to “Commercial Office of Taipei.”<sup>60</sup> The question of Taiwan's official designation in international contexts is important to both Taipei and Beijing, with Beijing advocating for names that suggest Taiwan's status as a mere province of China and Taipei advocating for names that convey separateness and autonomy from China.

*Detention of Lee Ming-che in China Continues a Disturbing Trend and Further Strains Cross-Strait Relations*

Chinese authorities' detention of Lee Ming-che, a human rights advocate from Taiwan, in China further strained cross-Strait relations. Mr. Lee was detained in March 2017 after he entered mainland China from Macau.<sup>61</sup> In May 2017, a Taiwan Affairs Office spokesperson announced that Mr. Lee had been arrested on suspi-

\*The Vatican established ties with the Republic of China government in 1942 and maintained those ties after the government moved to Taiwan and Beijing expelled the Vatican's representative from China in 1951. Kevin Hsu, “China and the Vatican: Toward a New Era?” *Diplomat*, September 22, 2016.

†ROC stands for Republic of China, Taiwan's official name.

‡Taiwan's representative office in the United States is called the Taipei Economic and Cultural Representative Office in the United States (TECRO).

cion of “subverting state power.”<sup>62</sup> In September 2017, Mr. Lee went on trial during which he pleaded guilty.<sup>63</sup> Prior to his trial, Chinese authorities did not allow his family to visit him.<sup>64</sup> Human Rights Watch’s China director Sophie Richardson wrote that Mr. Lee’s detention and prosecution were “riddled with violations of fair trial rights, including incommunicado detention and denial of defense counsel of choice.”<sup>65</sup> In further describing the trial of Mr. Lee and a Chinese activist, Peng Yuhua, Dr. Richardson wrote, “the prosecution presented no evidence suggesting the pair’s activities were anything but acts of peaceful expression and association.”<sup>66</sup> He may be the first Taiwan citizen to be charged in China with “subverting state power.”<sup>67</sup> Mr. Lee’s arrest is part of a disturbing trend. In its statement on Mr. Lee’s case in April 2017 Human Rights Watch observed that, “Since President Xi Jinping came to power in March 2013, authorities have apprehended citizens of other countries—inside and outside China—for their work helping Chinese human rights lawyers and activists or for speaking critically of Chinese leaders.”<sup>68</sup> Two foreign citizens affiliated with Hong Kong publishing house Mighty Current Media, a publisher of political gossip books banned in mainland China, reportedly were abducted outside of mainland China and brought there, where they were detained.<sup>69</sup> In addition, the Taiwan Foundation for Democracy writes that “Lee’s case will undoubtedly exacerbate fears among Taiwan’s nongovernmental organization community that their activities in China may also subject them to arbitrary arrest and detention.”<sup>70</sup>

### ***Beijing’s Outreach to Taiwan Political Parties and Local Governments***

At the same time Beijing has reduced contact with Taiwan’s central government, it has continued its outreach to politicians at the party and local government levels as a way to promote its preferred cross-Strait policy and support the political opposition by demonstrating the benefits of doing what Beijing wants.<sup>71</sup> During her meeting with the Commission in May 2017, Minister Chang said Beijing “is trying to divide us” and “downgrade the [Taiwan] government’s role” in cross-Strait relations by engaging with Taiwan’s opposition groups and other nongovernment entities.<sup>72</sup> Beijing adopted this strategy during the administration of President Chen Shui-bian, Taiwan’s previous president from the Democratic Progressive Party (DPP).<sup>73</sup> This strategy has included meetings between Chinese Communist Party officials and leaders of the Kuomintang (KMT) and other pan-blue parties,\* and a forum between the cities of Taipei and Shanghai.<sup>74</sup> In September 2016, for example, eight KMT and blue-leaning independent mayors and county magistrates met with senior officials in China to discuss cooperation in various areas.<sup>75</sup> During one of the meetings, Taiwan Affairs Office Director Zhang Zhijun thanked the local officials for supporting the “1992 Consensus.”<sup>76</sup> The same day, a Taiwan Affairs Office spokesperson announced eight measures Beijing would take to promote ties between the Taiwan counties

\*Pan-blue parties comprise the KMT, the New Party, and the People’s First Party (the latter two have their origin in the KMT). In general, these parties see Taiwan’s identity as more closely linked to China than the DPP and other “pan-green” parties.

and cities represented and China, including in tourism, the import of Taiwan agricultural and specialty products, and cooperation in green and high technology.<sup>77</sup> Following this meeting, J. Michael Cole, editor-in-chief of *Taiwan Sentinel*, wrote, “Beijing is now accelerating its efforts to bypass the central government in Taipei and rewarding local governments that agree to say what it wants. ... The key to Beijing’s strategy is to undermine the central government’s authority by creating bilateral dependencies.”<sup>78</sup>

### **Taiwan and the 20th Anniversary of the Hong Kong Handover**

Some observers in Taiwan, as well as the ROC government, are concerned about the fate of freedom and democracy in Hong Kong.<sup>79</sup> In June 2017, two days before the 20th anniversary of the handover of Hong Kong to China, Taiwan’s Mainland Affairs Council released a statement calling on Beijing “to honor its promises, respect the right of Hong Kong to be ruled by the people of Hong Kong, and respond positively to the demands of the people of Hong Kong for democracy and freedom.”<sup>80</sup> Broadly, the idea of adopting Hong Kong’s “one country, two systems”\* framework—Beijing’s stated framework for cross-Strait unification—as a model for Taiwan has long been unpopular among the Taiwan public. However, Mr. Cole told the Commission in 2016 that developments in Hong Kong have intensified the Taiwan public’s opposition to Chinese rule and the “one country, two systems” framework.<sup>81</sup> (See Chapter 3, Section 4, “China and Hong Kong,” for more information on developments in Hong Kong.)

The apparent abduction and detention by mainland authorities in late 2015 of five sellers of political gossip books banned in mainland China cast further doubt on whether Beijing would abide by any agreement to protect political and civil liberties in Taiwan under a “one country, two systems” arrangement.<sup>82</sup> The abduction reportedly involved mainland authorities engaging in illegal cross-border law enforcement for supposed crimes committed in Hong Kong by individuals tied to Causeway Bay Books, a Hong Kong bookstore and publishing house. According to Article 22 of Hong Kong’s Basic Law, no mainland government entity may interfere in Hong Kong affairs, and thus only Hong Kong’s law enforcement agencies are allowed to enforce laws and take related actions within the territory.<sup>83</sup>

As China’s efforts to increase control over both Taiwan and Hong Kong have intensified in recent years, Hong Kong and Taiwan activists have forged closer ties despite Beijing’s pressure to stop such cooperation.<sup>84</sup> In June 2017, Executive Chairman of Taiwan’s New Power Party Huang Kuo-chang founded a new Taiwan Congressional Hong Kong Caucus alongside other Taiwan legislators and several Hong Kong localist activists in Taipei. Ac-

\*The “one country, two systems” framework is a policy measure adopted by the People’s Republic of China following the establishment of Hong Kong and Macau as Special Administrative Regions. The system grants Hong Kong and Macau the right to self-govern their economies and political systems to a certain extent, excluding foreign affairs and defense.

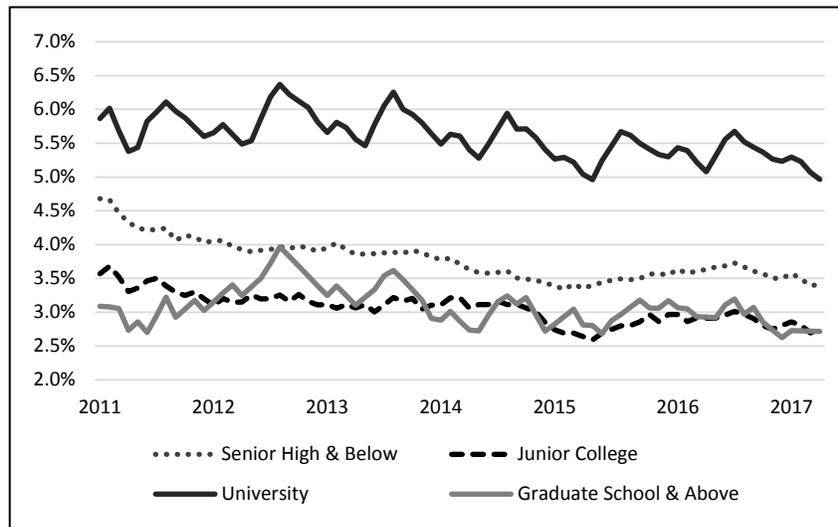
### **Taiwan and the 20th Anniversary of the Hong Kong Handover—Continued**

According to Mr. Huang, the caucus (composed of 18 Taiwan lawmakers: 13 from the Democratic Progressive Party and 5 from the New Power Party), will focus on providing support for the Hong Kong prodemocracy movement.<sup>85</sup> In response to the announcement, Beijing and pro-establishment lawmakers in Hong Kong condemned the development as “collusion between pro-independence forces.”<sup>86</sup> Minister Chang told the Commission that the Taiwan government continues to maintain engagement with authorities in Hong Kong and Macau (where it has offices), but the slowdown in cross-strait relations is starting to have a negative impact. She said Hong Kong and Macau officials are “more reluctant, cautious, and conservative” about meeting with Taiwan government officials.<sup>87</sup>

### **Taiwan’s Economy and Cross-Strait Trade and Investment**

Since taking office in May 2016, President Tsai has devoted a major part of her policy agenda to economic and social issues.<sup>88</sup> Taiwan’s economic growth has accelerated under President Tsai, with real gross domestic product (GDP) increasing 2.5 percent year-on-year in the second half of 2016 (and 1.48 percent in all of 2016), up from 0.75 percent in 2015.<sup>89</sup> In August 2017, Taiwan’s government raised its 2017 GDP growth forecast to 2.11 percent, up from May’s estimate of 2.05 percent.<sup>90</sup> The upward revision reflects Taiwan’s strong exports, which expanded for 13 straight months through August 2017 and increased 10.6 percent year-on-year in the first eight months of 2017.<sup>91</sup>

Despite the uptick in Taiwan’s economic growth, President Tsai’s record on other priorities—particularly creating jobs for young professionals and increasing wages—is mixed. As of August 2017, nearly 5.5 percent of Taiwan workers with a university degree were unemployed, compared to just 3.7 percent unemployment for workers across all education levels (see Figure 1).<sup>92</sup> Taiwan’s services and tech-driven economy has few practical applications for academic research skills, creating a gap between the number of academic research positions available and the supply of highly educated workers.<sup>93</sup> Wage growth in Taiwan also remains stagnant, with the Numeracy Lab, a Taiwan-based math teaching group, reporting 54 percent of workers between the ages of 35 and 39 earn less than \$1,180 per month on average, well below the national average of \$1,600.<sup>94</sup> Numeracy Lab also found that 74 percent of workers under 30 years old earn less than \$1,200 a month.<sup>95</sup> These factors, coupled with high housing prices, have led to a “brain drain” as educated young professionals seek employment outside Taiwan.<sup>96</sup> China in particular has attempted to recruit young Taiwan workers in fields like science and engineering by offering higher pay and greater opportunities for career development.<sup>97</sup> In 2015, more than 420,000 Taiwan workers were estimated to be employed in China, 58 percent of all Taiwan workers outside of Taiwan.<sup>98</sup>

**Figure 1: Taiwan Unemployment by Education Level, 2011–2017**

*Note:* 2017 data are through August. Junior colleges provide technical and vocational education in such areas as hospitality, healthcare, commerce, and languages.

*Source:* Taiwan's Directorate-General of Budget, Accounting and Statistics via CEIC database.

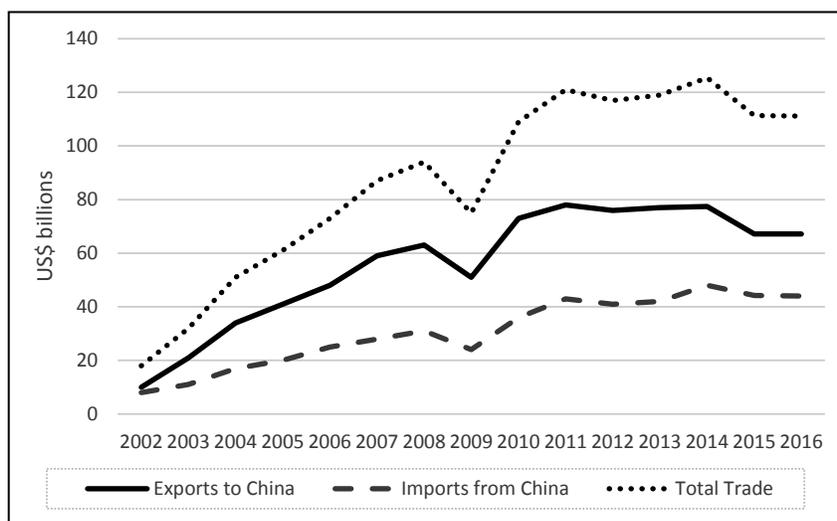
One persistent challenge to sustained economic growth is Taiwan's dependence on China-bound exports (see "Cross-Strait Trade and Investment," later in this section). President Tsai has sought to reduce Taiwan's reliance on cross-Strait trade by pursuing an innovation-driven economic model, seeking collaboration with foreign countries in areas like research and development, human resources, and financial capital.<sup>99</sup> The Tsai Administration has also emphasized a "5+2 Major Innovative Industries" policy, which seeks the development of five pillar industries (green energy, defense, the Internet of Things, biotechnology, and smart precision machinery), and two auxiliary sectors (high-value agriculture and the "circular economy"\*)<sup>100</sup> The initiative is backed by Taiwan's Industrial Innovation and Transformation Fund, which will invest \$3.3 billion to develop new technologies in pillar industries.<sup>101</sup> As part of Taiwan's trade diversification and industry development initiatives, the government also plans to spend \$140 million promoting smart machinery, \$1.65 billion in green energy investment through 2025, and \$32.73 million each year through 2022 to develop artificial intelligence research centers.<sup>102</sup> In August 2017, Taiwan's Legislature also approved a special budget of more than \$14 billion over the next four years to support Taiwan's infrastructure development, including projects related to rail transport construction, water improvement, and green energy development.<sup>103</sup>

\*A circular economy is a closed supply chain allowing for natural resource use while reducing pollution, avoiding resource constraints, and sustaining economic growth. Ying-Che Hsieh et al., "Governing a Sustainable Business Ecosystem in Taiwan's Circular Economy: The Story of Spring Pool Glass," *National Tsing Hua University*, June 20, 2017, 4.

### ***Cross-Strait Trade and Investment***

China remains Taiwan's largest trading partner, biggest export market, and top source of imports.<sup>104</sup> In 2016, cross-Strait trade totaled \$111.2 billion, down 1 percent from 2015 levels yet still comprising 22.6 percent of Taiwan's total annual trade.<sup>105</sup> Cross-Strait trade increased from 2016 levels in the first seven months of 2017, with Taiwan's exports to China up 21.6 percent year-on-year and imports from China up 10.6 percent year-on-year.<sup>106</sup> Increased 2017 trade flows represent a shift from recent years, when the slowdown of China's economy contributed to a decrease in cross-Strait trade: between 2014 and 2016, Taiwan exports to China were down 13.2 percent and imports from China declined 8.4 percent (see Figure 2).<sup>107</sup>

**Figure 2: Taiwan's Trade with China, 2002–2016**



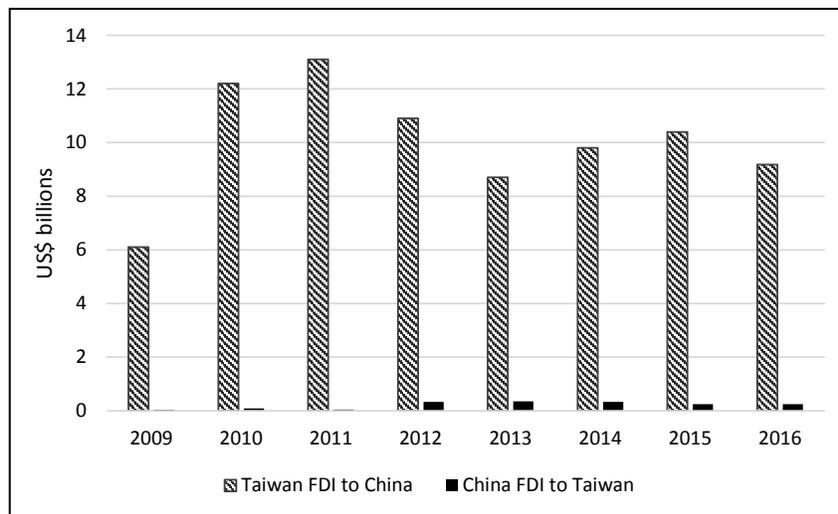
Source: Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.

Taiwan's top exports to China consist largely of circuits and electronic materials: Taiwan's top three China-bound exports in 2016 were hybrid circuits (\$5.6 billion), circuit chips (\$4.3 billion), and circuit wafers (\$3.6 billion).<sup>108</sup> Taiwan's top imports from China also consist mainly of electronic devices, with digital circuits (\$2.4 billion), telephones (\$2.3 billion), and hybrid circuits (\$1.3 billion) topping the imports list in 2016.<sup>109</sup>

China remains Taiwan's top destination for foreign direct investment (FDI), though investment flows—like trade flows—have declined in recent years due to China's slowing economic growth.<sup>110</sup> In 2016, Taiwan invested \$9.2 billion in China, down 11.7 percent from 2015 levels (see Figure 3).<sup>111</sup> Computer manufacturing made up the largest share (nearly 22 percent) of Taiwan's FDI in China in 2016, with electronic manufacturing (16.3 percent) and financial services and insurance (14.1 percent) accounting for the second- and third-largest shares, respectively.<sup>112</sup> From January to August 2017,

Taiwan invested \$5.8 billion in China, a decline of 5 percent from the same period in 2016.<sup>113</sup> Meanwhile, Chinese FDI in Taiwan remained consistent with 2015 levels, increasing from \$244 million to \$247.6 million in 2016.<sup>114</sup> In the first eight months of 2017, Chinese FDI in Taiwan reached \$167.6 million, down 1.5 percent from the same period in 2016.<sup>115</sup> Chinese FDI remains limited in part because of laws requiring the Taiwan government to approve of inbound Chinese FDI projects and prohibiting Chinese investors from appointing managers or having controlling stakes in Taiwan firms.<sup>116</sup>

**Figure 3: Cross-Strait Investment, 2009–2016**



Source: Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, May 2017.

Beijing is continuing its policy of emphasizing cross-Strait economic ties, making it easier for Taiwan citizens to travel, study, or work in China, and expanding cultural and other people-to-people exchanges in pursuit of its goal of “deepening economic and social integrated development.”<sup>117</sup> According to the Taiwan Affairs Office, new measures include making it more convenient for Taiwan citizens to purchase train and airplane tickets for travel in China, implementing initiatives to increase employment opportunities for Taiwan citizens in China, and strengthening support for Taiwan entrepreneurs in China.\* In May 2017, a Taiwan Affairs Office spokesperson described the efforts various government agencies were undertaking as “policy measures to convenience Taiwan compatriots.”<sup>118</sup>

Beijing is also increasing emphasis on outreach to Taiwan youth and “grassroots” groups.<sup>119</sup> In August 2017, the Hong Kong-based newspaper *South China Morning Post* reported that these efforts include inviting Taiwan students and grassroots leaders to visit China

\*A Taiwan Affairs Office spokesperson said that this policy includes “support in areas such as start-up capital, financing, and the use of office space.” China's Taiwan Affairs Office, *TAO News Conference Transcript (May 10, 2017)*, May 10, 2017. Translation.

for “cultural and education events, interschool contests, research on community service and elderly health care, internships and seminars on job creation and business start-ups.”<sup>120</sup> The newspaper also reported that while schools were on vacation in 2017 there was an increase in the frequency of these invitations, including to groups from elementary and high schools.<sup>121</sup>

### **Taiwan’s International Engagement**

Despite Beijing’s efforts to constrict Taiwan’s international space, Taipei continues to pursue greater participation in the international community through its official diplomatic relations with 20 countries,\* efforts to expand its involvement in international organizations, and initiatives to strengthen economic and unofficial diplomatic partnerships with countries other than China.

#### ***Trans-Pacific Partnership***

Taiwan is at a disadvantage when competing economically with other countries because it is more difficult for Taiwan to sign free trade agreements (FTAs)<sup>122</sup>—in large part because Beijing pressures other countries not to sign FTAs with Taiwan.<sup>123</sup> Taiwan’s protectionist policies in sectors like agriculture and financial services also limit its ability to join FTAs.<sup>124</sup> As a result, Taiwan has signed FTAs with only eight countries—Panama, Guatemala, El Salvador, Honduras, Singapore, Nicaragua, Paraguay, and New Zealand—and has an economic cooperation agreement with China.<sup>125</sup> With fewer FTAs, Taiwan’s trade with key trade partners has grown at a sluggish rate compared to other economies and its brands have floundered in global markets. In contrast, South Korea, which, like Taiwan, has pursued an economic growth model driven by exports of advanced technologies and electronics, has 16 FTAs (along with an additional 10 FTAs currently being negotiated).<sup>126</sup> After the signing of the U.S.-Korea Free Trade Agreement (KORUS) in 2011, the value of South Korean merchandise exports to the United States increased by an average of 3.4 percent annually from 2010 to 2016.<sup>127</sup> Meanwhile, Taiwan, which has no FTA with the United States, saw the value of its merchandise exports decrease 1.7 percent between 2010 and 2016.<sup>128</sup>

For this reason, Taiwan has been eager to participate in the Trans-Pacific Partnership (TPP) trade agreement, which was originally negotiated as a 12-country deal representing around 40 percent of world GDP. Both the Ma and Tsai administrations endeavored for Taiwan to be included in the second round of negotiations of the agreement. Vice Minister of Taiwan’s Ministry of Economic Affairs Wang Mei-hua told the Commission in May 2017 that Taiwan was still interested in joining a TPP led by Japan and Australia even though the United States had withdrawn from the agreement.<sup>129</sup> Several days later, trade ministers from the 11 remaining TPP member countries decided to continue to advance the trade deal.<sup>130</sup> In June 2017, Japan’s Chief Cabinet Secretary Yoshihide

\*Taiwan has diplomatic relations with Belize, Burkina Faso, the Dominican Republic, El Salvador, Guatemala, Haiti, the Holy See, Honduras, Kiribati, the Marshall Islands, Nauru, Nicaragua, Palau, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Solomon Islands, Swaziland, and Tuvalu. Taiwan’s Ministry of Foreign Affairs, *Diplomatic Allies*.

Suga welcomed Taiwan's interest in joining the TPP and Taiwan's then Premier Lin Chuan stated that Taiwan will continue to pursue TPP membership.<sup>131</sup>

### ***New Southbound Policy***

In 2016, the Tsai Administration initiated the "New Southbound Policy" to strengthen trade, investment, people-to-people, and other links with the countries of Southeast Asia, South Asia, and Oceania. In part, Taipei hopes the policy will help Taiwan further diversify its economic ties beyond China.<sup>132</sup> The policy aims to enhance economic collaboration through initiatives such as the opening of "Taiwan Desks" in these countries to conduct research on local business conditions and help Taiwan businesspeople establish business clusters\* in these countries.<sup>133</sup> The policy also seeks to bring more foreign students to Taiwan's universities, encourage professionals to work in Taiwan, promote cooperation in the healthcare sector, expand cultural exchanges and attract more tourists, and promote technology collaboration and agricultural technology assistance.<sup>134</sup> During a meeting with the Commission in May 2017, President Tsai said Taiwan companies, in collaboration with the Taiwan government, have prepared 5,000 vacancies for Southeast Asian citizens to work or study in Taiwan, and will largely cover the expenses of these students and interns.<sup>135</sup> She added that the students will be able to stay in Taiwan for a few years after graduation.<sup>136</sup> She explained that Taiwan's companies need young and skilled labor, and Southeast Asian countries are looking for training and educational opportunities for their citizens. According to President Tsai, the New Southbound Policy is different from China's "One Belt, One Road initiative" because it prioritizes human capital-intensive programs related to education, training, high technology, agriculture, and innovation, rather than infrastructure.<sup>137</sup> She said this approach will benefit Taiwan's small and medium enterprises.<sup>138</sup>

In a meeting with the Commission in May 2017, the American Chamber of Commerce in Taipei explained that Taiwan companies had already been operating in Southeast Asia before the launch of the New Southbound Policy, searching for lower labor costs and attractive markets.<sup>139</sup> With the implementation of the New Southbound Policy, Taiwan's government seeks to integrate Taiwan firms with New Southbound Policy target countries' supply chains, link Taiwan's domestic industries to foreign markets, and develop bilateral infrastructure projects.<sup>140</sup> Taipei has budgeted over \$130 million for the Southbound Policy in 2017, along with plans to work with local governments, private firms, and nongovernmental organizations for additional funding.<sup>141</sup>

Most of the 18 countries covered in the policy are developing economies with a rising middle class, making them attractive markets for Taiwan businesses.† According to International Monetary Fund estimates, annual growth rates of Southbound Policy target coun-

\*Business clusters are concentrations of businesses from the same industry in a limited geographic area.

†The 18 countries included in the New Southbound Policy are the Association of Southeast Asian Nations (ASEAN) members, Australia, Bangladesh, Bhutan, India, Nepal, New Zealand, Pakistan, and Sri Lanka. Taiwan's Executive Yuan, *New Southbound Policy Promotion Plan*, September 26, 2016.

tries will far outpace global growth, which is expected to increase around 3.5 percent year-on-year in 2017.<sup>142</sup> The Philippines, Vietnam, and Indonesia, for instance, are forecast to experience GDP growth of 6.8 percent, 6.5 percent, and 5.1 percent, respectively, in 2017.<sup>143</sup> Additionally, India's GDP is expected to grow 7.2 percent, which would make it the world's fastest growing economy.<sup>144</sup>

Although it is difficult to assess the Southbound Policy's effectiveness so soon after implementation, Taiwan appears to be forming more diverse trade and investment relationships. For instance, Taiwan is reportedly close to signing bilateral investment agreements with Vietnam and Thailand, and Burma (Myanmar) and Brunei have been mentioned as other potential investment partners.<sup>145</sup> Additionally, Taiwan's total trade with Southbound Policy target countries grew 14.9 percent year-on-year between January and July 2017, compared to a 13.7 percent year-on-year increase for all Taiwan trade over the same period.<sup>146</sup> According to statistics from Taiwan's Bureau of Foreign Trade, Southbound Policy target countries made up 31.8 percent of Taiwan's total trade from January to July 2017, down from 36.2 percent during the same period in 2016 (see Table 1).<sup>147</sup>

**Table 1: Taiwan's Trade with Select Partners,  
Jan.–Jul. 2016 and Jan.–Jul. 2017**

Trade Partner		US\$ billions		Share of Taiwan's Total Trade (%)	
		Jan.–Jul.		Jan.–Jul.	
		2016	2017	2016	2017
ASEAN	Exports	26.7	30.9	18.7	19.2
	Imports	14.8	18.0	11.6	12.3
	Balance	11.9	12.9		
Australia	Exports	1.6	1.5	1.1	1
	Imports	3.2	4.9	2.5	3.4
	Balance	(1.6)	(3.4)		
China	Exports	35.3	42.9	24.7	26.7
	Imports	24.7	27.4	19.5	18.7
	Balance	10.6	15.5		
India	Exports	1.6	1.7	1.1	1.1
	Imports	1.0	1.9	0.8	1.3
	Balance	0.6	(0.2)		
New Zealand	Exports	0.2	0.2	0.1	0.1
	Imports	0.5	0.5	0.4	0.3
	Balance	(0.3)	(0.3)		
United States	Exports	17.9	19.7	12.5	12.3
	Imports	16.4	17.1	12.9	11.7
	Balance	1.5	2.6		

Source: Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/ENGLISH/FSCE/>.

One area in which the policy has already yielded success is tourism. Between October 2016 and March 2017, the number of tourists visiting Taiwan from the New Southbound Policy countries increased by 28.6 percent over the same period the year before.<sup>148</sup> This rise in tourists from Southeast Asia has partially offset the recent reduction in tourists from China.<sup>149</sup> Since 2016, the Taiwan government has allowed visitors from Brunei and Thailand to stay in Taiwan for 30 days without a visa.<sup>150</sup> Also, people from Cambodia, India, Indonesia, Laos, Burma, the Philippines, and Vietnam who have been issued a visa within ten years by Australia, Canada, Japan, or the United States, among other countries, can now apply online for a visa to visit Taiwan rather than applying at a Taiwan representative office.<sup>151</sup>

Vice Minister Wang told the Commission the policy has been well received by the partner countries, which are eager for more trade and investment from Taiwan and hope to host Taiwan's manufacturing.<sup>152</sup> Among other areas of policy that have been appealing to these countries, according to an article in *Taiwan Business Topics*, "Indonesia has been particularly interested in agricultural cooperation with Taiwan, including projects involving aquaculture and organic farming."<sup>153</sup>

## Taiwan Military and Security Issues

### *Cross-Strait Military Balance*

As President Tsai entered her second year in office, the threat to Taiwan posed by Chinese military modernization continued to grow. China's military modernization program remained focused on deterring Taiwan from moving toward formal independence and preparing the People's Liberation Army (PLA) for a cross-Strait conflict. As the Commission has noted, the cross-Strait military balance has shifted toward China, and continues to worsen.<sup>154</sup> The PLA possesses both a quantitative and a qualitative military advantage over the Taiwan military and is capable of conducting a range of military campaigns against Taiwan.

- The PLA Rocket Force has approximately 1,200 short-range ballistic missiles and 200–500 ground-launched land-attack cruise missiles.\*<sup>155</sup> According to congressional testimony by U.S. Defense Intelligence Agency Director Lieutenant General Vincent R. Stewart in February 2015, all of China's short-range ballistic missiles are deployed across from Taiwan.<sup>156</sup> The primary purpose of the majority of these missiles is to deter a move toward formal independence by Taiwan or to destroy Taiwan's ports and airfields should Beijing choose to do so. Although it has not greatly expanded in size since the late 2000s, China's short-range ballistic missile arsenal has become more lethal with the

\*Official U.S. and Taiwan estimates of China's number of short-range ballistic missiles and land-attack cruise missiles vary. According to the Taiwan Ministry of National Defense's August 2015 report on China's military power for the Legislative Yuan, China has 1,700 ballistic and cruise missiles, and 1,500 of these missiles are deployed against Taiwan. Senate Armed Services Committee, *Hearing on Worldwide Threats*, written testimony of Vincent R. Stewart, February 26, 2015; Zhu Ming, "Ministry of National Defense: China Keeps 1,500 Missiles Deployed against Taiwan," *Storm Media*, August 31, 2015. Translation.

introduction of new missile variants with longer ranges and improved accuracies and warheads.<sup>157</sup>

- The PLA Air Force and Navy have about 2,100 combat aircraft, of which approximately 600 are modern.\*<sup>158</sup> Fewer than 330 of Taiwan's combat aircraft are modern.<sup>159</sup> As part of its efforts to further enhance the capabilities of its fleet of combat aircraft, China signed a contract with Russia to purchase 24 Su-35 fighter aircraft in November 2015, and the first four were delivered in December 2016.<sup>160</sup> Also, the PLA Air Force accepted its first batch of J-20s, one of two fifth-generation fighter aircraft China is developing, in March 2017, and a spokesperson for China's Ministry of National Defense confirmed in September 2017 that the J-20 has been officially commissioned into service.<sup>161</sup>
- The PLA Navy has more than 300 surface combatants, submarines, and missile-armed patrol craft, in addition to China's highly capable coast guard and maritime militia.<sup>162</sup> Taiwan, on the other hand, has 92 naval combatants, comprising four submarines—two of which are only used for training—and 88 surface ships.<sup>†</sup><sup>163</sup> As China's efforts to improve its navy continue, an increasing percentage of these ships will be modern‡ and feature advanced weaponry. For example, in June 2017, China launched the first in its newest class of cruiser, the Type 055.<sup>164</sup> This cruiser will be equipped with a variant of the YJ-18, China's newest antiship cruise missile.<sup>165</sup> In addition, the PLA Navy recently acquired a land-attack capability, as the new LUYANG III-class guided missile destroyer is capable of launching land-attack cruise missiles.<sup>166</sup> (See Chapter 2, Section 2, "China's Military Modernization in 2017," for more information on developments in Chinese military modernization.)

Faced with a growing threat from PLA modernization, Taiwan has sought to enhance its military capabilities in part by indigenously developing combat ships and aircraft as well as weapons systems. Advanced antiship cruise missiles, air defense missiles, and fast attack and stealthy catamaran-style patrol ships are among the newest platforms and weapons systems Taiwan has produced. Some of the developments in Taiwan's procurement of domestic military equipment in recent years include the following:

\*"Modern" combat aircraft are defined as possessing advanced avionics and weapons systems. These aircraft include the J-10, J-11, JH-7, Su-27, and Su-30. For more information on the Commission's definition of "modern" combat aircraft, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 309.

†Taiwan's coast guard is in the midst of a ten-year shipbuilding program that will bring its forces to 173 ships. Taiwan does not have a maritime militia. Mrityunjoy Mazumdar, "Taiwanese Coast Guard Launches OPV amid Ongoing Force Development Programme," *Jane's Defense Weekly*, May 28, 2015.

‡In reference to China's submarine force, the term "modern" is used in this Report to describe a submarine capable of employing antiship cruise missiles. These include the SHANG nuclear attack submarine, SONG diesel attack submarine, KILo diesel attack submarine, and YUAN diesel air-independent power attack submarine. In reference to China's surface force, the term "modern" is used to describe multi-mission platforms with significant capabilities in at least two warfare areas. These include the following: LUZHOU guided missile destroyer, LUYANG I/II/III guided missile destroyer, SOVREMENNYĬ I/II guided missile destroyer, and JIANGKAI II guided missile frigate. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010*, August 2010, 45.

- *Submarines*: In March 2017, Taiwan's Ministry of National Defense, National Chung-Shan Institute of Science and Technology, and CSBC Corporation signed a memorandum of understanding on cooperation to build submarines.<sup>167</sup> Taipei hopes the U.S. government will assist with this process.<sup>168</sup> During meetings with the Commission in May 2017, Taiwan officials reiterated the desire for U.S. assistance.\*<sup>169</sup> Of Taiwan's four submarines, two are operational Zwaardvis-class submarines and two are decommissioned U.S. Navy GUPPY-class submarines (which have undergone upgrades since the 1940s) used only for training.<sup>170</sup>
- *Missile corvette*: Taiwan commissioned the first ship in the TUO JIANG-class of catamaran-style missile corvettes in March 2015, and after identifying several areas in which the ship needed improvement, has since created a new design for serial production.<sup>171</sup> Taiwan will build 11 more ships in the TUO JIANG-class, starting with a group of three.<sup>172</sup> The corvette has stealth features and better range, endurance, and sea-keeping ability than Taiwan's other patrol ships, and it is equipped with 16 antiship cruise missiles.<sup>173</sup> It also has two torpedo tubes and a towed sonar array.<sup>174</sup> These features will enhance the survivability and lethality of Taiwan's antisurface and antisubmarine forces in a potential cross-Strait conflict.<sup>175</sup>
- *Advanced jet trainer*: The Tsai Administration launched the development of a new advanced jet trainer for the Taiwan military in February 2017 with the signing of a production agreement between Taiwan's Ministry of National Defense and National Chung-Shan Institute of Science and Technology and a memorandum of understanding on cooperation between the National Chung-Shan Institute of Science and Technology and Aerospace Industrial Development Corporation.<sup>176</sup> The new trainers will replace Taiwan's aging AT-3 and F-5 E/F aircraft.<sup>177</sup>

Taiwan also seeks to enhance its military capabilities through the procurement of military platforms and weapons systems from overseas. Select military equipment Taiwan is acquiring from the United States includes the following (see also the discussion on arms sales, military-to-military contact, and U.S.-Taiwan defense relations in "U.S.-Taiwan Relations," later in this section):

- *F-16 fighter upgrade*:† According to a January 2017 report by *IHS Jane's Defense Weekly*, Lockheed Martin said the upgrade of Taiwan's 144 F-16 A/B fighter aircraft has begun.<sup>178</sup> The

\*In 2001, the United States approved Taiwan's request to purchase diesel-electric submarines via the foreign military sales process. However, the sale stalled for a number of reasons, including disagreements between Washington and Taipei over costs, gridlock in Taiwan's legislature over a special budget, and delays in Taiwan's commitment of funds. Furthermore, the United States has not built a diesel-electric submarine since the 1950s or operated one since 1990. Shirley A. Kan, "Taiwan: Major U.S. Arms Sales Since 1990," *Congressional Research Service*, August 29, 2014, 11–15.

†In 2011, the United States government approved the upgrade of Taiwan's F-16 A/Bs instead of the sale of new F-16 C/Ds to Taiwan, which Taipei had sought. Shirley A. Kan, "Taiwan: Major U.S. Arms Sales Since 1990," *Congressional Research Service*, August 29, 2014, 25.

most important part of the upgrade is the installation of active electronically scanned array scalable agile beam radar made by Northrup Grumman.<sup>179</sup> This radar will enable Taiwan's F-16s to better detect China's advanced combat aircraft.<sup>180</sup>

- *P-3C Orion maritime patrol aircraft*: In July 2017, Taiwan received the last of 12 P-3C antisubmarine aircraft that the United States approved for sale in 2007.<sup>181</sup> The P-3Cs, which began arriving in 2013, are replacing Taiwan's 11 S-2T antisubmarine aircraft, which have served for more than 40 years.<sup>182</sup> The P-3C will increase the capabilities and endurance of the Taiwan military's fixed-wing maritime patrol aircraft force, improving Taiwan's ability to perform antisubmarine warfare and intelligence, surveillance, and reconnaissance missions.<sup>183</sup>
- *OLIVER HAZARD PERRY-class guided missile frigates*: The Taiwan Navy took delivery of two retrofitted PERRY-class frigates from the United States in March 2017.<sup>184</sup> These general-purpose escort ships, which will be equipped for antisubmarine, surface-to-surface, and surface-to-air operations,<sup>185</sup> would help Taiwan protect other ships against PLA submarines, surface combatants, and aircraft.

China's large defense expenditures are a major challenge for Taiwan. China's defense budget grew by double digits almost every year between 2005 and 2015.<sup>\*186</sup> In contrast, Taiwan's defense budget has grown modestly.<sup>187</sup> For example, the defense budget approved by the Executive Yuan for 2018 increased by 1.9 percent over the previous year's budget.<sup>188</sup> In 2016, China's official defense budget was about 14 times Taiwan's.<sup>189</sup>

Beyond an examination of the cross-Strait military balance, it is also important to consider how Chinese strategists view the potential employment of the PLA to achieve Beijing's objectives vis-à-vis Taiwan and how the PLA plans and trains for a conflict with Taiwan. Based on how Chinese military thinkers write about the pre-conflict use of force, China may attempt to manage a crisis involving Taiwan by seeking gains at the lowest possible cost, while balancing those gains against the risks that escalation could lead to conflict.<sup>190</sup> Beijing has tasked the PLA with planning and preparing for a range of contingency operations should conflict with Taiwan occur.<sup>191</sup> While the PLA presently lacks the amphibious lift to directly assault Taiwan, China could instead attempt to seize ports and airfields to land follow-on forces to conduct on-island operations.<sup>192</sup> This is a high-risk operation for Beijing, and one China may conduct only after other coercive options are exhausted. (See Chapter 2, Section 3, "Hotspots along China's Maritime Periphery," for detailed discussion of how a cross-Strait conflict might unfold.)

---

\*This measurement is according to China's announced defense budgets, not actual aggregate spending. China's announced budget omits major defense-related expenditures, such as purchases of advanced weapons, research and development programs, and local government support to the PLA.

### PLA Activities near Taiwan

On November 25, 2016, during long-range training, Chinese military aircraft flew over the Bashi Channel to the south of Taiwan and then over the Miyako Strait to the north of Taiwan to return to China. Taiwan's then Deputy National Defense Minister Lee Hsi-ming explained this was the first time Chinese military aircraft had "circled around Taiwan."<sup>193</sup> On December 10, 2016, Chinese military aircraft again conducted long-range training that took them around Taiwan, this time initially flying over the Miyako Strait and returning to China by flying over the Bashi Channel.<sup>194</sup> Then, on January 11 and 12, 2017, China's only operational aircraft carrier sailed through the Taiwan Strait when returning to its homeport after completing training in the South China Sea.<sup>195</sup> This was neither the first time the carrier had sailed through the Strait nor an indication Beijing was preparing for or anticipating an imminent military contingency. It did, however, carry significant symbolic meaning, particularly in the context of China's actions on multiple fronts to pressure and intimidate Taiwan.\* On July 1 and 2, 2017, the carrier passed through the Taiwan Strait again on its way to visit Hong Kong as part of the Chinese government's commemoration of the 20th anniversary of the city's handover from British rule.<sup>196</sup> It also transited the Taiwan Strait on July 12 en route to its homeport.<sup>197</sup> Furthermore, Chinese military aircraft flew near Taiwan one time in March and multiple times in July and August as part of training activities.<sup>198</sup>

### *The Tsai Administration's Defense Initiatives*

Taiwan's Ministry of National Defense published the report from its first quadrennial defense review under the Tsai Administration in May 2017. The report outlines Taiwan's defense strategy, described as "resolute defense, multi-domain deterrence."<sup>199</sup> In describing "multi-domain deterrence," the report states, "To achieve resolute defense through multi-domain deterrence, we are adopting innovative/asymmetric means and developing joint capabilities to present multiple dilemmas to the enemy and deter aggression."<sup>200</sup> Under the Ma Administration, the Ministry of National Defense described Taiwan's defense strategy as "resolute defense, credible deterrence."<sup>201</sup> Derek Grossman, Michael S. Chase, and Logan Ma of the RAND Corporation write that "both strategies seek to deter or, if necessary, repel a Chinese attack against the island by developing key capabilities and enhancing the Taiwan military's ability to conduct joint operations."<sup>202</sup>

In addition to launching the jet trainer and submarine development programs, the Tsai Administration took several measures to advance its goal of enhancing Taiwan's defense industry. Among these measures, the Ministry of National Defense released a draft version of the Revitalizing the Defense Industry Bill for comments

\*The aircraft carrier passed through the Taiwan Strait for the first time after its commissioning in November 2013 as it sailed to conduct training in the South China Sea, and did so again on its way back to its homeport in December 2013. Wang Jionghua, "China's Aircraft Carrier Passed through the Taiwan Strait Three Times Before. Ministry of National Defense: Its Combat Capability Is Stronger Each Time," *Apple Daily*, January 5, 2017. Translation.

in March 2017 and is implementing a new “National Defense Manufacturers Security Control Mechanism.”<sup>203</sup>

The Tsai Administration is continuing to transition the Taiwan military to an all-volunteer force, a process that began under former President Ma. The Taiwan government seeks to increase the quality of Taiwan’s military personnel by building a force of volunteers—individuals who it assesses want to serve and over time will be more experienced and receive more training than conscripts.<sup>204</sup> Taiwan’s transition to an all-volunteer force has been costly, increasing budgetary pressure on research and development as well as operations and maintenance funding.<sup>205</sup> Taiwan also has struggled with recruitment and retention.<sup>206</sup> To build the all-volunteer force, Minister of Defense Feng Shih-Kuan explained to the Commission in May 2017, the ministry seeks to expand training opportunities so recruits learn skills they can use after the transition to civilian life, offer additional benefits, and increase pay for those serving in combat, intelligence community, or reconnaissance posts.<sup>207</sup> The Tsai Administration also is taking steps to improve morale and working conditions in the Taiwan military by introducing improved combat uniforms and renovating old living quarters.<sup>208</sup>

#### **Hong Kong Customs and Excise Department Seizes Singapore Armored Vehicles Returning from Taiwan**

Beijing used an incident involving the seizure of Singapore military vehicles by Hong Kong authorities to pressure Singapore over its military cooperation with Taiwan. In November 2016, the Hong Kong Customs and Excise Department seized nine Singapore Armed Forces armored personnel carriers. The carriers were transiting through Hong Kong on a commercial cargo ship en route to Singapore after their use in military training in Taiwan.<sup>209</sup> The department, which stated that it conducted the seizure due to a suspected breach of the territory’s licensing requirements, impounded the vehicles until January 2017.<sup>210</sup> They arrived in Singapore on January 30, 2017.<sup>211</sup> After the vehicles were seized, Beijing lodged a diplomatic protest with the government of Singapore and spokespersons for both the Chinese Ministry of Foreign Affairs and Ministry of Defense spoke out against Singapore’s military contacts with Taiwan.<sup>212</sup> Several analysts assessed that in addition to pressuring Singapore over its longstanding military-to-military relationship with Taiwan, Beijing sought to use the seizure and impounding of the vehicles to pressure Singapore over its perceived support for the July 2016 ruling of the Permanent Court of Arbitration on China’s claims and activities in the South China Sea.<sup>213</sup>

#### ***Taiwan Military Training and Activities***

The Taiwan military routinely conducts a range of exercises to maintain combat readiness; integrate new weapons systems and tactics; test and improve its capabilities; and demonstrate to the Taiwan people, China, and others that it has a credible deterrence capability. In 2017, select exercises and activities included the following:

- *Antisubmarine exercise*: As part of its training for antisubmarine warfare, in March 2017, the Taiwan military carried out an exercise in which a P-3C antisubmarine aircraft engaged a simulated enemy submarine with torpedoes and depth charges.<sup>214</sup>
- *Han Kuang exercises*: Taiwan's annual Han Kuang exercises began in early May with a five-day, computer-assisted command post exercise, a combat simulation exercise in which commanders, staff, and communications personnel participate. Live-fire exercises were held later in the month.<sup>215</sup> The live-fire exercises included joint air defense, joint counter amphibious landing, and joint counter airborne landing, among other missions.<sup>216</sup>

### ***China's Espionage and Political Warfare against Taiwan***

China's aggressive intelligence activities against Taiwan pose a threat to Taiwan's security and to the security of U.S. military information and equipment to which Taiwan has access. Peter Mattis, China fellow with the Jamestown Foundation, wrote in September 2016 that "from 2006 to the present, more than 40 Taiwanese citizens were prosecuted for espionage and espionage-related crimes involving China."<sup>217</sup>

In the face of the Chinese espionage threat, the Taiwan government and military have implemented measures to impede Chinese intelligence activities. Mr. Mattis writes that "Taiwan has made several substantial efforts to improve security—including trip reporting and routine polygraphs for personnel with sensitive access as well as boosting its counterintelligence staff—and serious offenders can, but not always, receive heavy prison sentences."<sup>218</sup> Among the most recent actions the Taiwan government has taken is requiring government personnel to receive government approval before transiting through an airport in China. Taiwan civil servants are already required to obtain approval before traveling to China.<sup>219</sup>

The problem of Chinese espionage against Taiwan has implications for U.S. interests. William Stanton, former director of the American Institute in Taiwan (AIT) and current director of Taiwan's National Tsinghua University's Center for Asia Policy, said in 2013 that cases of Chinese espionage against Taiwan "have been harmful not only because of the potential loss of unknown quantities of classified information, but also because their success and frequency serves to undermine U.S. confidence in security cooperation with Taiwan."<sup>220</sup> However, David Major, a former director of counterintelligence, intelligence and security programs at the National Security Council testified to the Commission in 2016 that "if the USA begins to slowdown or stop the transfer of needed technology and information with Taiwan for fear of espionage loss then [China] wins and Taiwan is doomed."<sup>221</sup>

Beyond espionage, Taiwan faces Chinese political warfare, including through disinformation. One of the goals of disinformation targeting Taiwan is to damage the morale of the Taiwan people.<sup>222</sup> For example, according to the Ministry of National Defense's communications division, individuals working for the Chinese government tried to spread misleading and negative information about the 2017 Han Kuang exercises through online fora.<sup>223</sup>

Beijing has a network of organizations involved in political warfare against Taiwan. One of the main organizations is the former PLA General Political Department's 311 Base.<sup>224</sup> According to a report published by the Project 2049 Institute, the 311 Base is “at the forefront of applied psychological operations and propaganda directed against Taiwan.”<sup>225</sup>

In what appears to be an example of a Chinese psychological operation against Taiwan, state-run media outlet China Central Television broadcast video of a PLA exercise involving an assault on a building resembling Taiwan's presidential palace; the broadcast aired in July 2015, during the lead-up to Taiwan's presidential election.<sup>226</sup> Mr. Cole said the following about the exercise:

*[It] strikes at the heart of what is recognizable to ordinary Taiwanese—downtown Taipei ... By making the threat more recognizable and immediate than missiles fired off Taiwan's northern and southern tips, or drills simulating an amphibious assault, Beijing may hope to engage ordinary Taiwanese not at the intellectual and abstract level, but on an emotional one.*<sup>227</sup>

Derek Grossman, a senior defense analyst at the RAND Corporation, wrote in reference to the video that “psychological warfare is just one component of a likely broader Chinese information operations campaign meant to reduce Taiwanese morale.”<sup>228</sup>

In July 2017, Taiwan's *Liberty Times* reported, based on Taiwan government information, that “Chinese influence” was involved in protests and the spread of disinformation against the Tsai Administration's pension reforms.<sup>229</sup> Later that month, Mr. Cole wrote that Beijing had intensified its political warfare efforts against Taiwan,

*from ramped up efforts by China's United Front apparatus to recruit and co-opt academics, journalists and local officials in Taiwan and abroad to a major campaign of (dis)information saturation to distract from the real issues and create a sense of permanent crisis in Taiwan. The campaign is aimed at undermining democratic processes, eroding public support for the Tsai Ing-wen Administration, and overwhelming the Taiwanese government by sapping its finite resources.*<sup>230</sup>

In addition, Mr. Cole wrote that China “is now using bots, various social media (e.g., LINE, WeChat) and content farms (also known as content mills) to saturate Taiwan with pro-Beijing agitprop—the standard Chinese modus operandi.”<sup>231</sup> In August 2017, Mr. Mattis wrote that “Beijing's effort to shape or even destabilize Taiwanese society itself through united front work is intensifying. The aim, according to several Taiwanese interlocutors, is to create a ‘fake civil society’ that can be used against Taiwan's democratic system.”<sup>232</sup> The idea of a “fake civil society” appears to have been reflected in the remarks of Taiwan legislator Wang Ting-Yu during a meeting of the Legislative Yuan's Foreign and National Defense Committee when he raised concerns about certain people and groups in Taiwan that receive direction and resources from outside Taiwan whose pur-

pose is not to protest and express their views but rather to create chaos in society.<sup>233</sup>

### ***The Challenge of Chinese Cyber Operations***

Chinese cyber operations pose a significant threat to Taiwan. According to Taiwan's 2017 quadrennial defense review report, "The PLA has drastically increased its information and electronic warfare and cyber operations capabilities, threatening our military and civilian networks."<sup>234</sup> Among the measures the Tsai Administration is taking to address this challenge is the establishment of the Information and Electronic Warfare Command within the Taiwan military to lead the military's cyber defense efforts. The command is tasked with integrating and coordinating the efforts of the military's information and electronic warfare units and with working with Taiwan's executive branch.<sup>235</sup>

### **U.S.-Taiwan Relations**

Despite uncertainties conferred by a change in administration in the United States, the trend in U.S.-Taiwan relations remains generally positive under President Donald Trump. In an interview with Fox News in December 2016 then President-elect Trump said, "I don't know why we have to be bound by a One-China policy unless we make a deal with China having to do with other things, including trade,"<sup>236</sup> which raised concerns in Taiwan that the United States might now be inclined to use Taiwan as a bargaining chip in its relationship with China.<sup>237</sup> However, prior to his confirmation, now Secretary of State Rex Tillerson and Secretary of Defense James Mattis made statements at the June 2017 Shangri-La Dialogue in Singapore indicated overall continuity in the executive branch's approach to Taiwan policy.<sup>238</sup> Secretary Mattis said, "The Department of Defense remains steadfastly committed to working with Taiwan and with its democratic government to provide the defense articles necessary, consistent with the obligations set out in our Taiwan Relations Act."<sup>239</sup> Moreover, the Trump Administration approved new potential sales of defense items to Taiwan; the U.S. Department of State notified Congress of these potential sales in June 2017 (for more information on these potential sales, see "Security Cooperation," later in this section).<sup>240</sup>

### ***U.S.-Taiwan Economic and Trade Relations***

In a meeting with the Commission in May 2017, President Tsai emphasized enhancing Taiwan's economic relations with the United States as a top priority for her Administration.<sup>241</sup> The comments echoed statements President Tsai made at an American Chamber of Commerce event in March 2017, where she spoke about her hopes for U.S.-Taiwan relations, saying, "Taiwan and the [United States] should engage in bilateral discussions and trade negotiations as a

<sup>233</sup>The Taiwan Relations Act states, "It is the policy of the United States to ... consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States; to provide Taiwan with arms of a defensive character; and to maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan." American Institute in Taiwan, *Taiwan Relations Act* (Pub. L. No. 96-8).

matter of priority. Both sides should have frank and substantive discussions and work together towards a new bilateral trade agreement. Preferably, of course, FTA type.”<sup>242</sup> So far, Taiwan’s Ministry of Economic Affairs has identified six sectors—steel, semiconductors, petrochemicals, textiles, automobile components, and smart machinery—as targets for further Taiwan-U.S. cooperation.<sup>243</sup> In June 2017, Taiwan also sent its largest delegation—comprising 140 representatives from 84 Taiwan businesses—to the SelectUSA Investment Summit in Washington, DC, which the Ministry of Economic Affairs told the Commission highlights Taiwan’s commitment to good economic ties with the United States.<sup>244</sup>

As of 2013 (the most recent data available), Taiwan companies employed more than 12,000 workers in the United States.<sup>245</sup> In one notable example of Taiwan investment in the United States, Foxconn, Taiwan’s electronics maker and Apple Inc. supplier, announced plans in July 2017 to invest more than \$10 billion in a display-making factory in Wisconsin.<sup>246</sup> According to Foxconn, the investment will create between 3,000 and 13,000 U.S. jobs in four years.<sup>247</sup> Although Foxconn already operates some facilities in Pennsylvania, the newly announced investments would mark the firm’s most significant investment in the United States to date.\*<sup>248</sup>

A spokesman for Wisconsin Governor Scott Walker described the new Foxconn deal as a “once-in-a-lifetime opportunity” and indicated private investment would be the driving force behind the deal, contributing \$6.70 for every \$1 of public funds.<sup>249</sup> Nevertheless, critics have attacked the plan as too expensive after Governor Walker offered \$3 billion in tax breaks and subsidies for the plant. According to the nonpartisan Legislative Fiscal Bureau, a research agency under the Wisconsin Legislature, it will take at least 25 years for the plant to see a return on investment (the estimate assumes 13,000 workers are hired; if, however, the actual employment numbers are lower, recouping the investment could take significantly longer).<sup>250</sup> Assuming the factory provides the full 13,000 jobs, the *Washington Post* estimates state subsidies provided to the project would amount to \$230,700 per worker annually.<sup>251</sup> Environmental organizations have also objected to the deal, which, under Governor Walker’s proposal, would be exempt from filing environmental permits and conducting an environmental analysis.<sup>252</sup> In September 2017, Governor Walker approved the deal, sending it to the Wisconsin Economic Development Corporation where the last details of the contract will be finalized.<sup>253</sup>

Bilateral goods trade between the United States and Taiwan totaled \$65.4 billion in 2016, down 2 percent year-on-year, making Taiwan the United States’ tenth-largest trading partner.<sup>254</sup> In 2016, U.S. goods exports to Taiwan remained consistent with 2015 levels (\$26 billion), but U.S. imports from Taiwan dropped 3.9 percent year-on-year to \$39.3 billion.<sup>255</sup> Of the United States’ \$26 billion worth of goods exports to Taiwan in 2016, the leading categories were industrial machinery (\$5.4 billion), electrical machinery (\$5.2 billion), and civilian aircraft (\$3.2 billion).<sup>256</sup> U.S. goods imports from Taiwan

\*In 2013, Foxconn announced a \$30 million investment for a new plant in Pennsylvania, but the factory was never built. Todd C. Frankel, “How Foxconn’s Broken Pledges in Pennsylvania Cast Doubt on Trump’s Jobs Plan,” *Washington Post*, March 3, 2017.

were led by electrical machinery (\$14 billion), general equipment and machinery (\$6.8 billion), and vehicles (\$2.5 billion).<sup>257</sup>

Taiwan and the United States continue to discuss bilateral economic issues primarily through a Trade and Investment Framework Agreement (TIFA), which was established in 1994.<sup>258</sup> In the latest TIFA discussions held in July 2017, the United States and Taiwan discussed a range of bilateral economic issues, including agriculture, pharmaceuticals and medical devices, intellectual property rights protection, trade barriers, and investment.<sup>259</sup> The two sides have yet to resolve a decade-long dispute over U.S. pork imports, one of the most contentious issues in the economic relationship. An April 2017 report from the Office of the U.S. Trade Representative highlighted Taiwan's continued failure to open its pork market to U.S. producers, with Taiwan authorities citing pressure from the local pork industry and consumer groups as the main obstacle to implementation.<sup>260</sup> The conflict stems from U.S. pork farmers' use of ractopamine, a feed additive, to produce leaner meat products. Taiwan, along with the EU and China, has banned the use of ractopamine due to health and food safety concerns.<sup>261</sup> Ractopamine had been a sticking point in U.S. beef trade to Taiwan up until 2012, when Taiwan loosened some restrictions on residual levels of ractopamine in U.S. beef imports.<sup>262</sup> To date, however, no similar progress has been made on pork market access in Taiwan.<sup>263</sup>

### ***Security Cooperation***

U.S.-Taiwan security cooperation includes arms sales, training, advising, exchanges, and equipment maintenance. This partnership helps Taiwan enhance its ability to deter and, if necessary, defend against an attack from the Chinese military.

On June 29, 2017, the State Department announced its approval of seven foreign military sales to Taiwan valued at \$1.36 billion.\*<sup>264</sup> This announcement marked the first arms sales to Taiwan approved by the Trump Administration and the first notifications since December 2015. The announced items that are available to Taiwan are: (1) operation and maintenance support for Taiwan's Surveillance Radar Program; (2) upgrade of the AN/SLQ-32(V)3 electronic warfare systems on Taiwan's KEELUNG-class destroyers; (3) AGM-154C joint stand-off weapon air-to-ground missiles; (4) MK 54 lightweight torpedo conversion kits; (5) MK 48 Mod 6AT heavyweight torpedoes; (6) Standard Missile-2 Block IIIA missiles and components; and (7) AGM-88B high-speed antiradiation missiles. The Trump Administration also notified Congress of a possible direct commercial sale to Taiwan, which raised the total value of the items notified to about \$1.4 billion.<sup>265</sup>

Military-to-military contacts between the United States and Taiwan are robust, though visitors to Taiwan are currently limited by

\*The executive branch is required to notify Congress of arms sales through the foreign military sales process that meet or exceed the following values: \$14 million in major defense equipment, \$50 million in defense articles or services, and \$200 million in design and construction services. After the executive branch's decision to approve, the government purchasing the arms may decide to purchase less than what is approved and must finalize a contract with the supplier. Therefore arms sales notified to Congress are not final. Paul K. Kerr, "Arms Sales: Congressional Review Process," *Congressional Research Service*, April 19, 2016; Piin-Fen Kok and David J. Firestein, "Threading the Needle: Proposals on U.S. and Chinese Actions on Arms Sales to Taiwan," *East-West Institute*, September 10, 2013, 71.

State Department practice to mid- or lower-grade U.S. personnel, and U.S. military observer delegations attending the Taiwan's Han Kuang exercise are led by a retired general or flag officer.<sup>266</sup> More than 3,200 U.S. defense personnel visited Taiwan in 2015.<sup>267</sup> Among other areas of training, the United States provides training to Taiwan fighter pilots, special operations personnel, and rapid runway repair personnel.<sup>268</sup> Additionally, Taiwan military personnel undergoing education and training at U.S. military institutions number in the hundreds.<sup>269</sup>

Nevertheless, the U.S. government practice of limiting the highest rank of U.S. military personnel who can visit Taiwan to colonels and captains (O6 level) prevents the most senior U.S. officers from gaining firsthand knowledge of the Taiwan military and the operational environment in a potential cross-Strait conflict.<sup>270</sup> Furthermore, the U.S. government has not invited Taiwan to the major U.S.-led Rim of the Pacific (RIMPAC) exercise, Red Flag air-to-air combat training exercise, or the cybersecurity exercise Cyber Storm. Participating in such exercises, even as an observer, could help Taiwan enhance its ability to defend itself and provide the Taiwan military with more opportunities to interact with other militaries.

### ***Other Areas of Cooperation***

Beyond commercial and security ties, U.S.-Taiwan cooperation spans many other areas, including environmental protection, cybersecurity, education, public health, and science and technology.<sup>271</sup> One example of U.S.-Taiwan cooperation is the Global Cooperation and Training Framework. During a visit to Taiwan in April 2017, AIT chairman James Moriarty said, "We consider [the Global Cooperation and Training Framework] one of the signature programs in the U.S.-Taiwan relationship, built on our long history of strong cooperation."<sup>272</sup> Through this initiative, which the two countries established in June 2015, the United States and Taiwan jointly train experts from the Asia Pacific in areas such as public health, energy, information and communication technology, and the empowerment of women.<sup>273</sup> Programs Taiwan has hosted under the initiative include a training course for laboratory professionals on diagnosing, preventing, and responding to Middle East Respiratory Syndrome, and a training course for government officials and healthcare professionals on the prevention and control of dengue fever.<sup>274</sup> This partnership recently was expanded to include humanitarian assistance and disaster relief. The first workshop on this topic was held in Taiwan in July 2017.<sup>275</sup>

<sup>266</sup>The National Defense Authorization Act for Fiscal Year 2017 includes a sense of Congress that "the Secretary of Defense should conduct a program of senior military exchanges between the United States and Taiwan that have the objective of improving military-to-military relations and defense cooperation between the United States and Taiwan." The exchanges would occur at least once a year in the United States and in Taiwan and would involve active-duty general or flag officers and civilian Department of Defense officials at the level of assistant secretary of defense or above. The National Defense Authorization Act for Fiscal Year 2018, which passed the Senate, includes the sense of Congress that "the United States should support expanded exchanges focused on practical training for Taiwan personnel by and with United States military units, including exchanges between services, to empower senior military officers to identify and develop asymmetric and innovative capabilities that strengthen Taiwan's ability to deter aggression." As this Report went to print, the bill was awaiting conference. National Defense Authorization Act for Fiscal Year 2018, H.R. 2810, introduced September 19, 2017; Ankit Panda, "Senior Military Exchanges between the U.S. and Taiwan: Coming in 2017?" *Diplomat*, December 27, 2016.

### **Implications for the United States**

The United States was an ally of the Republic of China for decades before severing formal relations in 1979, under President Carter. Following that action, recognizing the importance of Taiwan in the Asia Pacific, Congress passed the Taiwan Relations Act of 1979. The Act is designed to “preserve and promote extensive, close, and friendly commercial, cultural, and other relations between the people of the United States and the people on Taiwan, as well as the people on the China mainland and all other peoples of the Western Pacific area.”<sup>276</sup> In the Act, Congress declared that “peace and stability in the area are in the political, security, and economic interests of the United States.”<sup>277</sup> The Taiwan Relations Act also makes it clear that “the United States’ decision to establish diplomatic relations with the People’s Republic of China rests upon the expectation that the future of Taiwan will be determined by peaceful means.”<sup>278</sup> Further, the Act states that it is U.S. policy “to consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States.”<sup>279</sup>

The United States, since that time, has successfully encouraged the development of a multi-party democracy on Taiwan and continued a policy of providing defensive arms and services to Taiwan. If the United States ignored its own law and its long commitment to a peaceful resolution of the cross-Strait problems, it would undermine the credibility of U.S. foreign policy and security commitments regionally, if not globally.

The Tsai Administration is engaged in the difficult tasks of transforming Taiwan’s economy and strengthening its defensive and deterrent capabilities in the face of China’s major military modernization program. Beijing has increased its pressure on Taipei on multiple fronts, including in Taiwan’s foreign relations and participation in international organizations. China also has continued to use its economic leverage to exert political pressure on Taiwan, including reducing tourism from China to Taiwan and stepping up efforts to attract Taiwan workers and students to China. Increased cross-Strait tension could lead to instability in the Asia Pacific or even a conflict that might involve the United States.

U.S. support is important to help Taiwan overcome the challenges it faces in the security, economic, and international realms. China’s military modernization presents a significant challenge both to Taiwan’s ability to defend itself and to the United States’ ability to intervene effectively in a cross-Strait conflict. Improvements in China’s military capabilities enhance Beijing’s ability to use the threat of military force to coerce Taipei into making political concessions. The shift in the military balance underscores the importance of U.S. arms sales to Taiwan, U.S.-Taiwan military exchanges, and other areas of security cooperation. The U.S.-Taiwan security partnership contributes to regional peace and stability by enhancing Taiwan’s ability to deter an attack by the Chinese military.

In the economic realm, although Taiwan has worked to diversify its trade and investment ties away from China, further reforms are needed to guarantee long-term, sustainable economic growth. To this end, Taiwan’s government recognizes the importance of fur-

thering Taiwan's economic relationship with the United States. Increased trade and investment with Taiwan also could benefit the United States.

U.S. support also is an important source of confidence for Taipei as it faces increased pressure in the international arena from Beijing. Working with Taiwan to solve international problems and supporting Taiwan's participation in the international community benefits the United States in many ways. Taiwan's robust democracy, civil society, and technology sector, and its vast expertise and experience in areas such as humanitarian assistance and disaster relief make it a strong partner for the United States in initiatives like the Global Cooperation and Training Framework and the International Environmental Partnership. Taiwan also has much to contribute in areas like aviation safety, combating the spread of infectious diseases, and law enforcement and fighting transnational crime.<sup>280</sup> At a Global Cooperation and Training Framework workshop in July 2017, AIT director Kin Moy called Taiwan "a model of disaster preparedness" in Asia.<sup>281</sup> As Mr. Cole writes, Taiwan's exclusion from certain international organizations means that "Taiwan risks becoming a blind spot and a potential launch pad for illicit trade, various forms of trafficking, terrorist attacks and disease outbreaks, while its busy airspace can, due to lack of information, become more prone to accidents resulting from miscommunication."<sup>282</sup> These transnational challenges have the potential to affect the United States and U.S. citizens living and traveling around the world, underscoring the importance of continued U.S.-Taiwan collaboration and Taiwan's inclusion in international organizations to the United States.

## ENDNOTES FOR SECTION 3

1. Freedom House, "Freedom of the Press 2017: Press Freedom's Dark Horizon," April 2017, 25; Reporters Without Borders, "2017 World Press Freedom Index."
2. Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.
3. *Taiwan Today*, "Tsai Rings in the New Year with Call for Unity," January 1, 2017.
4. National Institute for Defense Studies, "Change in Continuity: The Dynamics of the China-Taiwan Relationship," 2017, 82.
5. Dai Ruifen, "Zhang Zhijun: The Mainland Will Not Unilaterally Change Agreements That the Two Sides of the Strait Have Already Signed," *United Daily News*, August 18, 2016. Translation; China's Taiwan Affairs Office, *TAO: The People on Both Sides of the Strait Support Cracking down on Telecommunications Fraud According to Law. The Taiwan Side Should Make Practical Efforts to Resume the Working of the Cross-Strait Contacts and Communication Mechanisms*, August 8, 2016; China's Taiwan Affairs Office, *TAO: Cracking down on Telecommunications Fraud Is Supported by the People on Both Sides of the Taiwan Strait*, June 25, 2016. Translation.
6. China's Taiwan Affairs Office, *TAO: Cracking down on Telecommunications Fraud Is Supported by the People on Both Sides of the Taiwan Strait*, June 25, 2016. Translation.
7. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
8. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
9. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
10. Taiwan official, meeting with Commission, Taipei, Taiwan, June 22, 2016; Bonnie S. Glaser, "Managing Cross-Strait Ties in 2017," *Center for Strategic and International Studies China Power*, January 26, 2017, 6.
11. Taiwan's Tourism Bureau, "Visitor Arrivals, 2016/5–2017/5." [http://stat.taiwan.net.tw/system/country\\_months\\_arrival\\_result.asp?105&106&05&05&1&2&%E4%B8%AD%E5%9C%8B%E5%A4%A7%E9%99%B8%3Cbr%3E\(Mainland%20China\)](http://stat.taiwan.net.tw/system/country_months_arrival_result.asp?105&106&05&05&1&2&%E4%B8%AD%E5%9C%8B%E5%A4%A7%E9%99%B8%3Cbr%3E(Mainland%20China)).
12. Bonnie S. Glaser, "Managing Cross-Strait Ties in 2017," *Center for Strategic and International Studies China Power*, January 26, 2017, 6.
13. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
14. Lawrence Chung, "Beijing Cuts Number of Students Allowed in Taiwan," *South China Morning Post*, May 30, 2017.
15. Lawrence Chung, "Beijing Cuts Number of Students Allowed in Taiwan," *South China Morning Post*, May 30, 2017.
16. Zhuang Pinghui, "Cross-Strait Tensions 'a Barrier to Mainland Entry for Taiwanese Exports,'" *South China Morning Post*, March 14, 2017.
17. Zhuang Pinghui, "Cross-Strait Tensions 'a Barrier to Mainland Entry for Taiwanese Exports,'" *South China Morning Post*, March 14, 2017.
18. Zhuang Pinghui, "Cross-Strait Tensions 'a Barrier to Mainland Entry for Taiwanese Exports,'" *South China Morning Post*, March 14, 2017.
19. Zhuang Pinghui, "Cross-Strait Tensions 'a Barrier to Mainland Entry for Taiwanese Exports,'" *South China Morning Post*, March 14, 2017.
20. Zhuang Pinghui, "Cross-Strait Tensions 'a Barrier to Mainland Entry for Taiwanese Exports,'" *South China Morning Post*, March 14, 2017.
21. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017; Business representatives, meeting with Commission, Taipei, Taiwan, May 17, 2017.
22. Wang Junwei, "Hai Pa Wang Takes Out Advertisement in *Want Daily* Disassociating Itself from Tsai Ing-wen and Supporting the Two Sides of the Strait Are Part of One China," *Storm Media*, December 5, 2016. Translation.
23. Taiwan's Mainland Affairs Council, *MAC Solemnly Protests to Mainland China for Forcible Deportation of Taiwanese Nationals from Malaysia and Cambodia and Calls again for Cross-Strait Cooperation in Combating Crime*, August 24, 2017; Taiwan's Mainland Affairs Council, *MAC Solemnly Protests to the Mainland and Calls again for Cross-Strait Cooperation in Combating Crime*, August 3, 2017; Miao Zhong-han and Romulo Huang, "Three More Deported from Cambodia to China," *Focus Taiwan*, July 29, 2017; Chen Chia-lun and Evelyn Kao, "China Still Holding 223 Taiwanese Deportees from Other Countries: MAC," *Focus Taiwan*, January 8, 2017.
24. Yu-Jie Chen and Jerome A. Cohen, "Beijing and Taipei Should End Their Tug of War over Repatriation of Criminal Suspects," *South China Morning Post*, Septem-

ber 29, 2016; Jerome A. Cohen and Yu-Jie Chen, "Cross-Strait Cooperation in Fighting Crime," *Council on Foreign Relations*, July 6, 2011.

25. Michael Turton, "The Truth about the Deportations of Alleged Taiwanese Scammers from Kenya to China," *Diplomat*, May 11, 2016; Aggrey Mutambo and Angira Zadock, "China Pushes Kenya to Hand over Suspects Linked to Cyber Fraud," *Daily Nation*, January 15, 2015.

26. Charlie Campbell, "Law and Order Is at the Heart of China-Taiwan Deportation Dispute," *Time*, April 22, 2016.

27. Scarlett Chai and Y.F. Low, "MOFA Rejects Beijing's 'One China' Claim on WHA Issue," *Focus Taiwan*, May 22, 2017.

28. China's Taiwan Affairs Office, *TAO News Conference Transcript (May 10, 2017)*, May 10, 2017; China's Taiwan Affairs Office, *TAO: That the Taiwan Side Is Unable to Participate in the 39th International Civil Aviation Organization Assembly Was Completely Caused by the DPP Authorities*, September 23, 2016.

29. Stacy Hsu and Alison Hsiao, "Taiwan Rejected from OECD Meeting," *Taipei Times*, April 20, 2016; Jamey Keaten, "Taiwan Study Group Baffled over Blocked Geneva Visit to UN," Associated Press, June 8, 2016; Christie Chen and Yang Shumin, "Taiwan Officials Forced out of UN Fisheries Meeting Allegedly by China," *Focus Taiwan*, September 21, 2016.

30. J. Michael Cole, "Taiwan Kicked out of Kimberly Process Meeting in Australia," *Taiwan Sentinel*, May 2, 2017.

31. Joseph Wu, then Secretary General, Taiwan's National Security Council, meeting with Commission, Taipei, Taiwan, May 17, 2017.

32. Joseph Wu, then Secretary General, Taiwan's National Security Council, meeting with Commission, Taipei, Taiwan, May 17, 2017.

33. Liu Po-liang, "INTERPOL Is Not Complete without Taiwan's Participation," *Diplomat*, October 31, 2016; Bonnie S. Glaser and Jacqueline Vitello, "Taiwan's Marginalized Role in International Security: Paying a Price," *Center for Strategic and International Studies*, January 2015, 9.

34. INTERPOL, "Meng Hongwei."

35. Bonnie S. Glaser and Jacqueline Vitello, "Taiwan's Marginalized Role in International Security: Paying a Price," *Center for Strategic and International Studies*, January 2015, 3.

36. J. Michael Cole, "Interpol Puts China Ahead of Public Safety as Taipei Readies to Host 2017 Universiade," *Taiwan Sentinel*, August 15, 2017; Interpol.int, "Data Exchange." <https://www.interpol.int/INTERPOL-expertise/Data-exchange/I-24-7>.

37. Zeng Yixuan, "Universiade Needs Security Information. Contacting INTERPOL Meets a Wall," Central News Agency, August 12, 2017. Translation.

38. Chung Li-hua and Jonathan Chin, "Intel Channels Set up for Universiade," *Taipei Times*, July 31, 2017.

39. Taiwan's Office of the President, *President Ma Visits Ministry of Foreign Affairs and Expounds the Concept and Strategy of "Flexible Diplomacy"*, August 4, 2008. Translation; *China Post*, "President-Elect Ma Calls for 'Diplomatic Truce' with China," May 11, 2008.

40. Frank Ching, "Is It Good for China to Strip Taiwan of Its Diplomatic Allies?" *Manila Times*, January 10, 2017; Lucy Hornby and Luc Cohen, "No Ties? No Problem as China Courts Taiwan's Remaining Allies," Reuters, August 9, 2013; Central News Agency, "Sao Tome Breaks Relations. Ministry of Foreign Affairs Expresses Regret and Condemnation [Video]," December 21, 2016. Translation.

41. Richard C. Bush, "China's Gambia Gambit and What It Means for Taiwan," *Brookings Institution*, March 22, 2016.

42. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.

43. Taiwan's Ministry of Foreign Affairs, *The ROC Government Has Terminated Diplomatic Relations with Panama with Immediate Effect to Uphold National Dignity*, June 13, 2017.

44. Central News Agency, "Sao Tome Breaks Relations. Ministry of Foreign Affairs Expresses Regret and Condemnation [Video]," December 21, 2016. Translation.

45. Frank Ching, "Is It Good for China to Strip Taiwan of its Diplomatic Allies?" *Manila Times*, January 10, 2017; Lucy Hornby and Luc Cohen, "No Ties? No Problem as China Courts Taiwan's Remaining Allies," Reuters, August 9, 2013.

46. Pauline Bax, Simon Gongo, and Lungile Dlamini, "Chinese Billions Fail to Sway Taiwan's Last Two Allies in Africa," Bloomberg, January 24, 2017.

47. Pauline Bax, Simon Gongo, and Lungile Dlamini, "Chinese Billions Fail to Sway Taiwan's Last Two Allies in Africa," Bloomberg, January 24, 2017.

48. Pauline Bax, Simon Gongo, and Lungile Dlamini, "Chinese Billions Fail to Sway Taiwan's Last Two Allies in Africa," Bloomberg, January 24, 2017.

49. Timothy S. Rich, "Status for Sale: Taiwan and the Competition for Diplomatic Recognition," *Issues and Studies* 45:4 (December 2009): 163; J. Michael Cole, "Yes, China Has Re-Established Ties with The Gambia. Now Calm Down," *News Lens*, March 18, 2016.
50. General Assembly of the United Nations, "H.E. Mr. Yahya Jammeh, President," September 27, 2013; Jenny W. Hsu and Ko Shu-ling, "Ma, MOFA Regret Latest Rejection of UN Attempt," *Taipei Times*, September 19, 2008.
51. J. Michael Cole, "Sao Tome and Principe Drops Taiwan, Embraces China," *University of Nottingham China Policy Institute*, December 21, 2016; J. Michael Cole, "Yes, China Has Re-Established Ties with The Gambia. Now Calm Down," *News Lens*, March 18, 2016.
52. Central News Agency, "Trade Missions under Pressure from China to Change Names: Official," *China Post*, June 14, 2017.
53. Gary Cheung and Tony Cheung, "Beijing, Vatican Reach Initial Accord on Appointment of Bishops, Hong Kong Cardinal Says," *South China Morning Post*, August 5, 2016; Lisa Jucca, Benjamin Kang Lim, and Greg Torode, "After Decades of Mistrust, Pope Pushes for Diplomatic Breakthrough with China," Reuters, July 14, 2016.
54. Joseph Wu, then Secretary General, Taiwan's National Security Council, meeting with Commission, Taipei, Taiwan, May 17, 2017.
55. News Agency of Nigeria, "Nigeria Ends Romance with Taiwan," January 11, 2017.
56. News Agency of Nigeria, "Nigeria Ends Romance with Taiwan," January 11, 2017.
57. China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang's Regular Press Conference on January 12, 2017*, January 12, 2017.
58. Scarlett Chai and Lilian Wu, "Taiwan Trade Office in Ecuador Forced to Change Name: MOFA," *Focus Taiwan*, June 27, 2017.
59. Su Longqi and Liu Guanting, "Ministry of Foreign Affairs: Five Overseas Missions Names Are under Pressure to Change Names (Video)," June 14, 2017. Translation.
60. Scarlett Chai and Lilian Wu, "Taiwan Trade Office in Ecuador Forced to Change Name: MOFA," *Focus Taiwan*, June 27, 2017.
61. Chris Horton and Chris Buckley, "China Charges Activist from Taiwan with 'Subverting State Power,'" *New York Times*, May 29, 2017.
62. China's Taiwan Affairs Office, *Taiwan Resident Lee Ming-che Was Arrested According to Law*, May 26, 2017. Translation.
63. Chun Han Wong, "Taiwanese Activist Pleads Guilty in China to Conspiring against Beijing," *Wall Street Journal*, September 11, 2017.
64. Abraham Gerber, "Beijing Blocks Advocate's Wife," *Taipei Times*, April 11, 2017.
65. Sophie Richardson, "Taiwanese Activist Not Spared China's Wrath," *Human Rights Watch*, September 11, 2017.
66. Sophie Richardson, "Taiwanese Activist Not Spared China's Wrath," *Human Rights Watch*, September 11, 2017.
67. Jerome A. Cohen and Yu-Jie Chen, "A Taiwanese Man's Detention in Guangdong Threatens a Key Pillar of Cross-Straits Relations," *ChinaFile*, April 20, 2017.
68. Human Rights Watch, "China: Release Taiwanese Democracy Activist," April 19, 2017.
69. Human Rights Watch, "China/Hong Kong: Free 'Disappeared' Booksellers," February 10, 2016.
70. Taiwan Foundation for Democracy, "Lee Ming-che Disappearance in China Causes Fears among Taiwan NGOs," April 3, 2017.
71. Jessica Drun, "Taipei-Shanghai Forum: A Tale of Two Cross-Strait Exchanges," *Global Taiwan Brief*, September 28, 2016; Shannon Tiezzi, "Cross-Strait Relations Caught in a Time Warp," *Diplomat*, November 4, 2016.
72. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
73. Shannon Tiezzi, "Cross-Strait Relations Caught in a Time Warp," *Diplomat*, November 4, 2016.
74. Jessica Drun, "Taipei-Shanghai Forum: A Tale of Two Cross-Strait Exchanges," *Global Taiwan Brief*, September 28, 2016.
75. J. Michael Cole, "Spurned, Beijing Bypasses Taiwan's Central Government," *News Lens*, September 19, 2016.
76. China's Taiwan Affairs Office, *TAO Director Zhang Zhijun's Meeting with Visiting Taiwan County Magistrates and Mayors Delegation*, September 18, 2016. Translation.
77. Xinhua, "TAO: Will Take Measures to Promote Exchanges with Eight Taiwan Counties and Cities," September 18, 2016. Translation.

78. J. Michael Cole, "Spurned, Beijing Bypasses Taiwan's Central Government," *News Lens*, September 19, 2016.
79. Chris Zappone, "Hong Kong Pro-Democracy Protests Create Waves in Taiwan," *Sydney Morning Herald*, October 9, 2014; Cindy Sui, "Why Taiwan Is Watching Hong Kong Protests," BBC, September 30, 2014.
80. Taiwan's Mainland Affairs Council, *MAC Calls on Mainland China to Honor Pledges to Hong Kong*, June 29, 2017.
81. J. Michael Cole, Editor-in-Chief, *Taiwan Sentinel*, meeting with Commission, Taipei, Taiwan, June 22, 2016.
82. J. Michael Cole, *Convergence or Conflict in Taiwan Strait: The Illusion of Peace?*, Routledge, 2016, 91.
83. Congressional-Executive Commission on China, *Hearing on Will the Hong Kong Model Survive?: An Assessment 20 Years after the Handover*, written testimony by Lam Wing Kee, May 3, 2017; Frank Langfitt, "The Plot Thickens in the Mystery of Hong Kong's Missing Booksellers," National Public Radio, January 5, 2016.
84. Joshua Wong, Secretary-General of Demosistō, meeting with Commission, Hong Kong, May 19, 2017.
85. Abraham Gerber, "HK Democracy Caucus Formed at Legislative Yuan," *Taipei Times*, June 13, 2017.
86. Jeffie Lam, "Beijing Loyalist Lawmakers Condemn Hong Kong Localists for Taiwan Cross-Party Alliance," *South China Morning Post*, June 16, 2017; China's Taiwan Affairs Office of the State Council, *Taiwan Affairs Council Press Conference on June 14, 2017*, June 14, 2017. Translation.
87. Chang Hsiao-yueh, Minister of Taiwan's Mainland Affairs Council, meeting with Commission, Taipei, Taiwan, May 16, 2017.
88. Taiwan's Office of the President, *President Tsai Meets Delegation of Overseas Chinese-Language Media*, May 19, 2017.
89. Taiwan's Directorate-General of Budget, Accounting and Statistics via CEIC database.
90. Taiwan's Directorate General of Budget, Accounting, and Statistics, *GDP: Preliminary Estimate for 2017Q2 and Outlook for 2017-18*.
91. Taiwan's Ministry of Economic Affairs, *Export Orders up 7.5% in August 2017*, September 20, 2017; Taiwan Overseas Community Affairs Council, "Value of Export Orders Grows for 13th Straight Month in August," September 21, 2017.
92. Taiwan's Directorate-General of Budget, Accounting and Statistics via CEIC database.
93. Chuing Prudence Chou, "Education in Taiwan: Taiwan's Colleges and Universities," *Brookings Institution*, November 2014.
94. Central News Agency, "Taiwan Workers Aged 35–39 Earning Less Than Average: Numeracy Lab," May 9, 2017.
95. Central News Agency, "Taiwan Workers Aged 35–39 Earning Less Than Average: Numeracy Lab," May 9, 2017.
96. Scholar, meeting with Commission, Taipei, Taiwan, June 22, 2016.
97. Central News Agency, "China Times: Brain Drain Is Taiwan's Top Crisis," April 16, 2017.
98. Xinhua, "Mainland Maintains Top Destination for Taiwan's Job Hunters: Survey," April 20, 2017.
99. Sara Yi-Ying Lin, "Taiwan's Trade Policy Priorities in the Face of Global Uncertainties," *Global Taiwan Brief*, March 29, 2017; Taiwan official, meeting with Commission, Taipei, Taiwan, June 21, 2016.
100. Taiwan National Development Council, *The Push for Industrial Innovation*. Translation.
101. Timothy Ferry, "The 5+2 Industrial Transformation Plan," *Taiwan Business Topics* 47:5 (May 2017): 15–20.
102. Central News Agency, "Taiwan to Invest US\$140 Million in Smart Machinery Industry," April 6, 2017; *Focus Taiwan*, "NT\$300 Billion Eyed for Green-Energy, Water Infrastructure," March 20, 2017; Jess Macy Yu, "Taiwan to Spend \$33 Million over Five Years on AI Research Centers," Reuters, July 6, 2017.
103. Central News Agency, "Infrastructure Budget Clears Legislature," August 31, 2017.
104. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.
105. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.
106. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.

107. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.
108. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.
109. Taiwan's Bureau of Foreign Trade, *Trade Statistics*. <http://cus93.trade.gov.tw/FSCE000F/FSCE000F>.
110. Central News Agency, "Approved Taiwanese Investment in China Down Sharply in 2016," *China Post*, January 20, 2017.
111. Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, August 2017.
112. Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, August 2017.
113. Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, August 2017.
114. Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, August 2017.
115. Taiwan's Ministry of Economic Affairs, Investment Commission, *Monthly Report*, August 2017.
116. U.S. Department of State, *2016 Investment Climate Statements—Taiwan*, July 5, 2016.
117. Xinhua, "Ninth Straits Forum Held in Xiamen. Yu Zhengsheng Attends and Delivers Remarks," June 2017. Translation; China's Ministry of Education, *Ministry of Education Distributes Notice on the Loosening of the Standard for Taiwan High School Graduates Using Subject Aptitude Test Scores to Enter Universities in the Mainland*, July 7, 2017. Translation.
118. China's Taiwan Affairs Office, *TAO News Conference Transcript (May 10, 2017)*, May 10, 2017. Translation.
119. Lawrence Chung, "Beijing Reaches out to Young Taiwanese with Summertime Sweeteners," *South China Morning Post*, August 5, 2017.
120. Lawrence Chung, "Beijing Reaches out to Young Taiwanese with Summertime Sweeteners," *South China Morning Post*, August 5, 2017.
121. Lawrence Chung, "Beijing Reaches out to Young Taiwanese with Summertime Sweeteners," *South China Morning Post*, August 5, 2017.
122. Taiwan official, meeting with Commission, Taipei, Taiwan, June 21, 2016.
123. Scholar, meeting with Commission, Taipei, Taiwan, June 22, 2016; Taiwan official, meeting with Commission, Taipei, Taiwan, June 21, 2016.
124. Hugh Stephens, "Taiwan, China and the TPP," *China-U.S. Focus*, November 6, 2014.
125. Asia Regional Integration Center, "Free Trade Agreements." <https://aric.adb.org/fta-country>.
126. Asia Regional Integration Center, "Free Trade Agreements." <https://aric.adb.org/fta-country>.
127. Michael Heath, "The Strange Case of Korea and Taiwan's Diverging Export Fortunes," Bloomberg Markets, March 27, 2017.
128. Michael Heath, "The Strange Case of Korea and Taiwan's Diverging Export Fortunes," Bloomberg Markets, March 27, 2017.
129. Wang Mei-hua, Vice Minister of Taiwan's Ministry of Economic Affairs, meeting with Commission, Taipei, Taiwan, May 16, 2017.
130. BBC, "TPP Trade Deal Will Continue without Trump," May 21, 2017.
131. Kelvin Huang and Kuo Chung-han, "Japan Welcomes Taiwan and Other Countries to Join TPP," *Focus Taiwan*, June 26, 2017.
132. Jane Rickards, "Taiwan Looks Southward," *Taiwan Business Topics*, May 2017; Wang Mei-hua, Vice Minister of Taiwan's Ministry of Economic Affairs, meeting with Commission, Taipei, Taiwan, May 16, 2017.
133. Taiwan's Executive Yuan, *New Southbound Policy Promotion Plan*, September 26, 2016; Jane Rickards, "Taiwan Looks Southward," *Taiwan Business Topics*, May 2017.
134. Taiwan's Executive Yuan, *New Southbound Policy Promotion Plan*, September 26, 2016.
135. Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.
136. Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.
137. Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.
138. Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.

139. Staff, American Chamber of Commerce in Taipei, meeting with Commission, Taipei, Taiwan, May 17, 2017.
140. Taiwan's Executive Yuan, *New Southbound Policy Promotion Plan*, September 26, 2016.
141. Bonnie S. Glaser, Matthew P. Funaiolo, and Emily Jin, "Unpacking Tsai Ing-wen's New Southbound Policy," *Diplomat*, April 2017.
142. International Monetary Fund, *World Economic Outlook*, April 2017.
143. International Monetary Fund, *World Economic Outlook*, April 2017.
144. International Monetary Fund, *World Economic Outlook*, April 2017.
145. Jane Rickards, "Taiwan Looks Southward," *Taiwan Business Topics* 47:5 (May 2017): 29.
146. Taiwan's Executive Yuan, *New Southbound Policy Paying Early Dividends*, May 15, 2017.
147. Taiwan's Bureau of Foreign Trade. *Trade Statistics*. <http://cus93.trade.gov.tw/ENGLISH/FSCE/>.
148. Taiwan's Executive Yuan, *New Southbound Policy Achievements*, May 5, 2017.
149. Chris Horton, "With Chinese Tourism Down, Taiwan Looks to Lure Visitors from Southeast Asia," *New York Times*, May 17, 2017; Tsai Ing-wen, President of Taiwan, meeting with Commission, Taipei, Taiwan, May 17, 2017.
150. Elaine Hou, "Taiwan to Expand Visa Privileges for Southeast Asian Visitors," *Focus Taiwan*, April 12, 2017.
151. Taipei Economic and Cultural Office in the Philippines, "Taiwan Relaxes Visa Rules for Nationals of Six ASEAN Members and India," September 21, 2016.
152. Wang Mei-hua, Vice Minister of Taiwan's Ministry of Economic Affairs, meeting with Commission, Taipei, Taiwan, May 16, 2017.
153. Jane Rickards, "Taiwan Looks Southward," *Taiwan Business Topics*, May 2017.
154. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 523; U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 487.
155. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31, 95; Senate Armed Services Committee, *Hearing on Worldwide Threats*, written testimony of Vincent R. Stewart, February 26, 2015; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012*, May 2012, 29.
156. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 31; Senate Armed Services Committee, *Hearing on Worldwide Threats*, written testimony of Vincent R. Stewart, February 26, 2015.
157. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 57; Andrew S. Erickson and Michael Chase, "China's Strategic Rocket Force: Sharpening the Sword," *China Brief*, July 3, 2014; and U.S.-China Economic and Security Review Commission, *Hearing on China's Military Modernization and Its Implications for the United States*, written testimony of Lee Fuell, January 30, 2014.
158. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28.
159. International Institute for Strategic Studies, *Military Balance 2014*, Routledge, 2014, 281-282.
160. Franz-Stefan Gady, "Christmas Day Gift: China Received Four Su-35 Fighter Jets from Russia," *Diplomat*, December 27, 2016; TASS, "Russia Inks Contract with China on Su-35 Deliveries," November 19, 2015.
161. China's Ministry of National Defense, *September 2017 Ministry of National Defense Regular Press Conference Transcript*, September 28, 2017. Translation; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 28; Minnie Chan, "China's J-20 Stealth Fighter Joins the People's Liberation Army Air Force," *South China Morning Post*, March 10, 2017.
162. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 94.
163. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 94.
164. Mike Yeo, "China Launches its Most Advanced Home Grown Class of Guided-Missile Destroyers," *Defense News*, June 28, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25.

165. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 25.
166. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 26.
167. Taiwan's Navy Command, *Order to Initiate Navy Indigenous Submarine Production and Signing of Memorandum of Understanding on Cooperation*, March 22, 2017.
168. Lu Zhaolong, "Minister of Defense Feng Shih-kuan Hopes That the United States Will Assist Taiwan in Building Combat Aircraft and Submarines," *China Times*, June 6, 2016. Translation.
169. Feng Shih-kuan, Taiwan Minister of Defense, meeting with Commission, Taipei, Taiwan, May 16, 2017; Joseph Wu, then Secretary General, Taiwan's National Security Council, meeting with Commission, Taipei, Taiwan, May 17, 2017.
170. Wendell Minnick, "Taiwan Pushes for New Weapons on All Fronts," *Defense News*, May 27, 2015; Jason Pan, "Navy to Run with Domestic Submarine Program," *Taipei Times*, April 2, 2015.
171. Kelvin Wong, "Taiwan Highlights New Features, Further Development for Tuo Jiang Stealth Corvette," *IHS Jane's*, August 20, 2015; Cheng Jiawen, "Come Quick and See! The Navy's Two New Ships Are Revealed," *United Daily News*, May 14, 2016. Translation.
172. Luo Tianbin, "Its Body Lengthened and Widened, the Tuo Jiang 2.0 Will Enter Serial Production," *Liberty Times*, April 8, 2017. Translation.
173. Gavin Phipps and James Hardy, "Taiwan Commissions First-in-Class Missile Corvette, Combat Support Ship," *IHS Jane's*, March 30, 2015; Michael Pilger, "Taiwan's Improving Patrol Fleet Could Enhance Its Ability to Defend against a Chinese Invasion," *U.S.-China Economic and Security Review Commission*, February 3, 2015; Agence France-Presse, "Taiwan Launches Its Largest-Ever Missile Ship," December 23, 2014.
174. Kelvin Wong, "Taiwan Highlights New Features, Further Development for Tuo Jiang Stealth Corvette," *IHS Jane's*, August 20, 2015.
175. Gavin Phipps and James Hardy, "Taiwan Commissions First-in-Class Missile Corvette, Combat Support Ship," *IHS Jane's*, March 30, 2015; Michael Pilger, "Taiwan's Improving Patrol Fleet Could Enhance Its Ability to Defend against a Chinese Invasion," *U.S.-China Economic and Security Review Commission*, February 3, 2015; Agence France-Presse, "Taiwan Launches Its Largest-Ever Missile Ship," December 23, 2014.
176. Taiwan's Office of the President, *Advanced Trainer 'Indigenous Design and Production' Is an Important Milestone for Self-Reliant National Defense*, February 7, 2017. Translation.
177. Wendell Minnick and Tom Kington, "Taiwan Advance Jet Trainer Nears Bidding Process," *Defense News*, August 10, 2016.
178. Gareth Jennings, "Taiwan Begins F-16V Modernisation Effort," *IHS Jane's Defense Weekly*, January 18, 2017; Wendell Minnick, "F-16 Crash in U.S. Part of Taiwan's Secret 'Gamblers' Program," *Defense News*, January 25, 2016.
179. Lockheed Martin, "F-16V Takes Flight," October 21, 2015; Kyle Mizokami, "The F-16V, the Newest Version of the Iconic Fighter, Takes Flight," *Popular Mechanics*, October 21, 2015.
180. Kyle Mizokami, "The F-16V, the Newest Version of the Iconic Fighter, Takes Flight," *Popular Mechanics*, October 21, 2015.
181. Hong Zhezhen, "What About the Promise to Patrol the South China Sea with P-3C Antisubmarine Aircraft? Tsai Does Not Follow Ma," *United Daily News*, September 6, 2017. Translation.
182. Luo Tianbin, "P-3C Antisubmarine Aircraft to Conduct Reconnaissance Patrols at Taiping Island by the End of the Year," *Liberty Times*, May 2, 2016. Translation; Lu Hsin-hui and Y.F. Low, "Taiwan to Send P-3C on Surveillance Missions over South China Sea," Central News Agency, April 20, 2015.
183. Lu Hsin-hui and Y.F. Low, "Taiwan to Send P-3C on Surveillance Missions over South China Sea," Central News Agency, April 20, 2015.
184. Chen Wei-han, "Taiwan Takes Possession of Two U.S. Frigates," *Taipei Times*, March 13, 2017.
185. Naval Technology, "Oliver Hazard Perry Class Frigates, United States of America"; EToday, "Is the Perry-Class Ship's Combat Capability Greater Than the Mainland's 052 Destroyer? SQR-19 Sonar Is a Key Player in the U.S. Military," August 15, 2016. Translation; Lo Tien-pin and Jake Chung, "Taiwan Accepts U.S. Weapons Deal," *Taipei Times*, August 13, 2016.
186. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 509.

187. Craig Caffrey, "Taiwan Announces Modest Defense Spending Rise," *IHS Jane's Defense Weekly*, September 24, 2015.
188. Tu Jumin, "Defense Budget Fine Tuned. Reduced by NT\$3.9 Billion," *Liberty Times*, September 23, 2017. Translation.
189. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 67, 82.
190. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Timothy R. Heath, April 13, 2017.
191. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 26, 2016, 88–89; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 216; U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Military Force Projection and Expeditionary Capabilities*, written testimony of Mark R. Cozad, January 21, 2016; Zhang Yuliang, ed., *The Science of Campaigns*, National Defense University Press, 2006, 292. Translation.
192. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 77; U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Christopher D. Yung, April 13, 2017.
193. Hsieh Chia-chen and Lilian Wu, "Chinese Aircraft Circling around Taiwan for First Time: MND," *Focus Taiwan*, December 5, 2016.
194. Jason Pan, "Chinese Aircraft Fly around Taiwan," *Taipei Times*, December 11, 2016.
195. Lu Hsin-hui, "China's Aircraft Carrier Completes Passage through Taiwan Strait," *Focus Taiwan*, January 12, 2017.
196. Hu Hsin-hui, Elizabeth Hsu, and S.C. Chang, "China's Aircraft Carrier Battle Group Leaves Taiwan's ADIZ," *Focus Taiwan*, July 2, 2017.
197. Claudia Liu and Evelyn Kao, "Chinese Aircraft Carrier-Led Flotilla Leaves Taiwan's ADIZ," *Focus Taiwan*, July 13, 2017.
198. Lu Hsin-hui and Y.F. Low, "Chinese Aircraft Enters Taiwan's ADIZ: MND," *Focus Taiwan*, August 15, 2017; *Taipei Times*, "Chinese Bombers Pass Taiwan," July 25, 2017; Faith Hung, "After Spate of Chinese Patrols, Taiwan Says It's Prepared to Defend Itself," Reuters, July 25, 2017; Ben Blanchard and J.R. Wu, "China Drills Again near Taiwan as Island Warns of Threat," Reuters, March 2, 2017.
199. Taiwan's Ministry of National Defense, *Quadrennial Defense Review 2017*, 38.
200. Taiwan's Ministry of National Defense, *Quadrennial Defense Review 2017*, 38–39.
201. Derek Grossman, Michael S. Chase, and Logan Ma, "Taiwan's 2017 Quadrennial Defense Review in Context," *Global Taiwan Brief*, June 14, 2017.
202. Derek Grossman, Michael S. Chase, and Logan Ma, "Taiwan's 2017 Quadrennial Defense Review in Context," *Global Taiwan Brief*, June 14, 2017.
203. Taiwan's Public Policy Online Participation Platform, *Notice about Developing the Draft of the Revitalizing the Defense Industry Bill*, March 30, 2017. Translation; Taiwan Ministry of National Defense Political Warfare Bureau, *June 2017 ROC Military Security Report*, June 7, 2017. Translation.
204. Taiwan's Ministry of National Defense, *Ministry of National Defense's Propagation of Explanation Materials on "All-Volunteer Force" Promotion*, August 4, 2016. Translation.
205. Katherine Wei, "Military's Budget Should Favor Weapons over Recruitment: DPP," *China Post*, May 9, 2013; U.S.-Taiwan Business Council, "Defense and Security Report: Annual Review 2012," January 2013; and Taiwan's Ministry of National Defense, *Quadrennial Defense Review 2009*, March 2009.
206. Taiwan's Ministry of National Defense, *10 Infographics Help You Quickly Understand National Defense*, October 2015. Translation; *China Post*, "Defense Ministry Cancels Plan to End Conscription," August 26, 2015.
207. Feng Shih-kuan, Taiwan's Minister of National Defense, meeting with Commission, Taipei, Taiwan, May 16, 2017.
208. Taiwan's Office of the President, *Observing Han Kuang Exercise Number 33 Field Exercises. The President Is the Military's Support. Expects the Military to Continue to Strive for the Country's Security and Dignity*, May 25, 2017. Translation.
209. Stanley Cheung and Lilian Wu, "Hong Kong Seized Armored Vehicles from Taiwan on China Tip: Media," *Focus Taiwan*, November 26, 2016.

210. Christy Leung, "Hong Kong Denies Beijing Role in Seizure of Singaporean Troop Carriers," *South China Morning Post*, July 7, 2017.
211. Bhavan Jaipragas, "Hong Kong's Singaporean Armoured Vehicle Saga Finally Comes to an End, But Taiwan Could Still Feel Reaction," *South China Morning Post*, January 30, 2017; Bhavan Jaipragas, "Hong Kong to Return Seized Armored Vehicles to Singapore," *South China Morning Post*, January 24, 2017.
212. China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson's Geng Shuang's Regular Press Conference on November 28, 2016*, November 28, 2016; China's Ministry of National Defense, *Defense Ministry's Regular Press Conference on November 30, November 30, 2016*.
213. Minnie Chan, "How Singapore's Military Vehicles Became Beijing's Diplomatic Weapon," *South China Morning Post*, December 3, 2016; Michal Thim, "For Beijing, Seizure of Singapore Armored Vehicles Is a Low-Risk Shot across the Bows," *South China Morning Post*, December 1, 2016.
214. Lo Tien-pin and Jake Chung, "Simulated Hunt of Chinese Submarine Successful: Official," *Taipei Times*, March 26, 2017; Zhu Ming, "Displaying the Capability to Indigenously Produce Warships, the Tuo Jiang and Pan Shi Conduct Joint Exercise in the Waters off Zuoying," *Storm Media*, January 27, 2016. Translation.
215. Central News Agency, "Taiwan Drill Tests Defense Capability against Air Attack by China," May 24, 2017.
216. Lu Jiongchang, "Chingchuankang Counter Airborne. First Exercise for National Airborne Service Corps' Black Hawk Helicopters," *Now News*, May 25, 2017. Translation; Lu Xinhui, "Han Kuang Exercise. President Tsai Oversees Live-Fire Exercise on Penghu," Central News Agency, May 25, 2017. Translation; Central News Agency, "Taiwan Drill Tests Defense Capability against Air Attack by China," May 24, 2017.
217. Peter Mattis, "Spy Games in the Taiwan Strait: Taipei's Unenviable Espionage Problem," *Global Taiwan Brief*, September 28, 2016.
218. Peter Mattis, "China's Espionage against Taiwan (Part I): Analysis of Recent Operations," *China Brief*, November 7, 2014.
219. Wang Cheng-chung and Y.F. Low, "Premier Defends New Rule for Civil Servants Transiting in China," *Focus Taiwan*, March 17, 2017.
220. William Stanton, "National Security and Taiwan's Future," World Taiwanese Congress, Taipei, Taiwan, March 15, 2013.
221. U.S.-China Economic and Security Review Commission, *Hearing on Chinese Intelligence Services and Espionage Threats to the United States*, written testimony of David Major, June 9, 2016.
222. J. Michael Cole, "China Intensifies Disinformation Campaign against Taiwan," *Taiwan Sentinel*, January 19, 2017.
223. Lo Tien-pin and William Hetherington, "MND Halts China 'Fake News' Hack" *Taipei Times*, May 30, 2017.
224. Mark Stokes and Russell Hsiao, "The People's Liberation Army General Political Department: Political Warfare with Chinese Characteristics," *Project 2049 Institute*, October 14, 2013, 22–23, 29, 34–35.
225. Mark Stokes and Russell Hsiao, "The People's Liberation Army General Political Department: Political Warfare with Chinese Characteristics," *Project 2049 Institute*, October 14, 2013, 29.
226. Aaron Jensen, "China's Psychological War on Taiwan," *National Interest*, April 7, 2016; Chun Han Wong, "Palace Intrigue: Chinese Soldiers Storm Replica of Taiwan Presidential Office," *Wall Street Journal*, July 23, 2015.
227. Chun Han Wong, "Palace Intrigue: Chinese Soldiers Storm Replica of Taiwan Presidential Office," *Wall Street Journal*, July 23, 2015.
228. Derek Grossman, "A Bumpy Road Ahead for China-Taiwan Relations," *RAND Corporation*, September 22, 2016.
229. Zhong Lihua and Xu Guozhen, "National Security Authorities: Chinese Influence Involved in Anti-Pension Reform Protests," *Liberty Times*, July 18, 2017. Translation.
230. J. Michael Cole, "Will China's Disinformation War Destabilize Taiwan?" *National Interest*, July 30, 2017.
231. J. Michael Cole, "Will China's Disinformation War Destabilize Taiwan?" *National Interest*, July 30, 2017.
232. Peter Mattis, "Counterintelligence Remains Weakness in Taiwan's Defense," *China Brief*, August 17, 2017.
233. "Third Session of the Ninth Legislative Yuan, Sixth Full Committee Meeting of the Foreign and National Defense Committee," March 9, 2017. Translation.
234. Taiwan's Ministry of National Defense, *Quadrennial Defense Review 2017*, 27.

235. Chung Li-hua, Aaron Tu, and Jake Chung, "Tsai Swears in Cyberwar Commander," *Taipei Times*, June 30, 2017.
236. Mahita Gajinan, "Read Donald Trump's Fox News Interview on Russia, Climate Change and His Company's Future," *Time*, December 11, 2016.
237. Shannon Tiezzi, "Taiwan's Message to Trump, We're No 'Bargaining Chip,'" *Diplomat*, January 20, 2017; *News Lens*, "Taiwanese Believe They Are a Bargaining Chip for President Trump: Poll," January 20, 2017; William Kazer, "Taiwan Fears Becoming a Pawn in Donald Trump's Game," *Wall Street Journal*, January 19, 2017; Javier C. Hernandez and Amy Qin, "Taiwan Is Both Exhilarated and Unnerved by Trump's China Remarks," *New York Times*, December 15, 2016.
238. *Taipei Times*, "Tillerson Reaffirms U.S.' Commitment to Taiwan," February 10, 2017; U.S. Department of Defense, *Remarks by Secretary Mattis at Shangri-La Dialogue*, June 3, 2017.
239. U.S. Department of Defense, *Remarks by Secretary Mattis at Shangri-La Dialogue*, June 3, 2017.
240. Felicia Schwartz, "Trump Administration Approves \$1.42 Billion in Arms Sales to Taiwan," *Wall Street Journal*, June 29, 2017.
241. President Tsai Ing-wen, meeting with Commission, Taipei, Taiwan, May 17, 2017.
242. Tsai Ing-wen, American Chamber of Commerce Hsie Nian Fan Celebration, Taipei, Taiwan, March 22, 2017.
243. Tsai Ing-wen, American Chamber of Commerce Hsie Nian Fan Celebration, Taipei, Taiwan, March 22, 2017.
244. Official, Taiwan Ministry of Economic Affairs, meeting with Commission, Taipei, Taiwan, May 16, 2017; *Taiwan Today*, "Biggest-Ever Taiwan Delegation Set for SelectUSA Investment Summit," June 15, 2017.
245. U.S. Department of State, *U.S. Relations with Taiwan*, September 13, 2017.
246. Jess Macy Yu and J.R. Wu, "Foxconn Plans U.S. Display Making Plant for over \$10 Billion, Scouting for Location," Reuters, June 22, 2017.
247. Seth Fiegerman and Julia Horowitz, "Apple Supplier Foxconn Says It Will Build Big Wisconsin Factory," CNN, July 26, 2017.
248. Jess Macy Yu and J.R. Wu, "Foxconn Plans U.S. Display Making Plant for over \$10 Billion, Scouting for Location," Reuters, June 22, 2017.
249. Danielle Paquette, "Trump Is Celebrating the Foxconn Deal. The People Paying for It Aren't so Sure," *Washington Post*, August 14, 2017.
250. Julia Jacobs, "Wisconsin Won't Break Even on Foxconn Plant Incentives for 25 Years: Analysis," Reuters, August 8, 2017.
251. Danielle Paquette, "Foxconn Deal to Build Massive Factory in Wisconsin Could Cost the State \$230,700 per Worker," *Washington Post*, July 27, 2017.
252. Shawn Johnson, "Wisconsin Foxconn Deal Waives Environmental Regulations," Wisconsin Public Radio, July 28, 2017.
253. Todd Richmond, "Wisconsin Governor Signs \$3 Billion Foxconn Bill into Law," *Washington Post*, September 18, 2017.
254. Office of the U.S. Trade Representative, *Taiwan*. <https://ustr.gov/countries-regions/china/taiwan>.
255. Office of the U.S. Trade Representative, *Taiwan*. <https://ustr.gov/countries-regions/china/taiwan>.
256. Office of the U.S. Trade Representative, *Taiwan*. <https://ustr.gov/countries-regions/china/taiwan>.
257. Office of the U.S. Trade Representative, *Taiwan*. <https://ustr.gov/countries-regions/china/taiwan>.
258. Taiwan's Executive Yuan Office of Trade Negotiations, *Introduction of Taiwan-U.S. TIFA*.
259. Ku Chuan, Scarlett Chai, and Frances Huang, "AIT: Taiwan-U.S. Dialogue Will Help Bilateral Ties," *Focus Taiwan*, July 26, 2017.
260. Office of the U.S. Trade Representative, *2017 National Trade Estimate Report on Foreign Trade Barriers*, April 2017, 416.
261. Shirley A. Kan and Wayne Morrison, "U.S.-Taiwan Relationship: Overview of Policy Issues" *Congressional Research Service*, April 22, 2014, 34–36.
262. Shirley A. Kan and Wayne Morrison, "U.S.-Taiwan Relationship: Overview of Policy Issues" *Congressional Research Service*, April 22, 2014, 34–36.
263. Rita Cheng, Chen Cheng-wei, and Lilian Wu, "Taiwan Sees Food Safety as Key in Opening Market to U.S. Pork," *Focus Taiwan*, April 1, 2017.
264. U.S.-Taiwan Business Council, "The Trump Administration Announces U.S. Arms Sales to Taiwan," June 29, 2017.
265. U.S.-Taiwan Business Council, "The Trump Administration Announces U.S. Arms Sales to Taiwan," June 29, 2017.

266. Hong Zhezhen, "Taiwan's Military Simulation Starts Today. U.S. Observer Delegation Led By Retired General Rice," *United Daily News*, May 1, 2017. Translation.
267. U.S. government official, interview with Commission staff, July 25, 2016.
268. U.S.-China Economic and Security Review Commission, *Hearing on Recent Developments in China's Relations with Taiwan and North Korea*, written testimony of Ian Easton, June 5, 2014.
269. Shirley A. Kan, "Taiwan: Major U.S. Arms Sales since 1990," *Congressional Research Service*, August 29, 2014, 56.
270. U.S.-China Economic and Security Review Commission, *Hearing on Recent Developments in China's Relations with Taiwan and North Korea*, written testimony of Ian Easton, June 5, 2014.
271. Taipei Economic and Cultural Representative Office in the U.S., "Taiwan-U.S. Relations," May 2, 2017; Kurt Tong, "Taiwan's International Role and the GCTF," Roundtable on Taiwan-U.S. International Engagement: The Global Cooperation Training Framework and Beyond, Washington, DC, March 2, 2016; Chiu Yu-Tzu, "U.S., Taiwan Tighten Cybersecurity Cooperation," *Bloomberg Law*, June 1, 2016.
272. James Moriarty, Global Cooperation and Training Framework Mosquito-borne Viral Diseases Laboratory Diagnosis Workshop, Taipei, Taiwan, April 25, 2017.
273. Kurt Tong, "Taiwan's International Role and the GCTF," Roundtable on Taiwan-U.S. International Engagement: The Global Cooperation Training Framework and Beyond, Washington, DC, March 2, 2016.
274. Bruce Linghu, Roundtable on Taiwan-U.S. International Engagement: The Global Cooperation Training Framework and Beyond, Washington, DC, March 2, 2016.
275. Kin Moy, Global Cooperation and Training Framework Humanitarian Assistance and Disaster Relief Workshop, Taipei, Taiwan, July 5, 2017.
276. American Institute in Taiwan, *Taiwan Relations Act (Pub. L. No. 96-8)*.
277. American Institute in Taiwan, *Taiwan Relations Act (Pub. L. No. 96-8)*.
278. American Institute in Taiwan, *Taiwan Relations Act (Pub. L. No. 96-8)*.
279. American Institute in Taiwan, *Taiwan Relations Act (Pub. L. No. 96-8)*.
280. Bonnie S. Glaser and Jacqueline Vitello, "Taiwan's Marginalized Role in International Security: Paying a Price," *Center for Strategic and International Studies*, January 2015, vii; Adam Minter, "China Should Want a Stronger Taiwan," *Bloomberg*, May 12, 2016.
281. Kin Moy, Global Cooperation and Training Framework Humanitarian Assistance and Disaster Relief Workshop, Taipei, Taiwan, July 5, 2017.
282. J. Michael Cole, "How to Wage the Battle for Taiwan's International Space," *Taiwan Sentinel*, May 4, 2017.

## SECTION 4: CHINA AND HONG KONG

### Key Findings

- Beijing’s increasing pressure on Hong Kong has called into question the “one country, two systems” framework. Mainland China’s interpretation of the Basic Law (Hong Kong’s mini constitution) on Hong Kong lawmakers’ oaths of office—while a legal case on the matter was ongoing—has raised widespread concerns about the level of autonomy in Hong Kong’s judiciary. It has also caused apprehension in Hong Kong about the implications for political life and freedom of speech in the territory. Six prodemocracy legislators-elect were barred from office following the decision and two additional lawmakers face criminal charges, which could result in their seats being vacated in Hong Kong’s legislature. This poses a significant threat to the representation of prodemocracy voices in the legislature.
- Mainland China continues to either disregard or ignore Hong Kong’s rule of law and its related commitments to the international community. In addition to the disappearance of five Hong Kong book sellers in late 2015 (a case that remains unresolved as this Report went to print), mainland agents in January 2017 apparently abducted a Chinese-born billionaire with Canadian citizenship and close ties to senior Chinese government officials, taking him from a hotel in Hong Kong. These incidents have raised concerns about Hong Kong’s legal protections.
- The 2017 chief executive election, which used the existing voting system by an election committee comprising mostly pro-Beijing electors, resulted in the Mainland’s preferred candidate Carrie Lam taking the most votes. Having served as the second-most senior official under the previous administration, which was deeply unpopular, and being seen as loyal to Beijing, Chief Executive Lam is unlikely to advance prodemocracy advocates’ goal of universal suffrage in chief executive elections.
- Consistent with its downward trajectory in recent years, press freedom in Hong Kong continues to decline, according to journalists in Hong Kong and leading international non-governmental watchdogs. These observers point to mainland China’s rising interference in local Hong Kong media, erosion of media autonomy, and increasing difficulty in covering sensitive stories.
- As Beijing’s fears regarding Hong Kong’s political dynamics appear to be rising with the increase in prodemocracy advocates pushing for greater autonomy from mainland China, pressure on prodemocracy activists is on the upswing. In the lead up to Chief Executive Lam’s formal inauguration on July 1, 2017, Hong Kong authorities arrested numerous prodemocracy leg-

islators and activists. This was followed by the August 2017 jailing of Joshua Wong and two other student leaders from the 2014 Occupy protests—escalating a wide-scale crackdown that has further eroded freedom of expression in Hong Kong.

- Concerns persist among prodemocracy advocates in Hong Kong and among international observers that the territory is sliding away from “one country, two systems” and moving ever closer to the Mainland. In the process, they argue, Hong Kong is losing the unique characteristics and legal protections that make the territory a key U.S. partner in the Asia Pacific. As Beijing moves to tighten its control over Hong Kong, the territory also faces economic pressure from mainland China.
- Hong Kong continues on the path of greater economic integration with the Mainland. Initiatives like the Shenzhen-Hong Kong Stock Connect and the China-Hong Kong Bond Connect allow Beijing to deepen economic integration with the world, attract foreign investment, and enhance the international use of the renminbi. At the same time, signs are emerging that Hong Kong’s importance as a gateway to China may be reduced in the future as China’s own markets gain sufficient international standing.

### **Recommendations**

The Commission recommends:

- Congress reauthorize annual reporting requirements of the United States-Hong Kong Policy Act of 1992, in an effort to ensure policymakers have the most up-to-date and authoritative information about developments in Hong Kong. The report should include an assessment of whether Hong Kong has maintained a “sufficient degree of autonomy” under the “one country, two systems” policy, among other developments of interest to the United States.
- Congressional committees of jurisdiction examine and analyze potential U.S. policy options toward Hong Kong, including those to impose costs on Beijing for not abiding by its commitments to the territory, given mainland China’s increased intrusions into Hong Kong’s autonomy.
- Members of Congress participate in congressional delegations to Hong Kong and meet with Hong Kong officials, legislators, and business representatives in the territory and while they visit the United States. In these meetings, they should raise concerns about Beijing’s adherence to the “one country, two systems” policy and the recent crackdown on prodemocracy activists, including the imprisonment of Joshua Wong and others. They should also continue to express support for freedom of expression and rule of law in Hong Kong.

### **Introduction**

In 2017, as mainland China and the Beijing-backed Hong Kong government celebrated the 20th anniversary of Hong Kong’s handover from the United Kingdom to China, Beijing continued to erode

the spirit of the “one country, two systems” policy that has guided its relationship with Hong Kong since 1997.\* Of particular concern were efforts to remove, imprison, or otherwise silence democratically elected Hong Kong legislators and prodemocracy activists. Most notably, in August, three young activists were imprisoned for their acts of civil disobedience in an apparent attempt to intimidate and silence some of Hong Kong’s most powerful prodemocracy voices. Hong Kong authorities have signaled that they are willing to use similar tactics to prosecute and imprison other activists and prodemocracy lawmakers. These and other developments have led some to suggest Hong Kong is losing its status as China’s last bastion of openness and democratic freedoms. Many fear that the territory is becoming just another Chinese city. Informing this view is the negative outlook for progress on achieving true universal suffrage, a downward trend in freedom of expression, and further challenges to the territory’s economic future amid rising competition from the Mainland and its slowing growth.

When viewed in the context of Beijing’s recent willingness to use its growing power to coerce and bully its neighbors—many of which are U.S. allies and partners—the Mainland’s intrusions into Hong Kong’s legal institutions, political process, and personal freedoms present troubling implications for the region, and accordingly for the United States. Openness and transparency within the economic and political realms in the Asia Pacific are abiding U.S. interests.

This section examines Hong Kong’s recent political developments, declining freedom of expression, economic relations with mainland China, and the implications of these developments for the United States. It is based on the Commission’s May 2017 trip to Hong Kong, meetings with U.S. government officials, consultations with U.S. and foreign nongovernmental experts, and open source research and analysis.

### **Hong Kong’s Political Developments**

The September 2016 elections for Hong Kong’s legislature, the Legislative Council (LegCo), saw prodemocracy candidates win 30 of 70 total seats in a record voter turnout despite Beijing’s heavy-handed pressure to stifle support for the prodemocracy camp.<sup>1</sup> Since then, mainland China has increased its interference in Hong Kong’s political affairs. Beijing’s use of wide-reaching legal measures and other intrusions into Hong Kong’s democratic institutions are further strengthening the central Chinese government’s control over Hong Kong. Prodemocracy activists in Hong Kong and international observers have expressed concern that Beijing’s actions are undermining confidence in the “one country, two systems” policy as guaranteed under the 1984 Sino-British Joint Declaration<sup>†</sup> and Hong Kong’s mini constitution, the Ba-

\*The “one country, two systems” policy is a measure adopted by the People’s Republic of China following the establishment of Hong Kong and Macau as Special Administrative Regions. The framework grants Hong Kong and Macau the right to self-govern their economies and political systems to a certain extent, excluding foreign affairs and defense. Beijing has promised the policy will remain intact until 2047. China’s State Council Information Office, *The Practice of the “One Country, Two Systems” Policy in the Hong Kong Special Administrative Region*, June 10, 2014.

<sup>†</sup>According to the 1984 Sino-British Joint Declaration, Hong Kong “will enjoy a high degree of autonomy, except in foreign and defense affairs,” and retain its democratic freedoms, which “will remain unchanged for 50 years” (effective as of the United Kingdom’s handover of Hong Kong to

sic Law.<sup>2</sup> A number of key developments in the aftermath of the 2016 LegCo elections demonstrate Beijing's steady erosion of the "one country, two systems" framework and may portend further aggressive actions impeding Hong Kong's autonomy.

### The Political Spectrum in Hong Kong

For more than 30 years, two main camps have dominated Hong Kong politics: pro-Beijing (or "pro-establishment") and prodemocracy (or "pandemocrats"). The pro-establishment camp comprises individuals and groups supporting closer ties with China—particularly in economic relations—and includes members of the business community, among others. On the other side, the pandemocrats support the protection of civil liberties for Hong Kong residents and are wary of Beijing's encroachment into Hong Kong's democratic institutions; they include rights activists and other groups.<sup>3</sup> Both camps have diversified over time—especially since 2010\*—splitting into new political parties and holding a range of views on the challenges facing Hong Kong.<sup>4</sup>

In recent years, the pandemocrats have become even more diverse as mainland China has continued to deny their calls for democratic reform. The 2014 Occupy Central prodemocracy protests† resulted in Beijing refusing to concede to the protestors' demands and reflected a generational change within the camp: the young, post-Occupy democrats tend to favor a more confrontational approach toward Beijing in pursuing democratic reforms, whereas previous generations dominated by the traditional, older cohort generally favored pursuing reforms through negotiations with the central government and working within the Basic Law.<sup>5</sup> Despite the wide range of views and approaches within the prodemocracy camp, Joshua Wong—secretary-general of Demosistō, a political party formed and led by students involved in the Occupy protests—told the Commission during its May 2017 trip to Hong Kong that a great deal of solidarity still exists.<sup>6</sup>

Political parties formed in the aftermath of the Occupy protests reflect the widening views within the prodemocracy camp. One

China on July 1, 1997). These commitments by mainland China are included in Hong Kong's Basic Law, adopted by China's National People's Congress. Basic Law, *Chapter I: General Principles*. [http://www.basiclaw.gov.hk/en/basiclawtext/chapter\\_1.html](http://www.basiclaw.gov.hk/en/basiclawtext/chapter_1.html); United Kingdom, *Sino-British Joint Declaration on the Question of Hong Kong*, 1984.

\*According to Richard Bush, senior fellow at the Brookings Institution, this diversification of political parties can be traced back to 2010, when Beijing reached a compromise with moderate democrats to create five new District Council functional constituency seats in LegCo. Instead of the District Council members voting on these seats, they would be voted on by more than three million voters not part of another functional constituency, effectively shifting the number of seats elected by popular vote to 40 out of 70 total. Dr. Bush argues the main driver for this shift in party diversification is Beijing's refusal to grant the pandemocrats concessions on democratic reform. He also notes that Hong Kong's electoral system is a contributing factor through its use of proportional representation for the 35 geographic constituency seats elected by popular vote. Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Institution Press, 2016, 41–45.

†The Occupy movement (also referred to as Occupy Central with Love and Peace, the "Umbrella Movement," and the "Umbrella Revolution") advocated for true universal suffrage according to international standards in future Hong Kong elections. The largely nonviolent protests lasted 79 days and concluded in December 2014. For more information on the 2014 prodemocracy protests, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 523–527. For more information on Hong Kong's political groups in the run-up to the 2016 LegCo elections, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 406–407.

### **The Political Spectrum in Hong Kong—Continued**

group identifies as “localist”—a political minority predominately comprising students belonging to political parties that support some or all of the following policies: self-determination (the notion that Hong Kong citizens should be able to determine the political future of the territory), the preservation of Hong Kong’s culture, and outright independence. Of the 30 prodemocracy candidates who won seats in the September 2016 LegCo elections, eight are localists. Notably, two of the eight are supporters of Hong Kong independence (discussed later in this section).<sup>7</sup> Beijing has become particularly worried about this political track. During a May 2016 visit to Hong Kong, Zhang Dejiang, Chinese Communist Party (CCP) Politburo Standing Committee member and director of the Hong Kong and Macau Affairs Leading Group,\* said, “If we forgo ‘one country, two systems’ and the Basic Law, Hong Kong would undoubtedly rot. Any advocacy for self-determination, Hong Kong independence, and the like will not succeed.”†<sup>8</sup>

### ***Oath Controversy***

As is the case following all LegCo elections, the newly elected legislators were required to take their oath of office before officially becoming lawmakers. In October 2016, during the oath-taking ceremony, at least 11 legislators reportedly deviated from the official script, added words before or after the oath, or used the platform to criticize Beijing.<sup>9</sup> This act was not without precedent; the ceremony traditionally has been used by newly elected LegCo members to express their views and policies—including those against the central government—by not following the official script.<sup>10</sup> Nonetheless, for only the second time since the handover of Hong Kong to China in 1997, the president of LegCo ruled that the oaths of five elected legislators from prodemocracy and pro-establishment parties were invalid; according to the procedural rules of LegCo, they could not attend a meeting or vote in LegCo until properly reading their oath.<sup>11</sup> Out of these five lawmakers, all were allowed to retake their oaths<sup>12</sup> except for two: Sixtus “Baggio” Leung Chung-hang and Yau Wai-ching, members of the localist Youngspiration party and supporters of Hong Kong independence. Mr. Leung used a derogatory name for China in his oath reading and draped a banner over his shoulders that read, “Hong Kong Is Not China.” As Ms. Yau took her oath of office, she used profane language when saying “People’s Republic of China,” according to the LegCo clerk overseeing the oath, and displayed the same banner her colleague used. Both pledged their allegiance to the “Hong Kong nation,” diverting from the official script.<sup>13</sup>

\*Zhang Dejiang took over as head of the leading group when Xi Jinping became the general secretary of the CCP and president of China in early 2013. President Xi was director of the leading group from 2008 to 2013 when he served on the CCP Politburo Standing Committee and as vice president. Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Institution Press, 2016, 101.

†For more information on Hong Kong’s political developments in recent years, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 406–409.

In response, Beijing, the Hong Kong government, and pro-establishment lawmakers denounced the two elected legislators for offending the Chinese people.<sup>14</sup> Further, the Hong Kong government called for barring the lawmakers from re-taking their oaths for violating Article 104 of the Basic Law—promising to uphold the Basic Law and swearing allegiance to the Hong Kong Special Administrative Region of the People’s Republic of China.<sup>15</sup> The Hong Kong government filed a judicial review application challenging the validity of the oaths taken by Mr. Leung and Ms. Yau and applied for an injunction seeking to deny them a chance to retake their oath. Hong Kong’s High Court rejected the injunction request but decided to grant a judicial review hearing in early November 2016 to determine whether the two lawmakers overstepped the Basic Law.<sup>16</sup> In the meantime, Mr. Leung and Ms. Yau indicated that when re-taking their oath of office they would read directly from the script as required and avoid further controversy.<sup>17</sup> However, pro-establishment legislators prevented them from doing so by staging a walkout during the next LegCo meeting, which resulted in the lack of a quorum to proceed with the oath-taking ceremony and other business.<sup>18</sup> The president of LegCo subsequently decided to suspend the re-taking of oaths for the two lawmakers until after the court’s decision.<sup>19</sup>

#### *Beijing’s Interference in the Case*

As Hong Kong’s High Court deliberated over the case raised by the Hong Kong government, Beijing preempted the court’s ruling by issuing a rare interpretation of the Basic Law, its fifth such intervention since the 1997 handover of Hong Kong to China and the first during a pending court case without being requested by the Hong Kong government or judiciary.\*<sup>20</sup> On November 7, 2016, the National People’s Congress Standing Committee of the People’s Republic of China (NPCSC) issued an interpretation of Article 104 of the Basic Law stating that all legislators must read their required oath “accurately, completely, and solemnly” the first time or face disqualification.<sup>21</sup> At the press conference announcing the interpretation, NPCSC Basic Law Committee Chairman Li Fei said it would have retroactive effect.† Beijing’s intervention, combined with other pressure from mainland officials and pro-China entities,<sup>22</sup> effectively disqualified Mr. Leung and Ms. Yau from LegCo before the High Court’s decision.

On November 15, Hong Kong’s High Court held that mainland China’s legal interpretation is binding on the Court and that the two elected legislators were disqualified and their seats vacated in LegCo.<sup>23</sup> The judge who ruled in the case said the court would have reached the same conclusion “with or without” the interpretation from Beijing.<sup>24</sup>

Nonetheless, Beijing’s interpretation of the Basic Law and the barring of Mr. Leung and Ms. Yau from LegCo caused apprehension

\*Under Article 158 of the Basic Law, the National People’s Congress Standing Committee of the People’s Republic of China is granted this power to interpret the Basic Law. Basic Law, *Chapter VIII: Interpretation and Amendment of the Basic Law, Article 158*.

†The committee did not specify the interpretation’s retroactive effect in its written decision, nor any reference to the pending legal case. Radio Television Hong Kong, “HK Courts Must Decide on Scope of Interpretation,” November 11, 2016; Tony Cheung et al., “Hong Kong Will Move on Controversial Security Law, CY Leung Says, as Beijing Bars Independence Activists from LegCo,” *South China Morning Post*, November 7, 2016.

across Hong Kong society about the implications for Hong Kong's rule of law and autonomy, particularly the independence of its judiciary.<sup>25</sup> During the Commission's trip to Hong Kong in May 2017, several interlocutors emphasized that the independent court system is fundamental to Hong Kong's autonomy.<sup>26</sup>

- After the central government confirmed it would intervene in the then pending Hong Kong legal case on the oath controversy, opponents of Beijing's move staged several large-scale demonstrations. Just prior to the Mainland's decision, prodemocracy activists led a protest involving 13,000 protestors, according to organizers (Hong Kong authorities reported 8,000 people in attendance).<sup>27</sup> Following Beijing's intervention, another protest over the Mainland's erosion of Hong Kong's legal institutions took place, involving more than 1,000 Hong Kong lawyers all dressed in black.<sup>28</sup>
- Hong Kong legal groups issued statements critical of Beijing's intervention. The Hong Kong Bar Association stated: "The Bar considers the timing of [Beijing's interpretation] at this highly sensitive moment ... most unfortunate, in that the perception of the international community in the authority and independence of the judiciary is liable to be undermined, as would public confidence in the rule of law in Hong Kong."<sup>29</sup> The Law Society of Hong Kong, a professional association of Hong Kong solicitors, said, "[We] believe the NPCSC should exercise restraint in invoking its power under [Article 158] to maintain confidence in One Country, Two Systems and the Rule of Law in Hong Kong."<sup>30</sup>

#### *Implications and Consequences of Beijing's Interference*

The backlash against these elected legislators could have significant consequences for the representation of prodemocracy views in LegCo and the independence of Hong Kong's judicial system. Following Beijing's interpretation of the Basic Law, then Chief Executive Leung Chun-ying (CY Leung) initiated additional judicial review cases against four prodemocracy lawmakers—Nathan Law Kwun-chung, "Long Hair" Leung Kwok-hung, Lau Siu-lai, and Edward Yiu Chung-yim—over their oaths of office.<sup>31</sup>

Beijing had already laid the groundwork for the case against these lawmakers. At the NPCSC press conference in November 2016 announcing Beijing's interpretation, Chairman Li said that in addition to the decision being retroactive, seeking "national self-determination" for Hong Kong is "essentially" the same as supporting independence.<sup>32</sup> Although none of the four legislators support outright independence, Mr. Law and Ms. Lau advocate self-determination for Hong Kong.<sup>33</sup> In July 2017, the High Court ruled to disqualify and vacate the four lawmakers' seats based on invalid oaths, though Mr. Leung and Ms. Lau later filed appeals which remain pending.<sup>34</sup> In addition to the six legislators already removed over purported improper oaths, as of early October 2017 two prodemocracy lawmakers risk losing their seats over charges stemming from the 2014 Occupy

protests.\* More prodemocracy legislators could face potential disqualification and removal from LegCo as well: two days after the NPCSC announced its interpretation of the Basic Law, Wang Zhenmin, legal chief of China's Central Liaison Office in Hong Kong, reportedly said 15 lawmakers "messed up" their oaths.<sup>35</sup> Hong Kong's Electoral Affairs Commission is planning to hold by-elections for four of the vacated LegCo seats (not including the two legislators with pending appeal cases) in March 2018, but they have not specified rules for candidates running for these seats.<sup>36</sup> Nevertheless, the potential for the removal of at least eight elected prodemocracy lawmakers from LegCo has major implications for Hong Kong's political future.

With six prodemocracy legislators forced to vacate their seats over the oath controversy, pro-establishment lawmakers temporarily hold a majority of geographic constituency seats in LegCo (until the vacant seats are filled through by-elections or several prodemocracy lawmakers win their appeals). Importantly, this negates the prodemocracy camp's ability to filibuster.† Pandemocrats fear pro-Beijing lawmakers can now pass a controversial and long-delayed national security law that would further degrade Hong Kong's autonomy.<sup>37</sup> Article 23 of the Basic Law states that Hong Kong "shall" enact such legislation, which would grant the Hong Kong government broad power to detain or prosecute individuals deemed a threat to mainland China and shut down any nongovernmental organization or body with foreign ties.‡<sup>38</sup> In the aftermath of Beijing's recent interpretation of the Basic Law, then Chief Executive Leung said that given the current political atmosphere in Hong Kong, he would consider reintroducing the national security legislation, which the Hong Kong government attempted to pass in 2003 but ultimately withdrew and indefinitely postponed because of widespread public opposition.<sup>39</sup> In May 2017, Zhang Dejiang made a high-profile speech emphasizing the Xi Administration's hardline views on Hong Kong governance, calling for tighter control over the Hong Kong government and for Hong Kong to pass the national security law.<sup>40</sup>

If the pro-establishment camp reaches a two-thirds majority in LegCo through a combination of vacated seats previously held by prodemocracy lawmakers and winning by-elections to replace them,

\*The High Court has already ruled to disqualify Yau Wai-ching, Sixtus Leung, Nathan Law, "Long Hair" Leung Kwok-hung, Lau Siu-lai, and Edward Yiu Chung-yim, after determining their oaths were invalid. Tanya Chan and Shiu Ka-chun face the charge of incitement to commit public nuisance and incitement to incite public nuisance related to their involvement in the 2014 Occupy movement. Kris Cheng, "Hong Kong Court Suspends Legal Challenge to Oust Two More Pro-Democracy Lawmakers," *Hong Kong Free Press*, July 31, 2017; Phoenix Un and Phoebe Ng, "Occupy Leaders Charged—Activists Face Public Nuisance Allegations," *Standard*, March 28, 2017.

†The LegCo is composed of 40 seats elected directly by Hong Kong voters—35 in the geographic constituency and 5 through the District Council—and 30 functional constituency seats picked by electors composed of business groups and a variety of interest groups and organizations. For a motion, bill, or amendment to proceed in LegCo, it requires majority support from both the geographic and functional constituencies. With six prodemocracy lawmakers forced to vacate their seats, the pandemocrats hold 14 seats in the geographic constituency (out of their 24 total seats in LegCo), while the pro-establishment camp has 16 seats (out of their 40 total). Jason Y. Ng, "FAQ: How Might the Ejection of 4 More Pro-Democracy Lawmakers Alter Hong Kong's Political Landscape?" *Hong Kong Free Press*, July 18, 2017; Suzanne Pepper, "Another Post-Occupy Election," *Hong Kong Focus*, September 8, 2016.

‡In 2009, Macau, the other special administrative region of the People's Republic of China, passed its own national security law under Article 23 of Macau's Basic Law. Congressional-Executive Commission on China, *Macau Special Administrative Region National Security Law*, July 20, 2009.

the Hong Kong government could reintroduce and possibly pass amendments to the Basic Law that pandemocrats have opposed in the past. One potential amendment that could be floated is the electoral reform proposal that was last considered in 2015.<sup>41</sup> This proposal, which Beijing has championed, would allow Hong Kong to elect its chief executive via popular vote, but would use a nomination mechanism that effectively bars democratic candidates from standing for election and guarantees the ultimate selection of a Beijing-approved candidate.<sup>\*42</sup>

The NPCSC's interpretation of the Basic Law and the High Court's subsequent ruling to remove six LegCo members constrains Hong Kong's rule of law and political space, according to observers.<sup>43</sup> Eddie Chu, a prodemocracy lawmaker and the largest recipient of total votes in the 2016 LegCo election, said, "[Beijing's interpretation] will definitely restrict freedom of speech ... as now [Beijing] has a new legal weapon to hit out at lawmakers. The Basic Law no longer protects the democratic rights of Hongkongers but is being used as an instrument to take away our rights."<sup>44</sup> Mainland China's tactic to use legal tools to retroactively remove more democratically elected representatives in LegCo could further intensify opposition against Beijing among prodemocracy advocates.<sup>45</sup>

### ***Election Committee Selects Beijing's Preferred Candidate as Chief Executive***

In December 2016, then Chief Executive Leung announced he would not run for a second term as chief executive—the first time a sitting chief executive has not sought reelection—setting the stage for a new leader.<sup>46</sup> Popular support was in favor of former Finance Secretary John Tsang Chun-wah,<sup>47</sup> a pro-establishment candidate (albeit less pro-Beijing than the Mainland's preferred candidate Carrie Lam Cheung Yuet-ngor) who campaigned on reducing the polarization in Hong Kong politics and had the backing of much of the prodemocracy camp.<sup>48</sup> Nonetheless, in March 2017, a 1,194-member election committee stacked heavily in favor of Beijing and representative of only 0.03 percent of eligible voters voted overwhelmingly for Ms. Lam, who received 777 out of 1,163 total votes.<sup>49</sup> Mr. Tsang came in second place with 365 votes.<sup>50</sup> Ms. Lam, who became the first female chief executive of Hong Kong,<sup>51</sup> previously served as chief secretary—the second most powerful position in the Hong Kong government—under CY Leung during his term as chief executive (2012–2017).<sup>†</sup> Leading up to the vote, Hong Kong media widely reported that Beijing officials had decided to support Ms. Lam for chief executive before she entered the race and conveyed this message in February 2017 to Hong Kong business leaders and pro-establishment figures at meetings in Shenzhen.<sup>52</sup> According to

\*When the LegCo voted on the proposal in 2015, it rejected the package. Although the Hong Kong government supported the proposal as a baseline for future reforms, and pro-establishment legislators voted for the proposal, prodemocracy legislators believed it allowed Beijing to "screen" candidates it opposes, and prevented the proposal from moving forward. For a more in-depth examination of the electoral reform process, see U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 533–537; Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Press, 2016, 121, 130–134.

†Notably, Ms. Lam was responsible for crafting and promoting the Hong Kong government's electoral reform proposal based on Beijing's August 2014 reform package. Chris Buckley and Alan Wong, "Hong Kong Presents Plan for Elections, Offering Little to Democrats," *New York Times*, April 22, 2015.

Suzanne Pepper, a Hong Kong-based U.S. observer of Hong Kong politics, “Beijing officials have obviously decided that they no longer need to keep up appearances about non-intervention in Hong Kong affairs. Past suspicions in this regard were typically met with bland denials. ... They’ve gone so far as to remind Hong Kong that Beijing’s right to appoint [the chief executive] is substantive and they now mean to exercise [their right] without trying to pretend they’re not.”<sup>53</sup>

The election of Ms. Lam as the fourth chief executive of Hong Kong appears to signal Beijing’s support for continuity with CY Leung’s administration. Although CY Leung experienced record-low public approval ratings,<sup>54</sup> Beijing praised his administration’s strict adherence to mainland China’s concerns, particularly its handling of political groups advocating for Hong Kong independence.<sup>55</sup> During one of CY Leung’s final visits to Beijing as chief executive, Chinese President and General Secretary of the CCP Xi Jinping met with him, saying, “On important issues such as curbing Hong Kong independence and street violence, you have worked in strict accordance with the Basic Law, the [NPCSC’s] interpretation of it and the law of Hong Kong, and safeguarded the nation’s sovereignty, security, and developmental interests.”<sup>56</sup> Several weeks prior to the chief executive election, Beijing expressed its gratitude toward CY Leung by electing him as vice chairman of mainland China’s top advisory body, the Chinese People’s Political Consultative Conference—a first for a sitting chief executive.<sup>57</sup> Some observers in Hong Kong believe that the Lam Administration is likely to adhere closely to Beijing’s policy goals, citing her decision to keep some of the previous administration’s cabinet officials in place, her experience serving under CY Leung, and her demonstrated loyalty to the central government.<sup>58</sup> Nonetheless, Chief Executive Lam has voiced the need to proceed carefully on Beijing’s political priorities, including electoral reform and national security legislation, only after gathering public support.<sup>59</sup>

### ***Beijing Toughens Stance on Handover Agreement and “One Country, Two Systems” Framework***

Beijing used the occasion of the 20th anniversary of the handover of Hong Kong to China to launch broadsides against the bedrock of protections afforded to Hong Kong: the 1984 Sino-British Joint Declaration and the “one country, two systems” framework. Beijing’s public statement on the eve of the July 1 anniversary disavowed the Joint Declaration. China’s Foreign Ministry spokesperson said, “It has already been 20 years now since Hong Kong returned to the embrace of the motherland; the Sino-British Joint Declaration as a historical document, possesses no practical significance of any kind, and has no binding force of any kind with respect to the central government’s administration of the Hong Kong Special Administrative Region.”<sup>60</sup> A spokesperson for the British Foreign Office responded, “[The Joint Declaration] remains as valid today as it did when it was signed over 30 years ago. It is a legally binding treaty, registered with the UN and remains in force.”<sup>61</sup> More than one week

\*The United Kingdom’s official responses to the Mainland’s increasing encroachment on Hong Kong’s autonomy and freedom of expression have been muted. Chris Patten, the last British gov-

later, on the sidelines of an international law conference in Hong Kong, Director General of China's Foreign Ministry Treaty and Law Department Xu Hong tried to clarify his colleague's comments, saying that the Joint Declaration is still legally binding but Great Britain has no right to interfere in China's "domestic affairs."<sup>62</sup> Nonetheless, Beijing's willingness to disregard the document, which laid the groundwork for the Basic Law, is expected to lead to further encroachment on Hong Kong's autonomy.

On July 1, 2017, after swearing in Ms. Lam as chief executive, President Xi gave a speech marking the 20th anniversary of the handover, which focused on the "one country, two systems" framework. In the speech, President Xi stressed Beijing's control over Hong Kong, using stronger rhetoric than the CCP has used in the past to warn against those obstructing mainland China's sovereignty over the territory. He said:

*'One country' is like the roots of a tree. For a tree to grow tall and luxuriant, its roots must run deep and strong. The concept of 'one country, two systems' was advanced, first and foremost, to realize and uphold national unity. ... Any attempt to endanger China's sovereignty and security, challenge the power of the central government and the authority of the Basic Law of the [Hong Kong Special Administrative Region] or use Hong Kong to carry out infiltration and sabotage activities against the Mainland is an act that crosses the red line, and is absolutely impermissible.*<sup>63</sup>

In the speech, President Xi also indirectly signaled Beijing's priorities for Hong Kong, on patriotic education and the national security law.<sup>64</sup> The speech appears to suggest mainland China will proceed with a heavy-handed approach on Hong Kong policy moving forward and work to ensure Chief Executive Lam strictly implements Beijing's policies.

#### **The Chinese Military in Hong Kong: Highlighted in Handover Anniversary and Signs of a Larger Role**

During President Xi's visit to Hong Kong, the People's Liberation Army's (PLA) Hong Kong Garrison staged its fifth and largest military parade since arriving in the territory in 1997, involving more than 3,100 officers and troops and more than 100 pieces of military equipment.<sup>65</sup> President Xi inspected 20 squads, including a newly established logistics unit from the garrison's Shenzhen base.<sup>66</sup> Observers viewed the parade as a further demonstration of China's sovereignty over Hong Kong and a message against pro-independence activists.<sup>67</sup> Shortly after President Xi departed Hong Kong, China's aircraft carrier *Liaoning* visited the territory for the first time, and the PLA Navy opened the ship to the public—another first.<sup>68</sup> The five-day port call in Hong Kong appeared to be designed to promote feelings of patriotism among

ernor of Hong Kong, criticized the British government's response to "outrageous breaches" of the Joint Declaration as little more than "a slightly embarrassed clear of the throat." Tom Phillips, "Chris Patten: A Craven Britain Has Demeaned Itself with China, Brexit Will Make It Worse," *Guardian*, June 28, 2017.

**The Chinese Military in Hong Kong: Highlighted in Handover Anniversary and Signs of a Larger Role—Continued**

Hong Kong citizens and to demonstrate the PLA's growing capabilities.<sup>69</sup> While the PLA has maintained a relatively low profile over the 20 years it has been in Hong Kong,<sup>70</sup> recent signs suggest a larger role for the garrison. In a June 2017 article in the CCP's Central Party School journal *Qiushi*, the Commander of the PLA's Southern Theater Command Vice Admiral Yuan Yubai and Political Commissar Wei Liang of the Southern Theater Command wrote, "[The garrison] has been adapting to the new situation and task requirements and transformed from a symbolic presence to a show of force, from image building to combat capability development."<sup>71</sup> Garrison exercises in recent years seem to reflect this change, as they have demonstrated increased complexity and a greater diversity of missions.\* In November 2016, garrison personnel participated alongside other Southern Theater Command units in a humanitarian rescue exercise with Malaysia, which marked the first time the garrison exercised with a foreign military.<sup>72</sup>

**Beijing's Degradation of Rule of Law in Hong Kong**

According to Article 22 of the Basic Law, no mainland government entity may interfere in Hong Kong affairs, and thus only Hong Kong's law enforcement agencies are allowed to enforce laws and take related actions within the territory. However, in recent years, mainland China has disregarded this provision—a development that has resulted in further encroachment on Hong Kong's autonomy. The most prominent example is the apparent abduction and detention in late 2015 of five sellers of political gossip books banned in mainland China. The incidents reportedly involved mainland authorities engaging in illegal cross-border law enforcement for supposed crimes committed by individuals tied to Causeway Bay Books, a Hong Kong bookstore and publishing house. One of the booksellers, Lee Bo, a British citizen and shareholder of Hong Kong publishing house Mighty Current (which owned Causeway Bay Books), reportedly was abducted from Hong Kong and brought across the border into mainland China.<sup>73</sup> The abductions continue to reverberate in Hong Kong and remain unresolved.† While four of the booksellers have since been released, one of them—Gui Minhai—remains in custody in the Mainland after going missing from his Thailand vacation home in October 2015. Mr. Gui, a Swedish national, is also a Mighty Current shareholder.‡<sup>74</sup> The incidents have caused anxiety among many observers in Hong Kong. These observers, ranging

\*For more information on the Hong Kong Garrison's exercises in recent years, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 423–424.

†For more information about the incident and the timeline of events, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 409–413.

‡The Hong Kong government is unlikely to seek the release of Mr. Gui. Prior to the inauguration of Chief Executive Lam, in an interview with CNN about the missing bookseller, she said, "It would not be appropriate for [the Hong Kong government] to go into the Mainland or challenge what happens on the Mainland." James Griffiths and Kristie Lu Stout, "Incoming Hong Kong Leader Says She Defers to China on Missing Booksellers," CNN, June 23, 2017.

from prodemocracy activists to foreign business leaders operating in Hong Kong, assert that Beijing's actions in this case are among the key factors leading the recent erosion of the "one country, two systems" framework.<sup>75</sup>

### ***Chinese Billionaire Apparently Abducted from Hong Kong***

The apparent abduction of mainland-born billionaire and Canadian citizen Xiao Jianhua,\* a Hong Kong resident, in late January 2017 raised further concerns in Hong Kong about the territory's legal protections and the "one country, two systems" framework.<sup>76</sup> Mr. Xiao is the founder of the Beijing-based Tomorrow Group investment firm, which has international holdings in real estate, insurance, banking, and coal. He reportedly was escorted by mainland agents in a wheelchair, his head covered by a sheet, from his Four Seasons apartment in Hong Kong where he had been living for years, and taken across the border into mainland China.<sup>77</sup> Hong Kong law enforcement authorities confirmed Mr. Xiao exited border control in Hong Kong.<sup>78</sup>

It is unclear why Mr. Xiao was apparently made to leave Hong Kong. He is known to have deep business connections with the families of top Chinese officials in Beijing, including President Xi and his political adversaries, such as former CCP Politburo Standing Committee member Zeng Qinghong. This suggests he may have been detained for political reasons prior to Beijing's leadership transition in October 2017, according to some analysts.<sup>79</sup> In early February, Hong Kong newspaper *South China Morning Post* cited several sources that said Mr. Xiao is on the Mainland "assisting investigations" into China's 2015 stock market turbulence and the corruption case of former Vice Minister of State Security Ma Jian.<sup>80</sup>

The circumstances of Mr. Xiao's departure are suspicious, even though security camera footage appears to show him departing his residence unforced. In the immediate aftermath of the incident, Mr. Xiao's family members and company spokesperson seemingly tried to reassure the public and stakeholders that there was no foul play involved.<sup>81</sup> One of Mr. Xiao's relatives reportedly filed a missing persons report, but then withdrew it soon after, indicating he was safe.<sup>82</sup> Several days later, a front page ad under his name appeared in the Hong Kong-based *Ming Pao* newspaper. According to the ad, he was seeking medical treatment "outside the country" and "had not been abducted to the mainland."<sup>83</sup> However, a source close to Mr. Xiao said the ad had been quickly produced by members of his family, company, and lawyers to try to temper any speculation that he was removed from Hong Kong under duress.<sup>84</sup> Another source said the ad was published to appease Beijing, which wanted to keep the incident quiet.<sup>85</sup> As this Report went to print, Mr. Xiao remains in mainland China.

Some observers in Hong Kong assess the incident is another example of Beijing eroding Hong Kong's legal protections. According

\*Mr. Xiao also held a diplomatic passport from Antigua and Barbuda (a Caribbean island nation) as an ambassador-at-large, which granted him the ability to "promote investment, trade and commerce, business and tourism development, and negotiate with the authorities and business entities of all states and territories," but it is unclear whether the passport was renewed. Niall Fraser, "Missing Tycoon Xiao Jianhua Had Diplomatic Passport from Caribbean State," *South China Morning Post*, February 16, 2017; Benjamin Haas, "The Darkest Time: Hong Kong Reels over Bizarre Disappearance of Chinese Billionaire," *Guardian*, February 12, 2017.

to Mr. Law, then lawmaker from the prodemocracy party Demosistō, “This is the darkest time for Hong Kong’s human rights and freedom. We used to think being taken away in the middle of the night would only happen in mainland China, but it happens in Hong Kong now.”<sup>86</sup> Mr. Xiao’s case appears to provide further evidence that Beijing has become even more brazen in violating Hong Kong’s autonomy since the bookseller abductions. Hong Kong political commentator Ching Cheong asserts that the incident is having a chilling effect on “mainland tycoons who have taken refuge in Hong Kong, thinking that Hong Kong will still be a safe place outside the jurisdiction of China.”<sup>87</sup> Moreover, the apparent abduction of Mr. Xiao appears to reflect the growing trend in recent years of Beijing being willing to treat anyone of Chinese descent as a Chinese citizen, regardless of legality.<sup>88</sup>

#### **Hong Kong Rail Terminal Proposal Raises Concerns about Undermining Rule of Law**

In July 2017, the Hong Kong government announced a proposal for implementing Hong Kong and mainland China customs, immigration, and quarantine procedures at a new terminal under construction, which will serve as a high-speed rail link connecting Hong Kong with the neighboring mainland cities of Shenzhen and Guangzhou in Guangdong Province. Scheduled to open in the third quarter of 2018, the proposal includes allowing mainland officers to enforce mainland laws in the “Mainland Port Area,” which comprises about one quarter of the five-story terminal.\*<sup>89</sup> Chief Executive Lam and other government officials argue the plan would be more efficient in terms of cost and travel time compared with the alternative of having separate immigration checks in Hong Kong and mainland China. Nonetheless, critics fear the move could serve as a precedent for Beijing to further increase its legal jurisdiction over Hong Kong and degrade Hong Kong’s autonomy.<sup>90</sup> China’s NPCSC must still approve the use of Article 20 in the Basic Law—granting Hong Kong the power to lease its land to the Mainland—and the LegCo must pass legislation for the project to proceed. Both are likely given positive signals from mainland officials and the pro-establishment majority in LegCo.<sup>91</sup>

#### **Declining Freedom of Expression in Hong Kong**

Under Chapter III of the Basic Law, Hong Kong residents are guaranteed civil liberties and a number of freedoms found in most open, democratic societies: freedom of speech, assembly, and press; and academic freedom.<sup>92</sup> Since 2012, when President Xi took power in mainland China and CY Leung became chief executive, challenges to these freedoms have continued to accumulate, resulting in a gradual decline in freedom of expression in Hong Kong. In 2017,

\*At the proposal’s announcement in July, the Hong Kong government said it was not yet aware if the Mainland’s Internet restrictions will also be in place within the section of the terminal under the Mainland’s jurisdiction. Hong Kong Special Administrative Region, *Transcript of Remarks at Press Conference on Co-Location Arrangement of Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link*, July 25, 2017.

some of these challenges have accelerated—especially in freedom of speech and assembly—as evident in the major crackdown on prodemocracy activists.

### ***Increasing Pressure on Hong Kong Prodemocracy Activists***

During the lead-up to Ms. Lam’s July 1, 2017 inauguration, Hong Kong authorities arrested 20 prodemocracy legislators and activists in a crackdown that further eroded freedom of expression in Hong Kong. One day after Ms. Lam won the chief executive election in March 2017, police arrested and charged three of the leaders of the 2014 Occupy protests and six prodemocracy lawmakers and activists. Each charge carries up to seven years in jail if convicted.<sup>93</sup> According to some interlocutors with whom the Commission met in Hong Kong in May 2017, Ms. Lam was not consulted about the arrests.<sup>94</sup> Several of those arrested blamed CY Leung, asserting he designed the move to apply pressure on Ms. Lam.<sup>95</sup> Mabel Au, director of Amnesty International Hong Kong, said, “The authorities have had years to consider these cases. The timing of these charges ... raises serious questions as to whether political maneuverings were a factor in the decision to bring charges now.”<sup>96</sup>

The following month, 11 more prodemocracy activists were arrested and charged with various crimes, including unlawful assembly, causing disorder in public places, and attempted forced entry into LegCo. Sixtus Leung and Yau Wai-ching—the elected pro-independence lawmakers who were subsequently disqualified from LegCo for changing their oaths of office—were among the group arrested.<sup>97</sup> As this Report went to print, these arrested prodemocracy legislators and activists had not been tried in court.

Critics viewed the arrests as a coordinated campaign to stifle dissent prior to Chief Executive Lam’s inauguration (for which President Xi was present), held on the 20th anniversary of the handover of Hong Kong to China.<sup>98</sup> For President Xi’s visit, the Hong Kong government deployed more than one-third of its police force (around 11,000 officers) and largely placed the city on lockdown, according to observers.<sup>99</sup> Nonetheless, in the days leading up to the handover anniversary, prodemocracy activists staged two protests at the Golden Bauhinia—a monument presented to Hong Kong by the Mainland in 1997 to celebrate the handover and the site of the inauguration ceremony.<sup>100</sup> The second protest ended with the arrest of all 26 participants (who were later released), including two LegCo lawmakers and Mr. Wong.<sup>101</sup> On July 1, the annual prodemocracy march calling for universal suffrage and the preservation of civil liberties in Hong Kong continued as planned, but the Hong Kong authorities denied organizers their usual starting location in Victoria Park for the first time since 2003. Instead, a pro-Beijing group, Hong Kong Celebrations Association, obtained the rights to use the park.<sup>102</sup>

<sup>93</sup>More than 250 Hong Kong scholars and nearly 500 overseas academics signed a statement criticizing the move, citing “widespread concern” that the decision to proceed with the arrests would have chilling effects across society, lead to further persecution of those involved in the Occupy protests, and damage Hong Kong’s reputation as a free and open society. Scholars Alliance for Academic Freedom, “Statement by International and Hong Kong Scholars to Protest against Hong Kong SAR Government’s Prosecution of Activist Scholars and Umbrella Movement Participants,” June 29, 2017.

After Chief Executive Lam took office in July 2017, the crack-down on prodemocracy activists escalated with the imprisonment of three student leaders from the 2014 Occupy protests—Mr. Wong, Mr. Law, and Alex Chow Yong-kang, former secretary-general of the Hong Kong Federation of Students—becoming Hong Kong’s first prisoners of conscience. The decision to seek jail time for some of the most prominent young Hong Kong prodemocracy activists appears designed by Beijing to have a chilling effect on Hong Kong’s vibrant tradition of protest and public assembly, and to keep the activists out of the legislature. In August 2017, Mr. Wong was sentenced to six months in prison, while Mr. Law and Mr. Chow received eight- and seven-month sentences, respectively<sup>103</sup> (all three appealed their sentence).<sup>104</sup> The ruling resulted in bans on seeking public office for five years, preventing the activists from running for a seat in the LegCo until at least the 2024 elections.<sup>105</sup> In the Court of Appeal’s reversal of a lower court’s 2016 sentence of community service for Mr. Wong and Mr. Law (which both completed) and a suspended three-week prison sentence for Mr. Chow, prosecutors from Hong Kong’s Justice Department used the appeals process, arguing that the original sentence was too lenient.<sup>106</sup> These legal tactics used to reverse earlier sentences mirrored those used by Hong Kong government prosecutors to successfully change the sentence of 13 other activists, several days earlier, from community service to jail time.<sup>107</sup> The judges in the case against the three young activists claimed there was a need to deter others from engaging in similar protests in the future.<sup>108</sup> Shortly after the sentence was announced, Mr. Wong tweeted, “[Beijing] can silence protests, remove us from the legislature, and lock us up. But they will not win the hearts and minds of Hongkongers.”<sup>109</sup>

In response, the Hong Kong prodemocracy camp and international observers\* denounced the ruling and voiced concern for the preservation of freedom of expression and rule of law in Hong Kong.<sup>110</sup> Several days after the ruling, thousands marched in support of the 16 activists imprisoned during the previous week in what one of the organizers called the largest post-Occupy protest (police estimated about 22,000 attendees).<sup>111</sup> The Hong Kong government pushed back against those insisting the case was politically influenced and claimed the judges made their rulings according to the law. Chief Executive Lam said, “[The Hong Kong] courts are exercising judicial powers independently, free from any interference. So any allegation ... [of decisions made] under political interference again is totally unfounded.”<sup>112</sup>

---

\*In addition to international human rights organizations and members of the U.S. Congress, several foreign governments issued responses to the ruling, including the U.S. Consulate General of Hong Kong and Macau, the United Kingdom, Canada, Germany’s Federal Foreign Office, and Taiwan’s Mainland Affairs Council. James Pomfret and Venus Wu, “Hong Kong Legal Chief Denies Political Motive in Jailings as Criticism Mounts,” Reuters, August 18, 2017; German Federal Foreign Office, *Human Rights Commissioner Bärbel Kofler Condemns the Imprisonment of Three Democratic Activists and Leaders of the Peaceful 2014 Occupy Central Protests to a Months-long Sentence without Parole*, August 18, 2017. Translation. [http://www.auswaertiges-amt.de/DE/Infoservice/Presse/Meldungen/2017/170817\\_Kofler\\_Occupy\\_Central\\_Proteste.html](http://www.auswaertiges-amt.de/DE/Infoservice/Presse/Meldungen/2017/170817_Kofler_Occupy_Central_Proteste.html); Reuters, “UK Says Jailing of Young Hong Kong Democracy Leaders Must Not Discourage Protest,” August 17, 2017; Consulate General of Canada in Hong Kong and Macau, Facebook, August 17, 2017. <https://www.facebook.com/CanadainHKandMacao/posts/1761418613888198>; Agence France-Presse, “Taipei Condemns Jailing of HK Democracy Activists,” August 17, 2017.

### **Hong Kong Prodemocracy Activists Bolster Ties with Taiwan Activists**

As China's efforts to enhance control over both Taiwan and Hong Kong have increased in recent years, Hong Kong and Taiwan activists have forged closer ties despite Beijing's pressure to stop such cooperation.<sup>113</sup> In June 2017, Executive Chairman of Taiwan's New Power Party Huang Kuo-chang founded a new Taiwan Congressional Hong Kong Caucus alongside other Taiwan legislators and several Hong Kong localist activists in Taipei. According to Mr. Huang, the caucus (comprised of 18 Taiwan lawmakers: 13 from the Democratic Progressive Party and 5 from the New Power Party), will focus on providing support for the Hong Kong prodemocracy movement.<sup>114</sup> In response to the announcement, Beijing and pro-establishment lawmakers in Hong Kong condemned the development as "collusion between pro-independence forces."<sup>115</sup>

The CCP has long feared cooperation between Taiwan and Hong Kong activists, and this anxiety has become more apparent following the student-led protest movements in 2014 (Taiwan) and 2015 (Hong Kong), directed against Beijing. In recent years, the Hong Kong government has denied entry to many Taiwan activists, and a number of Taiwan academics have also been unable to obtain visas to visit the territory.<sup>116</sup> Pro-Beijing groups, likely with ties to the CCP's United Front Work Department,<sup>117</sup> also have played a role in applying pressure on Hong Kong activists traveling to Taiwan. In January 2017, protestors tried to attack Mr. Wong upon his arrival at the Taipei airport, when he was in Taiwan for a political conference with three Hong Kong prodemocracy lawmakers. Upon the group's return to Hong Kong, protestors assaulted Mr. Law; observers assessed these protestors were probably mobilized by Beijing.<sup>118</sup>

### ***Self-Censorship and the Legacy of the Booksellers' Disappearance***

Observers in Hong Kong note that self-censorship and diminished access to books that are politically sensitive in mainland China continue to persist as a result of the booksellers' incidents. According to Renee Chiang, publisher for Hong Kong-based New Century Press, a publishing house known for its political books,

*Everybody is scared. The printers ... are not willing to print political books. And the bookshops are not willing to stock political books, because now it is considered dangerous. But since the majority of readers of this kind of work are visitors from the [M]ainland, now that the customs officers have increased their surveillance and confiscation of political books, they are no longer buying them. So at both ends of the chain we have problems.<sup>119</sup>*

Some independent bookstores continue to sell political books, but they are more difficult to find and have far fewer customers than before the incident, according to observers.<sup>120</sup> At the annual Hong

Kong Book Fair in July 2017, some store managers noted the sharp increase in self-censorship among publishers of political gossip books and a significant decline in the number of these books for sale.<sup>121</sup> Before the disappearance of the booksellers, banned books in the Mainland were commonly found at the Hong Kong International Airport but are now sparse.<sup>122</sup> Notably, the Causeway Bay bookstore tied to the booksellers' incidents has since been purchased by a Chinese national.<sup>123</sup> Meanwhile, Lam Wing-kee—the only bookseller who returned to Hong Kong—announced plans to open a new Causeway Bay Books location in Taiwan in 2018 as “a symbol of resistance.”<sup>124</sup>

### ***Press Freedom Trending Downward***

Several non-profit watchdog organizations and Hong Kong journalists point to a downward trend in press freedom in Hong Kong, largely reflecting the prevailing trajectory over the last decade. According to the annual ranking of global press freedom by Freedom House, an independent international human rights organization, in 2017 Hong Kong dropped three places to 80th among 199 countries and territories evaluated\*—one of the steepest year-on-year declines in the world.<sup>125</sup> The main reasons for the decline were “increased mainland interference in local media as well as multiple attacks on journalists during demonstrations.”<sup>126</sup> Freedom House noted that the *South China Morning Post*, which was purchased in 2015 by Chinese e-commerce giant Alibaba, included a “confessional” interview with a mainland detainee—which critics asserted was designed to support Chinese government positions.<sup>127</sup> International non-profit Reporters Without Borders, headquartered in Paris, moved Hong Kong down four places in its 2017 World Press Freedom Index to 73rd out of 180 countries and territories.† The organization emphasized that “the media are finding it more and more difficult to cover sensitive stories about the Hong Kong government and mainland China, and the need to protect their editorial positions from Beijing’s influence is increasingly noticeable.”<sup>128</sup> Reporters Without Borders stated that “the erosion of Hong Kong’s media independence vis-a-vis Beijing is now underway.”<sup>129</sup> Notably, in April 2017 the organization decided to open its first Asia bureau in Taiwan, and not Hong Kong—originally its first choice for the office. Reporters Without Borders Secretary-General Christophe Deloire said the decision was “because of a lack of legal certainty for our entity and activities” and potential surveillance on staff members in Hong Kong.<sup>130</sup> In a nod toward press freedom, in September 2017 the Hong Kong government announced it would reverse its longstanding policy of banning online-only news outlets from attending government press conferences and other events.<sup>131</sup>

According to a Hong Kong Journalists Association poll, press freedom for journalists and the general public increased slightly in 2016, but remained below the “passing score,” and the situation on the ground for journalists declined.<sup>132</sup> Hong Kong Journalists Association chairperson Sham Yee-lan noted that the increase was

\*In this ranking, 199 represents the country or territory with the least press freedom. Freedom House, “Freedom of the Press 2017: Press Freedom’s Dark Horizon,” April 2017.

†In this ranking, 180 represents the country or territory with the least press freedom. Reporters Without Borders, “Hong Kong,” April 2017.

likely a result of the growing footprint of online media, leading to “some diversity in the industry.”<sup>133</sup> Nonetheless, of the 465 journalists surveyed in Hong Kong, 72 percent believed overall press freedom decreased in 2016.<sup>134</sup> The survey also indicated 97 percent of journalists and 71 percent of Hong Kong residents believed the booksellers incidents caused serious damage to press freedom.<sup>135</sup>

***Sing Pao* Journalists Reportedly Face Harassment in Lead-up to Chief Executive Election**

In late February 2017, Sing Pao Media Enterprises, the parent company of pro-Beijing Hong Kong newspaper *Sing Pao*, issued a statement detailing mainland-affiliated harassment of its journalists and cyber attacks and intrusions targeted at their website and computer systems.<sup>136</sup> On February 18 and 19, the company’s website temporarily went offline in a purported cyber attack, and there were signs the perpetrators tried to gain access to information on the company’s e-mail and computer systems, according to the firm.<sup>137</sup> The media company also claimed that “a large number of suspicious individuals who look[ed] like Mainlanders” loitered outside the newspaper’s offices, monitoring and taking pictures of journalists.<sup>138</sup> Sing Pao Media Enterprises said it believed the incident was a response to a number of columns the newspaper had published criticizing then Chief Executive Leung and the Chinese government’s Central Liaison Office in Hong Kong in the run-up to the chief executive election in March 2017.<sup>139</sup>

On the 20th anniversary of Hong Kong’s handover to China, public broadcaster Radio Television Hong Kong (RTHK) faced criticism from the Association of Veteran Hong Kong Journalists, a pro-Beijing group, upon airing its roundtable political debate show. The episode that elicited controversy focused on the “one country, two systems” framework since the handover.<sup>140</sup> The broadcaster reiterated that its duty is to reflect a wide range of views across Hong Kong society. However, the pro-Beijing journalist association said the show’s producers were “malicious” in their intent to criticize China and called for those responsible for the broadcast to face disciplinary action.<sup>141</sup> As this Report went to print, the broadcaster’s staff was not reprimanded for airing the program.

*Politically Motivated Censorship*

Since the 2014 Occupy protests, Hong Kong prodemocracy activists and media organizations have continued to face pressure to self-censor. According to the Hong Kong Journalist Association, self-censorship remains a significant problem; in the association’s 2016 Hong Kong Press Freedom Index, which surveyed 465 journalists in Hong Kong, self-censorship occurred at a rate of 3.1 out of 10, with 0 indicating it being very common and 10 being uncommon.<sup>142</sup> On June 30, during President Xi’s visit to Hong Kong, television station TVB rescheduled an RTHK political satire program just minutes before it was due to air; the program expressed views critical of President Xi and referenced imprisoned Chinese Nobel laureate and dissident Liu Xiaobo.<sup>143</sup> TVB—whose

largest shareholder and vice president is former CCP official and mainland media tycoon Li Ruigang<sup>144</sup>—insisted that President Xi’s speech in Hong Kong was more important to air than the planned program. The decision brought about complaints from RTHK and accusations of self-censorship from prodemocracy observers.<sup>145</sup>

RTHK itself moved closer to the Mainland in 2017, however. The public broadcaster announced that starting in September 2017, it would end its 24-hour rebroadcast of the BBC World Service—which had been ongoing since 1978<sup>146</sup>—and in its place air the state-run China National Radio Hong Kong Edition. RTHK decided to keep only part of its BBC World Service rebroadcast on one of its analog stations overnight from 11 p.m. to 7 a.m. The main driver for the move, according to the broadcaster, was new regulatory requirements reducing available broadcasting space.<sup>147</sup> Amen Ng, the head of corporate communications at RTHK, stated that another reason for the change was to “enhance the cultural exchange between the Mainland and Hong Kong.”<sup>148</sup> Democratic lawmaker Claudia Mo called the decision “yet another step in the ‘mainlandization’ of Hong Kong.”<sup>149</sup>

Civil society also faced pressure to self-censor. In July 2017, PEN Hong Kong, a non-profit organization that promotes writing and freedom of expression, was forced to change venues for its book event after Asia Society Hong Kong banned Joshua Wong—who had contributed to the book—from speaking at the event.<sup>150</sup> Asia Society headquarters in New York blamed “an error in judgement at the staff level” for the decision, while Mr. Wong’s political party Demosistō argued self-censorship was behind the decision.<sup>151</sup> Accusations of self-censorship linked to this story spread to the United States, when a contributing author for Forbes wrote a profile of the Asia Society’s Hong Kong office and its billionaire chair Ronnie Chan. The article alleged Mr. Chan’s ties to Beijing were being used to influence the organization’s programming and promote Chinese interests more widely. Forbes quickly removed the online article and later fired the author after he reposted it on the *Asia Sentinel* website and publicly criticized Forbes.<sup>152</sup>

### ***Challenges to Academic Freedom***

The sensitivity of political books and other content published in Hong Kong has increased for academics in the aftermath of the booksellers’ incidents, leading to self-censorship. Timothy O’Leary, professor in the school of humanities at the University of Hong Kong, notes, “The effect [of the booksellers’ incidents] is more likely to be a slow undermining of willingness to publish in politically sensitive areas,” as academics look to avoid trouble.<sup>153</sup> Edmund Cheng, associate professor at Hong Kong Baptist University, asserts that scholars face the prospect of losing invitations to conferences, particularly on the Mainland, by publishing sensitive content.<sup>154</sup> However, during the Commission’s May 2017 trip to Hong Kong, Sonny Lo, a professor at the University of Hong Kong School of Professional and Continuing Education, noted that academics are largely free to go about their work, as long as they do not join a political party.<sup>155</sup>

Since 2015, the University of Hong Kong, Hong Kong's premier academic institution, has been mired in controversy over its leadership structure and its decisions regarding appointments to the university's governing council.\* The University of Hong Kong made a controversial decision in 2015 to delay and ultimately reject the appointment of a prodemocracy academic for a leadership position at the university. The following year, a member of the governing council who helped block the academic's appointment and a close friend of then Chief Executive Leung, became chairman of the council. These incidents outraged many in the university community and at other academic institutions in Hong Kong, leading to class boycotts and large-scale protests.<sup>156</sup> In April 2016, the governing council formed an independent panel to review the school's governance structure and discuss potential reforms.<sup>157</sup> The panel delivered a report on this matter to the council in late February 2017, which among other things, included a recommendation to remove the chief executive's power to appoint council members. Instead of publicly releasing the panel's findings, the council formed an internal working group to "propose the necessary policies, processes, arrangements, as well as the overseeing mechanism for their implementation."<sup>158</sup> In late June 2017, the council released the February report, but decided against the panel's recommendation to remove the chief executive's power to appoint council members.<sup>159</sup> The university's student union president and council member Ed Wong Ching-tak blamed the council for "not respecting students' opinions."<sup>160</sup>

Hong Kong students, who have faced mounting challenges to freely sharing and discussing pro-independence views, are at the forefront of the debate on freedom of expression. In September 2017, as the new school year began, several "Hong Kong independence" banners appeared on the Chinese University of Hong Kong's campus and were quickly removed by the university for being "illegal" and for violating the institution's policies.<sup>161</sup> Soon after, banners and posters promoting independence and expressing solidarity with students at the Chinese University of Hong Kong appeared on university campuses across the territory, some of which university authorities removed and mainland students either removed or covered up with anti-independence signage.<sup>162</sup> In response, Chief Executive Lam condemned the displays promoting independence, arguing that "Hong Kong independence runs against 'one country, two systems' and the Basic Law," and encouraged university administration to "take appropriate action."<sup>†</sup><sup>163</sup> Thirteen university student unions issued a joint open letter denouncing the removal of the signs and Chief Executive Lam's response to the controversy. The letter also voiced concern for the erosion of freedom of speech and academic freedom on campus.<sup>164</sup>

\*For more information on the controversy surrounding the university's leadership and its decisions, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 416–417; U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 542–544.

†The heads of ten Hong Kong universities later published a rare joint statement condemning the promotion of Hong Kong independence on campus and stating that Hong Kong independence is counter to the Basic Law. Tom Grundy, "Heads of Top Universities Call Hong Kong Independence Unconstitutional, Condemn Free Speech 'Abuses,'" *Hong Kong Free Press*, September 16, 2017; Chinese University of Hong Kong, "Statement by Heads of Universities," September 15, 2017.

### Economic Relations with Mainland China

For the 23rd consecutive year, in 2017 Hong Kong retained the rank of the world's freest economy on the strength of its rule of law, robust regulations, economic openness, freedom of assembly and expression, and sophisticated capital markets, according to an index prepared by the Heritage Foundation.\* For decades, Hong Kong's economic dynamism has ensured its status as a global financial hub and the premier gateway to China.† In 2016, over 3,700 multinational companies had regional headquarters or regional offices in Hong Kong, of which 77 percent were responsible for business in mainland China.<sup>165</sup>

According to UN data, in 2016, Hong Kong received over \$108 billion in foreign direct investment (FDI), making Hong Kong the second largest recipient of FDI in Asia after China (\$134 billion).<sup>166</sup> These inflows are rarely destined solely for Hong Kong, as many investors use Hong Kong as a transit point en route to China. As a result, Hong Kong has consistently been China's largest source of FDI, with cumulative inflows from Hong Kong amounting to \$914.8 billion at the end of 2016, or 51.7 percent of all inflows.<sup>167</sup> Mainland China, in turn, was the second largest source of FDI in Hong Kong (after the British Virgin Islands): at the end of 2015, stock of investment from China amounted to \$421.9 billion, or 26.5 percent of the total.‡<sup>168</sup> Hong Kong is also a key intermediary for China's trade with the rest of the world. According to Hong Kong government statistics, in 2016 59 percent of Hong Kong re-exports (i.e., goods imported and then exported again without alteration)§ were from China and 54 percent were shipped to mainland China.<sup>169</sup>

By all accounts, Hong Kong's economy is highly integrated with mainland China across trade, investment, and finance channels. In fact, where Hong Kong previously served as a platform for foreign companies to enter China, now it is Chinese companies that increasingly use Hong Kong to go out. For example, there are over 1,000 Chinese companies listed on the Hong Kong Stock Exchange, and they represent nearly two-thirds of market value.<sup>170</sup> In June 2017, Hong Kong joined the Asian Infrastructure Investment Bank (AIIB), as a non-sovereign member, and subscribed to 7,651 shares of AIIB's capital worth \$765.1 million (Hong Kong dollars [HK\$] 6 billion).<sup>171</sup> AIIB is closely linked with China's "One Belt, One Road" initiative,

\*The Index of Economic Freedom considers 12 factors grouped into 4 categories of economic freedom: rule of law, government size, regulatory efficiency, and open markets. Heritage Foundation, "About the Index." <http://www.heritage.org/index/about>.

†Although Hong Kong is part of China, it has separate legal structures and is treated as "overseas" for the purposes of most regulations governing the ability of mainland Chinese to travel, transfer funds, and conduct other transactions.

‡Data on investment flows between Hong Kong and China are likely distorted due to a practice known as "roundtripping." Alicia Garcia-Herrero, Le Xia, and Carlos Casanova, "Chinese Outbound Foreign Direct Investment: How Much Goes Where after Round-Tripping and Offshoring?" *BBVA Research*, June 2015.

§Traders engaging in Hong Kong-China re-exports might be taking advantage of Hong Kong's separate economic system and treatment as "overseas" for the purposes of commerce with mainland China. For example, goods exported from Hong Kong tend to command higher prices, netting bigger profits. The corporate tax rate in Hong Kong is among the lowest in the world (and significantly lower than on the Mainland), which gives traders another reason to export their marked-up goods from Hong Kong while banking profits in Hong Kong. Traders might also be trying to get money out of China by overstating the value of imports from Hong Kong to circumvent Chinese capital controls.

which aims to connect China to Europe, Southeast Asia, Africa, and other parts of the world via a network of roads, railroads, shipping lanes, and telecommunication ties. Hong Kong leadership hopes that as a modern, efficient financial services hub—already a host to a significant share of China’s outward investment—Hong Kong will act as a conduit for Chinese One Belt, One Road projects.<sup>172</sup>

Beyond financial connections, a number of infrastructure projects, including bridges and rail links, under the rubric of the greater Pearl River Delta integration, will bind Hong Kong more closely with Shenzhen and the greater Guangdong Province.<sup>173</sup> Physical integration with the Mainland may alleviate some of Hong Kong’s land shortages for business districts and housing, but may also lead to migration of high-value activities such as research and development to Shenzhen, China’s tech capital, where rents and wages are much lower.<sup>174</sup>

Hong Kong remains China’s main platform for internationalizing the renminbi (RMB), and in 2016 processed 70 percent of all RMB payment activities worldwide according to data from SWIFT, a global payments processing network.<sup>175</sup> However, 20 years after the handover of Hong Kong to China, signs are starting to appear that Hong Kong’s economic importance to the Mainland is diminishing. In 1997, Hong Kong accounted for 18.4 percent of China’s economy; in 2016, that share was under 3 percent.<sup>176</sup> In fact, at \$319 billion, Hong Kong’s gross domestic product in 2016 was roughly on par with Shenzhen’s (\$284 billion).<sup>177</sup> At the same time, new initiatives further integrating Hong Kong with Chinese equity markets will allow China to broaden the appeal of its stocks and debt to international clients. These initiatives may also undermine Hong Kong’s role as a regional financial hub and a conduit between foreign investors and China.<sup>178</sup> In other words, if investors can access Chinese markets directly, rather than having to go through Hong Kong, Hong Kong’s role as an intermediary—and related business activities—will be diminished. The combined market capitalization of the Shanghai and Shenzhen stock markets is significantly bigger than the Hong Kong Stock Exchange’s, and their recent inclusion in major stock indices will only broaden their international appeal (albeit from a low base).<sup>\*</sup> (For additional information on China’s inclusion in the MSCI index, see Chapter 1, Section 1, “Year in Review: Economics and Trade.”)

Closer financial integration comes with a host of challenges. Mainland companies, which dominate Hong Kong’s markets, tend to have lower corporate governance standards, and analysts are starting to wonder whether Hong Kong’s regulators can adequately check bad behavior by companies that remain outside Hong Kong’s legal reach because their “main assets, audit working papers, and management typically reside on the Mainland and can only be accessed with cooperation from the Chinese authorities.”<sup>†</sup><sup>179</sup> Since 2011, Hong Kong’s

<sup>\*</sup>The combined market capitalization of the Shanghai (\$4.5 trillion in June 2017) and Shenzhen (\$3.4 trillion) stock exchanges is third only to the New York Stock Exchange (\$20.7 trillion) and NASDAQ (\$8.8 trillion), while the Hong Kong Stock Exchange is seventh (\$3.7 trillion)—slightly ahead of Shenzhen. Hong Kong Securities and Futures Commission, *Market Capitalisation of the World’s Top Stock Exchanges (as of end June 2017)*, July 31, 2017; Gabriel Wildau, “Five Charts Explain How the Shenzhen Stock Exchange Works,” *Financial Times*, November 14, 2016.

<sup>†</sup>U.S. regulators face similar challenges when dealing with Chinese companies listed on U.S. stock exchanges. For an in-depth discussion, see Chapter 1, Section 2, “Chinese Investment in

Securities and Futures Commission halted trading of 15 companies due to accounting irregularities and other problems—13 of these companies were Chinese.<sup>180</sup> During the Commission's May 2017 trip to Hong Kong, interlocutors noted the risk for Hong Kong's continued importance as Asia's financial center if companies and individuals lose confidence in Hong Kong's rule of law and other freedoms as they are eroded by Beijing.<sup>181</sup>

To many foreign investors, the growing role of the state in Chinese companies is another cause for concern. The CCP, which has become much more visible in Hong Kong politics, is asserting its presence in Hong Kong's economy via state-owned enterprises (SOEs). According to research by the *Financial Times*, in 2017 more than 30 SOEs listed on the Hong Kong Stock Exchange (representing over \$1 trillion in market capitalization) "added lines to their central documents that place the [CCP], rather than the Chinese state, at the heart of each group," including describing the CCP as "providing direction [and] managing the overall situation."<sup>182</sup> While all companies operating in China—including foreign companies—are required by law to establish a CCP cell inside the company organization, their role has largely been considered symbolic.<sup>183</sup> In the view of many investors, the new push for formal inclusion of CCP's primacy into SOEs' articles of association marks a turning point. David Webb, an independent investor and shareholder activist in Hong Kong, noted, "This move to embed the [CCP] into constitutional documents of the companies puts a lie to the government's claim they want market forces to play a greater role."<sup>184</sup>

### ***Shenzhen-Hong Kong Stock Connect***

The Shenzhen-Hong Kong Stock Connect, launched in December 2016, is another in a long list of initiatives undertaken by Beijing to deepen economic integration with Hong Kong and enhance the promotion of the RMB's international use. Like the Shanghai-Hong Kong Stock Connect launched in 2014,\* the Shenzhen Connect maintains daily quotas: Hong Kong investors are able to buy a net of \$1.9 billion (RMB 13 billion), while Shenzhen investors are limited to \$1.6 billion (RMB 10.5 billion).<sup>185</sup> Expectations were high for the Shenzhen Connect, in part because unlike Shanghai, which primarily caters to established businesses and SOEs, Shenzhen is dominated by companies in emerging sectors such as technology, media, and telecommunications.<sup>186</sup> However, in the eight months since the launch of the Shenzhen Connect, investors used only an average of 5.5 percent of the daily quota for northbound investment.<sup>187</sup> In part, this lack of demand is attributable to a 10 percent dip in valuations of Shenzhen companies since the Connect program began, but investors also remain concerned about volatility, moral hazard, heavy-handed government intervention in capital markets (witnessed in force during the Chinese stock market turmoil in 2015 and 2016),<sup>†</sup> and cap-

the United States."

\*For more on the Shanghai-Hong Kong Stock Connect, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 421–422.

†For more on China's stock market collapse and government intervention, see Nargiza Salidjanova, "China's Stock Market Meltdown Shakes the World, Again," *U.S.-China Economic and Security Review Commission*, January 15, 2016; Nargiza Salidjanova, "China's Stock Market Col-

ital controls.<sup>188</sup> Mainland demand for Hong Kong stocks via the Shenzhen Connect has also been weak, with average daily quota use hovering around 4 percent since the launch.<sup>189</sup> This is likely due to Chinese regulatory tightening, ongoing since 2016, to prevent capital outflows and reduce leverage.<sup>190</sup>

The June 2017 decision by MSCI, the provider of international stock benchmarks, to include Chinese stocks may boost investors' interest in the Shenzhen-Hong Kong Stock Connect. There is speculation China's securities regulator would expand or even abolish the RMB 13 billion foreign investor daily quota for the Shenzhen-Hong Kong Stock Connect and the Shanghai-Hong Kong Stock Connect following the MSCI inclusion.<sup>191</sup>

### ***China-Hong Kong Bond Connect***

Valued at around \$9.4 trillion, the Chinese bond market is the third largest in the world after the United States and Japan, but foreign investors own only about \$109 billion of domestic bonds (less than 2 percent).<sup>192</sup> This is mainly the result of strict cross-border capital controls imposed by Chinese regulators. Yet, the Chinese government has been experimenting with loosening controls to encourage wider use of the RMB and provide domestic investors with outlets for borrowing and investment. The Bond Connect is the fourth program—after the Qualified Foreign Institutional Investor (QFII), the Renminbi Qualified Foreign Institutional Investor (RQFII), and the China Interbank Bond Market direct access scheme—to allow foreigners to buy Chinese debt.\*

Unlike the stock connects, the Bond Connect, which launched on July 3, will initially only be opened for northbound trading, which means foreign investors will be able to purchase Chinese debt via Hong Kong while Chinese investors will not be able to access the Hong Kong bond market.<sup>193</sup> Such asymmetric opening suggests Chinese regulators remain concerned capital outflows may ramp up again if Chinese investors are given another outlet for accessing international markets (for more on Chinese capital outflows, see Chapter 1, Section 1, “Year in Review: Economics and Trade”).

Although the Bond Connect conducted about \$1 billion (RMB 7 billion) worth of business on July 3, its first day of trading, foreign interest has since cooled.<sup>194</sup> According to data from China Depository & Clearing Co., in August 2017, foreign investment into China's onshore bond market accounted for around 2 percent of total onshore bonds outstanding.<sup>195</sup> Analysts expect foreign investors will be just as cautious engaging with the new Bond Connect as they were with the stock connects. Despite minor opening of the stock and bond markets, China continues to maintain strict capital controls and arduous registration requirements, leaving investors worried about their ability to move the money out of China.<sup>196</sup>

lapse and Government's Response,” *U.S.-China Economic and Security Review Commission*, July 13, 2015.

\*The QFII launched in 2002, RQFII in 2011, and the China Interbank Bond Market direct access scheme in 2016. Karen Yeung, “High Hopes for China-Hong Kong Bond Connect,” *South China Morning Post*, May 24, 2017.

### **Summary of Mainland China's Recent Intrusions into Hong Kong's Autonomy**

- *Political manipulation:* Heavy-handed involvement in the selection of Hong Kong's chief executive (March 2017); interference in the LegCo elections (September 2016); applying pressure on the prodemocracy camp through CCP United Front Work Department activities and other means; and the active promotion of Beijing's political agenda and legislative priorities in Hong Kong.
- *Legal tools:* The Ministry of Foreign Affairs spokesperson's statement on the eve of the 20th anniversary of the handover of Hong Kong to China questioning the legality of the 1984 Sino-British Joint Declaration (June 2017); disregard of cross-border law enforcement measures in the apparent abduction of Chinese billionaire Xiao Jianhua (January 2017) and the apparent abduction of a Mighty Current bookseller in Hong Kong (2015); and the Basic Law Committee of the National People's Congress' interpretation of the Basic Law on lawmakers' oaths of office (November 2016).
- *Economic tools:* Directing Chinese SOEs listed on the Hong Kong Stock Exchanges to include in their articles of association language highlighting the centrality of the CCP in corporate decision making.
- *Enabling self-censorship:* Harassing media and activists that promote democratic views or anti-Beijing messages; and the chilling effect posed by the potential for Beijing to use the same intrusions and coercive tools in the future that it has already used to degrade Hong Kong's autonomy.

### **Implications for the United States**

U.S. policy toward Hong Kong, as outlined in the U.S.-Hong Kong Policy Act of 1992, underscores U.S. support for Hong Kong's human rights, democratization, and autonomy under the "one country, two systems" framework.<sup>197</sup> The preservation of Hong Kong's way of life and maintenance of its status as a global economic hub helps facilitate U.S. economic, diplomatic, and security interests. Nonetheless, recent declines in freedom of expression and the press in Hong Kong, in addition to further setbacks in rule of law and Hong Kong's "high degree of autonomy" due to the Mainland's increasing encroachment, are troubling developments that pose obstacles for carrying out U.S. policy objectives in the territory.

U.S. allies and partners in the Asia Pacific—particularly Taiwan—are also closely watching these developments with concern.<sup>198</sup> Beijing's preferred model for Taiwan is the same "one country, two systems" framework it has in place for Hong Kong; notably, the concept originated in relation to the Mainland's policy toward Taiwan in the 1980s.<sup>199</sup> Mainland China's recent actions contravening its commitments under the framework suggest it would be willing to engage in the same behavior under a similar arrangement with Taiwan. Further, the Taiwan government and its citizens have consistently

rejected the potential adoption of this model.<sup>200</sup> (For more information on the implications of Beijing's heavy-handed approach toward Hong Kong for Taiwan, see Chapter 3, Section 3, "China and Taiwan.")

China's Ministry of Foreign Affairs spokesperson questioning the legality of the 1984 Sino-British Joint Declaration (although walked back by another Chinese government official) follows a pattern in recent years of the Mainland ignoring or disregarding international agreements and norms that it determines are not in line with its interests at a given time. For example, China in 2016 ignored The Hague's arbitral tribunal decision on disputed claims in the South China Sea which invalidated many of China's claims.<sup>201</sup> According to J. Michael Cole, a senior non-resident fellow with the China Policy Institute at the University of Nottingham, "[Beijing's statement on the Joint Declaration] should make governments worldwide wary of signing any agreements with China lest the latter decide at some point in the future that it is not bound by their stipulations."<sup>202</sup>

Negative trends in Hong Kong's political and legal spheres aside, the territory's autonomy from mainland China, its system of legal protections, and its transparency and openness make it an important destination and partner for U.S. trade and investment. In 2016, Hong Kong was the ninth-largest importer of U.S. goods (\$34.9 billion), and the United States retained its largest trade surplus globally with Hong Kong (\$27.5 billion).<sup>203</sup> U.S. FDI in Hong Kong was seventh in the world at HK\$ 315 billion (\$40.4 billion), as of year-end 2015.<sup>204</sup> Further demonstrating the United States' significant economic ties with Hong Kong, more than 1,400 U.S. companies operate in Hong Kong,<sup>205</sup> including 286 regional headquarters and 480 regional offices as of 2016—the highest number of any other foreign presence, including mainland China.<sup>206</sup> U.S. companies are strongly represented in financial services, insurance, and securities sectors.<sup>207</sup> As these data show, U.S. businesses have a vested interest in Hong Kong staying an open trading center, with a robust rule of law and independent economic system.

As a supporter of free markets and reducing trade barriers, Hong Kong also is a valuable member and participant of a number of important international economic organizations, such as the Asia-Pacific Economic Cooperation, Financial Action Task Force, Financial Stability Board, and World Trade Organization.<sup>208</sup>

In 2017, the United States strengthened existing export control and counterproliferation cooperation with Hong Kong, introducing new documentation requirements on controlled exports and re-exports to the territory, as well as re-exports from Hong Kong.<sup>209</sup> As a major transshipment hub for mainland China, the territory has been a particular focus in ensuring robust U.S. protections against unauthorized shipments to the Mainland.<sup>210</sup> Given the U.S. treatment of Hong Kong as a separate customs territory, it has unique export control agreements with Hong Kong that are different from those with mainland China. The new U.S. rule covers items subject to the Export Administration Regulations and controlled on the Commerce Control List for chemical and biological weapons, missile technology, nuclear nonproliferation, and national security. The rule is designed to reinforce regulations already in place by requiring

those wishing to export or re-export these items to first receive a Hong Kong license (if required), ensuring exports to Hong Kong abide by international counterproliferation regimes.<sup>211</sup>

### **Renewed Push for Hong Kong to Join Visa Waiver Program**

As the number of Hong Kong citizens traveling to the United States continues to rise—over 100,000 visitors are projected for 2017—U.S. officials and the business community have advocated adding Hong Kong to the U.S. Visa Waiver Program. Such a move would allow Hong Kong citizens to travel to the United States for stays of 90 days or less without obtaining a visa,<sup>212</sup> and thus lessen the burden of processing visa applications.<sup>213</sup> The U.S. Consulate General in Hong Kong and Macau and the American Chamber of Commerce in Hong Kong have voiced their support for the measure. Benefits of this new policy would include increased tourism and business investment in the United States, in addition to signaling support for Hong Kong’s rule of law and governance, according to U.S. Consul General Kurt Tong.<sup>214</sup> In 2013, the Senate passed a bill that included an amendment to allow Hong Kong in the program, but the House of Representatives did not take up the bill.<sup>215</sup>

In June 2017, the U.S. Department of State released a report on recent developments in Hong Kong and the U.S.-Hong Kong relationship, which assesses whether Hong Kong has maintained a “sufficient degree of autonomy” under the “one country, two systems” policy. The State Department report notes that Hong Kong “generally” maintains a high degree of autonomy, “more than sufficient to justify continued special treatment by the United States for bilateral agreements and programs.”<sup>216</sup> This “special treatment” afforded to Hong Kong is codified under the U.S.-Hong Kong Policy Act of 1992, which directs the United States to treat Hong Kong as a separate customs territory and as a World Trade Organization member.<sup>217</sup> The United States has an interest in upholding its longstanding policy toward Hong Kong and building on the strength of the existing relationship. Mainland China’s adherence to its commitments regarding Hong Kong is necessary to ensure continued positive ties between the United States and the territory.

Concerns also persist in Hong Kong among prodemocracy advocates and among international observers that the territory is sliding away from “one country, two systems” and moving ever closer to the Mainland; in the process, they argue, Hong Kong is losing the unique characteristics and legal protections that make the territory a key U.S. partner in the Asia Pacific.<sup>218</sup> As Beijing moves to tighten its control over Hong Kong, the territory also faces economic pressure from mainland China. The economic slowdown in the Mainland has negatively impacted Hong Kong’s growth prospects, while the territory faces increased competition from mainland cities, which receive considerable investment and promotion.<sup>219</sup>

## ENDNOTES FOR SECTION 4

1. Ben Bland, "Young Activists Win Seats in Hong Kong Elections," *Financial Times*, September 5, 2016.
2. Various interlocutors, meetings with Commission, Hong Kong, May 2017; Congressional-Executive Commission on China, *Hearing on Will the Hong Kong Model Survive?: An Assessment 20 Years after the Handover*, written testimony by Martin Chu-ming Lee, May 3, 2017; United Kingdom, *The Six-Monthly Report on Hong Kong 1 July to 31 December 2016*, February 24, 2017, 4, 15; Joshua Wong and Jeffrey Ngo, "Autonomy in Hong Kong Is at a 20-Year Low," *Washington Post*, January 25, 2017; Congressional-Executive Commission on China, *Chairs Denounce Chinese Government's Unprecedented Intervention in Hong Kong's Legal System*, November 9, 2016.
3. Various interlocutors, meetings with Commission, Hong Kong, May 2017; *Economist*, "How Hong Kong's Version of Democracy Works," August 25, 2016.
4. Dominic Chiu, "Why China's Supporters in Hong Kong Are Divided," *Diplomat*, January 20, 2017; Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Institution Press, 2016, 41–45.
5. Michael Forsythe and Alan Wong, "Vote in Hong Kong Deepens a Thorn in China's Side," *New York Times*, September 5, 2016.
6. Joshua Wong, Secretary-General of Demosistō, meeting with Commission, Hong Kong, May 19, 2017.
7. Malte Philipp Kaeding, "The Rise of 'Localism' in Hong Kong," *Journal of Democracy* 28:1 (January 2017): 157–171.
8. Alan Wong, "Chinese Official Condemns Calls for Greater Autonomy," *New York Times*, May 19, 2016.
9. Emily Tsang and Joyce Ng, "The Eight Types of Insincere Oaths, as Set out by Former Beijing Official," *South China Morning Post*, November 30, 2016; BBC, "Hong Kong Rebel Lawmakers Protest China at Oath-Taking," October 12, 2016.
10. Tony Cheung, "Wong Yuk-man Retakes Oath of Office to LegCo," *South China Morning Post*, June 11, 2015; Eleanor Randolph, "Long Hair and the Legislature in Hong Kong," *New York Times*, October 13, 2004.
11. Owen Fung, "LegCo President Invalidates Five Lawmakers' Oaths, Now Including Localist Lecturer and Pro-Beijing Loyalist," *South China Morning Post*, November 30, 2016; Legislative Council, *President's Ruling on the Validity of the Legislative Council Oath Taken by Six Members at the Council Meeting on 12 October 2016*, October 19, 2016, 1–4; Tony Cheung, "Wong Yuk-man Retakes Oath of Office to LegCo," *South China Morning Post*, June 11, 2015.
12. Radio Television Hong Kong, "Localist Lau Siu-lai Retakes Oath at LegCo," November 2, 2016; Phoenix Un and Chan Ho-him, "Swearing-in Foiled after LegCo Walkout," *Standard*, October 20, 2016.
13. Legislative Council, *Issues Relating to Administration of Legislative Council Oath by Clerk to the Legislative Council at the Council Meeting of 12 October 2016*, October 18, 2016; Dennis Chong and Aaron Tam, "Rebel Hong Kong Lawmakers Challenge China in Parliament," Agence France-Presse, October 11, 2016.
14. *Guardian*, "Hong Kong Lawmakers Walk out to Block Swearing-in of Democracy Activists," October 19, 2016; Luis Liu and Li Yinze, "Liaison Office in HK Condemns Antics of Localist Lawmakers," *China Daily*, October 15, 2016; Stanley Leung, "Limit to Number of Chances to Take Lawmaker Oath, Says New LegCo Pres. Andrew Leung," *Hong Kong Free Press*, October 14, 2016; Hong Kong Special Administrative Region, *Government Statement on Oath-Taking by Members-Elect of Legislative Council*, October 13, 2016.
15. National People's Congress Standing Committee, *The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China, Chapter IV* (Adopted at the Third Session of the Standing Committee of the Seventh National People's Congress on April 4, 1990).
16. High Court of the Hong Kong Special Administrative Region, *Constitutional and Administrative Law List No 185 of 2016*, October 18, 2016; Stuart Lau et al., "Hong Kong Government Fails to Block Localist Duo from Retaking LegCo Oaths, but Wins Right to Seek Judicial Review," *South China Morning Post*, October 18, 2016.
17. Owen Fung, "Legco President Invalidates Five Lawmakers' Oaths, Now Including Localist Lecturer and Pro-Beijing Loyalist," *South China Morning Post*, November 30, 2016.
18. Aaron Tam, "Hong Kong Pro-Independence Lawmakers Blocked from Taking Oath," Agence France-Presse, October 19, 2016; Alan Wong, "Hong Kong Legislators Stop Pro-Independence Lawmakers from Taking Oath," *New York Times*, October 19, 2016.

19. Legislative Council, *President's Decision for Deferring the Administration of Oath or Affirmation for Hon Sixtus Leung Chung-hang and Hon Yau Wai-ching*, October 25, 2016; Kevin Lui, "Pro-Independence Hong Kong Lawmakers Won't Be Allowed to Take Office until Court Rules," *Time*, October 25, 2016.

20. Michael Forsythe, "Hong Kong Elected 2 Separatists. China Took Drastic Action," *New York Times*, November 6, 2016.

21. Standing Committee of the National People's Congress, *Interpretation of Article 104 of the Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China* (Adopted by the 24th Session of the Standing Committee of the Twelfth National People's Congress on November 7, 2016).

22. Suzanne Pepper, "Beijing Strikes Back: The Risks Defined," *Hong Kong Focus*, November 14, 2016.

23. Benjamin Haas, "Hong Kong Court Bans Pro-Independence Politicians from Office," *Guardian*, November 15, 2016; The High Court of the Hong Kong Special Administrative Region, *Constitutional and Administrative Law List No. 185 of 2016 and Miscellaneous Proceedings No. 2819 of 2016*, November 15, 2016.

24. Joyce Ng et al., "Barred Hong Kong Localists Vow to Keep Fighting after High Court Decision," *South China Morning Post*, November 15, 2016.

25. Violet Law and Jessica Meyers, "China Bars Two Pro-Independence Hong Kong Legislators from Office," *Los Angeles Times*, November 7, 2016; Michael Forsythe, "Hong Kong Elected 2 Separatists. China Took Drastic Action," *New York Times*, November 6, 2016.

26. Various interlocutors, meetings with Commission, Hong Kong, May 2017.

27. Fion Li, Jonathan Browning, and David Tweed, "Hong Kong Protesters Stand Down as City Braces for China Ruling," *Bloomberg*, November 6, 2016.

28. Michael Forsythe, "Beijing's Intervention in Hong Kong Election Could Face a Hurdle: Local Courts," *New York Times*, November 8, 2016.

29. Hong Kong Bar Association, "The Hong Kong Bar Association's Statement Concerning the Interpretation Made by National People's Congress Standing Committee of Article 104 of the Basic Law," November 7, 2016.

30. Law Society of Hong Kong, "Interpretation of Article 104 of the Basic Law by the Standing Committee of the National People's Congress: Statement of the Law Society," November 8, 2016.

31. Joyce Ng, Tony Cheung, and Eddie Lee, "Hong Kong Government Seeks to Ban Four More Pro-Democracy Legislators," *South China Morning Post*, December 2, 2016.

32. Ellie Ng, "More Hong Kong Lawmakers at Risk of Losing Office as China Equates Self-Determination with Independence," *Hong Kong Free Press*, November 7, 2016; Benjamin Haas and Tom Phillips, "Hong Kong Pro-Democracy Politicians Banned by China as Crisis Grows," *Guardian*, November 7, 2016.

33. Joyce Ng, Tony Cheung, and Eddie Lee, "Hong Kong Government Seeks to Ban Four More Pro-Democracy Legislators," *South China Morning Post*, December 2, 2016.

34. Tony Cheung and Jasmine Siu, "Disqualified Hong Kong Lawmakers Launch Appeal Bid to Regain Legco Seats," *South China Morning Post*, September 11, 2017; The High Court of the Hong Kong Special Administrative Region, *Constitutional and Administrative Law List No. 223 of 2016*, July 14, 2017.

35. Tony Cheung, "First Two, Now 15 Hong Kong Lawmakers Face Prospect of Being Expelled from Legislative Council," *South China Morning Post*, November 10, 2016.

36. Hong Kong Special Administration Region Information Office, *Legislative Council By-Election*, September 14, 2017. <http://www.info.gov.hk/gia/general/201709/14/P2017091400808.htm>.

37. Radio Free Asia, "Hong Kong Court Strips Four Democratic Lawmakers of Seats over 'Insincere' Oaths," July 14, 2017; Various interlocutors, meetings with Commission, Hong Kong, May 2017.

38. Ellie Ng, "More Hong Kong Lawmakers at Risk of Losing Office as China Equates Self-Determination with Independence," *Hong Kong Free Press*, November 7, 2016; Ilaria Maria Sala, "Hong Kong's Leader Is Angling for a Fight by Threatening to Revive a Draconian Anti-Subversion Law," *Quartz*, November 7, 2016; The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China, *Chapter II: Relationship between the Central Authorities and the Hong Kong Special Administrative Region, Article 23* (Adopted at the Third Session of the Seventh National People's Congress on April 4, 1990).

39. Ilaria Maria Sala, "Hong Kong's Leader Is Angling for a Fight by Threatening to Revive a Draconian Anti-Subversion Law," *Quartz*, November 7, 2016; Keith Bradsher, "Security Laws Target of Huge Hong Kong Protest," *New York Times*, July 2, 2003.

40. Stuart Lau, "Chinese State Leader Zhang Dejiang Announces Beijing's Plans to Tighten Grip on Hong Kong," *South China Morning Post*, May 27, 2017.
41. Kimmy Chung, "No Chance Beijing Will Reform Hong Kong Electoral Framework in Next Five Years, Rita Fan Says," *South China Morning Post*, May 4, 2017; Suzanne Pepper, "Post-Occupy Payback ... in Slow Motion," *Hong Kong Focus*, April 19, 2017.
42. Standing Committee of the National People's Congress, *Decision of the Standing Committee of the National People's Congress on Issues Relating to the Selection of the Chief Executive of the Hong Kong Special Administrative Region by Universal Suffrage and on the Method for Forming the Legislative Council of the Hong Kong Special Administrative Region in the Year 2016* (Adopted at the 10th Session of the Standing Committee of the 12th National People's Congress on August 31, 2014).
43. Joshua Berlinger and James Griffiths, "4 Hong Kong Lawmakers Disqualified, Fueling Worries about Beijing's Influence," CNN, July 14, 2017; Ben Bland, "What Does China's Latest Intervention Mean for Hong Kong?" *Financial Times*, November 7, 2016.
44. Jeffie Lam, "Analysts Fear Beijing's Ruling Could Curtail Debate if Hong Kong Lawmakers Fear Legal Action," *South China Morning Post*, November 8, 2017.
45. Various interlocutors, meetings with Commission, Hong Kong, May 2017.
46. Elaine Yu, "Hong Kong Leader Leung Chun-ying Will Not Run Again," Agence France-Presse, December 9, 2016.
47. Ellie Ng, "All Polls but One Show John Tsang Is Hong Kong's Most Popular Leadership Candidate," *Hong Kong Free Press*, March 14, 2017.
48. Stuart Lau, "Why Is Hong Kong's John Tsang Popular with the People, But Not the Voters?" *South China Morning Post*, March 25, 2017; Jeffie Lam, "Pan-Democrat Support Builds for Hong Kong Chief Executive Candidate John Tsang as Election Looms," *South China Morning Post*, March 20, 2017.
49. Hong Kong Special Administrative Region, *Chief Executive Election Result*, March 26, 2017. <http://www.info.gov.hk/gia/general/201703/26/P2017032600510.htm>; Alan Wong, "Carrie Lam Wins Vote to Become Hong Kong's Next Leader," *New York Times*, March 26, 2017.
50. Hong Kong Special Administrative Region, *Chief Executive Election Result*, March 26, 2017. <http://www.info.gov.hk/gia/general/201703/26/P2017032600510.htm>.
51. Alan Wong, "Carrie Lam Wins Vote to Become Hong Kong's Next Leader," *New York Times*, March 26, 2017.
52. Gary Cheung, "Two Chinese State Leaders Reveal Beijing's Backing for Carrie Lam as Hong Kong Leader in Shenzhen Meetings," *South China Morning Post*, February 9, 2017; Kris Cheng, "Carrie Lam Is the Only Leadership Contender Beijing Supports, State Leader Zhang Dejiang Reportedly Says," *Hong Kong Free Press*, February 7, 2017.
53. Suzanne Pepper, "Chief Executive Selection: Beijing Decides, Hong Kong Approves," *Hong Kong Focus*, February 27, 2017.
54. University of Hong Kong Public Opinion Programme, "Comparison between Ratings of Chris Patten, Tung Chee-hwa, Donald Tsang Yam-kuen and Leung Chun-ying (Monthly Average)," June 27, 2017.
55. Kris Cheung, "Hong Kong Chief Executive CY Leung Nominated to Become Vice-Chairman of China's Top Advisory Body," *Hong Kong Free Press*, March 10, 2017.
56. Tony Leung and Stuart Lau, "President Xi Jinping Praises Hong Kong Leader for 'Curbing Independence,'" *South China Morning Post*, December 23, 2016.
57. Jeffie Lam and Phila Siu, "Hong Kong Chief Executive Leung Chun-ying Elected to Top National Body," *South China Morning Post*, March 14, 2017.
58. Joyce Ng and Jeffie Lam, "Carrie Lam Unveils Her 'Ideal Team' of Mostly Familiar Faces," *South China Morning Post*, June 22, 2017; Carrie Gracie, "Hong Kong's Carrie Lam: 'I am No Puppet of Beijing,'" BBC, June 21, 2017; Benjamin Haas, "Hong Kong Elections: Carrie Lam Voted Leader amid Claims of China Meddling," *Guardian*, March 26, 2017.
59. Joyce Ng and Jeffie Lam, "Carrie Lam Unveils Her 'Ideal Team' of Mostly Familiar Faces," *South China Morning Post*, June 21, 2017; Radio Television Hong Kong, "Political Reform Not a Priority," February 4, 2017.
60. Donald Clarke, "Chinese Grammar Matters: A Response to Julian Ku," *China Collection*, July 4, 2017; China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Lu Kang's Regular Press Conference on June 30, 2017*, June 30, 2017. Translation. [http://www.fmprc.gov.cn/web/wjdt\\_674879/fyrbt\\_674889/t1474476.shtml](http://www.fmprc.gov.cn/web/wjdt_674879/fyrbt_674889/t1474476.shtml).
61. Reuters, "UK Says Sino-British Joint Declaration on Hong Kong Remains in Force," June 30, 2017.

62. Joyce Ng, "Beijing Says Sino-British Treaty on Hong Kong Handover Still Binding But Does Not Allow UK to Interfere," *South China Morning Post*, July 11, 2017.
63. *South China Morning Post*, "Full Test of President Xi Jinping's Speech on 'One Country, Two Systems' and How China Rules Hong Kong," July 1, 2017.
64. *South China Morning Post*, "Full Test of President Xi Jinping's Speech on 'One Country, Two Systems' and How China Rules Hong Kong," July 1, 2017.
65. Minnie Chan, Stuart Lau, and Naomi Ng, "Hong Kong's PLA Garrison Stages Biggest Military Parade in 20 Years as Xi Jinping Inspects Troops," *South China Morning Post*, June 30, 2017; Xinhua, "Xi Inspects PLA Garrison in Hong Kong," June 30, 2017.
66. Minnie Chan, Stuart Lau, and Naomi Ng, "Hong Kong's PLA Garrison Stages Biggest Military Parade in 20 Years as Xi Jinping Inspects Troops," *South China Morning Post*, June 30, 2017.
67. Tom Phillips and Benjamin Haas, "China Flexes Military Muscle in Hong Kong during Xi Jinping Visit," *Guardian*, June 30, 2016.
68. Austin Ramzy, "Crowds in Hong Kong Line Up to See China's First Aircraft Carrier," *New York Times*, July 8, 2017.
69. Ting Shi and David Tweed, "China's Soft Power Has Hard Edge as Warship Visits Hong Kong," *Bloomberg*, July 7, 2017.
70. Various interlocutors, meetings with Commission, Hong Kong, May 2017.
71. Brad Lendon, "China Makes Its Military More Visible in Hong Kong," CNN, June 29, 2017; Yuan Yubai and Wei Liang, "Forging a Loyal Teacher, a Mighty Teacher, and a Civilized Teacher: Resolutely Safeguarding the Long-Term Prosperity and Stability of Hong Kong," *Qiushi*, June 15, 2017. Translation. [http://www.qstheory.cn/dukan/qs/2017-06/15/c\\_1121127135.htm](http://www.qstheory.cn/dukan/qs/2017-06/15/c_1121127135.htm).
72. Tony Cheung, "Officers from Hong Kong's PLA Garrison Take Part in First International Drill," *South China Morning Post*, November 22, 2016.
73. Congressional-Executive Commission on China, *Hearing on Will the Hong Kong Model Survive?: An Assessment 20 Years after the Handover*, written testimony by Lam Wing Kee, May 3, 2017; Frank Langfitt, "The Plot Thickens in the Mystery of Hong Kong's Missing Booksellers," National Public Radio, January 5, 2016.
74. Pavitra Dwibhashyam, "Hong Kong Publisher Gui Minhai Detained in China Gets Swedish Free Speech Award," *International Business Times*, April 20, 2017.
75. Various interlocutors, meetings with Commission, Hong Kong, May 2017; Kelvin Chan, "Rising China Risk Tarnishes Hong Kong Business Hub Luster," Associated Press, March 22, 2016; Ilaria Maria Sala, "Hong Kong's Business Community Is 'Freaked Out' over China's Crackdown," *Guardian*, February 9, 2016; BBC, "Hong Kong: Thousands Rally over Missing Booksellers," January 10, 2016.
76. Benjamin Haas, "'The Darkest Time': Hong Kong Reels over Bizarre Disappearance of Chinese Billionaire," *Guardian*, February 12, 2017.
77. Benjamin Haas, "'The Darkest Time': Hong Kong Reels over Bizarre Disappearance of Chinese Billionaire," *Guardian*, February 12, 2017; Michael Forsythe and Paul Mozur, "A Video, a Wheelchair, a Suitcase: Mystery of Vanished Tycoon Deepens," *New York Times*, February 10, 2017.
78. Clifford Lo, "Five Months On, Hong Kong Police Still Lack Answers from China about Missing Tycoon Xiao Jianhua," *South China Morning Post*, June 19, 2017.
79. Willy Lam, adjunct professor at the Chinese University of Hong Kong, meeting with Commission, Hong Kong, May 19, 2017; Jonathan Kaiman, "Mystery Deepens over Apparent Abduction of Chinese Billionaire in Hong Kong," *Los Angeles Times*, February 13, 2017; Michael Forsythe and Paul Mozur, "A Video, a Wheelchair, a Suitcase: Mystery of Vanished Tycoon Deepens," *New York Times*, February 10, 2017; Michael Forsythe, "Billionaire Is Reported Seized from Hong Kong Hotel and Taken into China," *New York Times*, January 31, 2017.
80. *South China Morning Post*, "Chinese Tycoon 'Helping Inquiries' into 2015 Stock Market Turmoil and Case of Former Top Spy," February 2, 2017.
81. Michael Forsythe and Paul Mozur, "A Video, a Wheelchair, a Suitcase: Mystery of Vanished Tycoon Deepens," *New York Times*, February 10, 2017.
82. Michael Forsythe, "Billionaire Is Reported Seized from Hong Kong Hotel and Taken into China," *New York Times*, January 31, 2017.
83. Venus Wu and Julie Zhu, "Missing China Billionaire Taken from Hong Kong Hotel in Wheelchair: Source," Reuters, February 11, 2017.
84. Venus Wu and Julie Zhu, "Missing China Billionaire Taken from Hong Kong Hotel in Wheelchair: Source," Reuters, February 11, 2017.
85. Michael Forsythe and Paul Mozur, "A Video, a Wheelchair, a Suitcase: Mystery of Vanished Tycoon Deepens," *New York Times*, February 10, 2017.
86. Benjamin Haas, "'The Darkest Time': Hong Kong Reels over Bizarre Disappearance of Chinese Billionaire," *Guardian*, February 12, 2017.

87. Jonathan Kaiman, "Mystery Deepens over Apparent Abduction of Chinese Billionaire in Hong Kong," *Los Angeles Times*, February 13, 2017.
88. Michael Forsythe, "Chinese Court Sentences American Publisher to Prison," *New York Times*, July 27, 2016.
89. Legislative Council, *Customs, Immigration and Quarantine Arrangements of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link*, July 25, 2017; Austin Ramzy, "Hong Kong Rail Plan Raises Fears of Mainland China's Influence," *New York Times*, July 25, 2017.
90. Kris Cheng, "Pro-Democracy Veteran Martin Lee Warns Joint Checkpoint Deal Sets Precedent for Crushing Protests," *Hong Kong Free Press*, July 27, 2017; *Economist*, "A High-Speed Rail Connection between Hong Kong and the Mainland Is Proving Controversial," July 26, 2017; Agence France-Presse, "Backlash in Hong Kong over Plan to Station Mainland Staff at China Rail Link Terminus," July 25, 2017.
91. Kris Cheng, "Gov't Moves to Debate Express Rail Link Joint Checkpoint in Legislature," *Hong Kong Free Press*, October 3, 2017; Tony Cheung, et al., "Hong-kongers Are 'Calm' about Joint Checkpoint Plan for High-Speed Rail Terminal, Top Chinese Official Says," *South China Morning Post*, August 8, 2017.
92. Standing Committee of the National People's Congress, *The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China, Chapter III* (Adopted at the Third Session of the Standing Committee of the Seventh National People's Congress on April 4, 1990).
93. Chris Lau and Joyce Ng, "Occupy Leaders Arrested and Charged a Day after Carrie Lam Wins Hong Kong Chief Executive Elections," *South China Morning Post*, March 30, 2017.
94. Various interlocutors, meetings with Commission, Hong Kong, May 2017.
95. Chris Lau and Joyce Ng, "Occupy Leaders Arrested and Charged a Day after Carrie Lam Wins Hong Kong Chief Executive Elections," *South China Morning Post*, March 30, 2017.
96. Amnesty International, "Hong Kong: Charges against Pro-Democracy Activists Latest Blow to Right to Peaceful Protest," March 27, 2017.
97. Benjamin Haas, "New Arrests in Hong Kong as Police Hold Nine Democracy Activists," *Guardian*, April 27, 2017; Ng Kang-chung and Joyce Ng, "Disqualified Hong Kong Pro-Independence Lawmakers Yau Wai-ching and Baggio Leung Charged with Unlawful Assembly," *South China Morning Post*, April 26, 2017.
98. Benjamin Haas, "New Arrests in Hong Kong as Police Hold Nine Democracy Activists," *Guardian*, April 27, 2017.
99. Jeffie Lam and Clifford Lo, "Security Lockdown as Chinese President Xi Jinping's Visit to Hong Kong Begins," *South China Morning Post*, June 29, 2017; Clifford Lo, "Details Revealed of Massive Hong Kong Police Operation to Protect Visiting Chinese Leaders," *South China Morning Post*, May 31, 2017.
100. Jeffie Lam, Kimmy Chung, and Ng Kang-chung, "Hong Kong Activists Rally after Arrests at Handover Statue Protest Hours Before Chinese President Xi Jinping Arrives," *South China Morning Post*, June 30, 2017.
101. Ernest Kao, "Detained Activists Including Joshua Wong Slam Hong Kong's 'Descent Into Police State' after Being Held for More than 30 Hours during Xi Jinping's Visit," *South China Morning Post*, June 30, 2017.
102. Mike Ives, "Hong Kong Pro-Democracy Rally Displaced by Pro-Beijing Event, Organizers Say," *New York Times*, May 10, 2017.
103. Alan Wong, "Joshua Wong and 2 Others Jailed in Hong Kong over Pro-Democracy Protest," *New York Times*, August 17, 2017.
104. Karen Cheung, "Democracy Activist Joshua Wong Applies to Appeal at Hong Kong's Top Court over Jail Sentence," *Hong Kong Free Press*, September 13, 2017.
105. Jasmine Siu, "Joshua Wong and Other Jailed Student Leaders See Political Careers Halted," *South China Morning Post*, August 18, 2017.
106. Chris Lau, Hong Kong Prosecutors Urge Appeal Court to Jail Three Occupy Activists," *South China Morning Post*, August 9, 2017.
107. Karen Cheung, "13 Activists Who Stormed Hong Kong Legislature Jailed Following Successful Appeal by Justice Dept.," *Hong Kong Free Press*, August 15, 2017.
108. Kelvin Chan, "Young Leaders of Massive 2014 Hong Kong Protests Get Prison," Associated Press, August 17, 2017.
109. Joshua Wong (@joshuawongcf), "They can silence protests, remove us from the legislature and lock us up. But they will not win the hearts and minds of Hong-kongers." August 17, 2017, 1:21 A.M. Tweet.
110. Demosistō, "Statement Regarding Imprisonment of Umbrella Student Leaders." Facebook, August 17, 2017. <https://www.facebook.com/demosisto/photos/a.497270963815064.1073741828.495193710689456/725480380994120/?type=3&theater>; Jun Pang, "10 Reactions to Hong Kong's Jailing of Democracy Figures Joshua Wong,

Nathan Law and Alex Chow," *Hong Kong Free Press*, August 17, 2017; Venus Wu and James Pomfret, "Critics Cry Foul as Joshua Wong and Other Young Hong Kong Democracy Leaders Get Jail," Reuters, August 17, 2017.

111. Radio Television Hong Kong, "Thousands Brave Heat to Protest Sentencing," August 20, 2017.

112. Hong Kong Special Administrative Region, *Transcript of Remarks by CE at Media Session (with Video)*, August 21, 2017. <http://www.info.gov.hk/gia/general/201708/21/P2017082100986.htm>.

113. Joshua Wong, Secretary-General of Demosistō, meeting with Commission, Hong Kong, May 19, 2017.

114. Abraham Gerber, "HK Democracy Caucus Formed at Legislative Yuan," *Taipei Times*, June 13, 2017.

115. Jeffie Lam, "Beijing Loyalist Lawmakers Condemn Hong Kong Localists for Taiwan Cross-Party Alliance," *South China Morning Post*, June 16, 2017; China's Taiwan Affairs Office of the State Council, *Taiwan Affairs Council Press Conference on June 14, 2017*, June 14, 2017. Translation. [http://www.gwytb.gov.cn/xwfbh/201706/t20170614\\_11801071.htm](http://www.gwytb.gov.cn/xwfbh/201706/t20170614_11801071.htm).

116. J. Michael Cole, "Why Jiang Yi-huah Will Be Able to Talk about Taiwan's Democracy in Hong Kong," *Taiwan Sentinel*, January 25, 2017; Agence France-Presse, "Taiwan Attacks Hong Kong over String of Visa Denials," September 26, 2016; J. Michael Cole, "Hong Kong No Longer Has Autonomy on Immigration," *News Lens*, August 24, 2016.

117. James Pomfret and Greg Torode, "China Extends Reach into Hong Kong to Thwart Democrats," Reuters, June 19, 2015.

118. Ilaria Maria Sala and Isabella Steger, "Beijing Wants to Crush Youth Activists in Taiwan and Hong Kong Trying to Band Together," *Quartz*, January 15, 2017; Vivian Kam, "Hong Kong Pro-Democracy Politicians Attacked by China Protesters," CNN, January 9, 2017; J. Michael Cole, "Pro-Unification Groups, Triad Members Threaten Hong Kong Activist Joshua Wong, Legislators in Taiwan," *Taiwan Sentinel*, January 7, 2017.

119. Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016.

120. Agence France-Presse, "China's Banned Books Fade from Hong Kong," July 20, 2017; Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016.

121. Agence France-Presse, "China's Banned Books Fade from Hong Kong," July 20, 2017.

122. Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016; PEN America, "Writing on the Wall: Disappeared Booksellers and Free Expression in Hong Kong," November 5, 2016, 30–31.

123. Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016.

124. Lee I-chia, "Bookseller Warns on Free Speech," *Taipei Times*, August 6, 2017; Jennifer Lo, "Hong Kong's Causeway Bay Books to Reopen in Taiwan," *Nikkei Asian Review*, May 6, 2017.

125. Freedom House, "Freedom of the Press 2017: Press Freedom's Dark Horizon," April 2017, 5, 25.

126. Freedom House, "Freedom of the Press 2017: Press Freedom's Dark Horizon," April 2017, 23.

127. Freedom House, "Freedom of the Press 2017: Hong Kong Profile," April 2017.

128. Reporters Without Borders, "Hong Kong," April 2017.

129. Reporters Without Borders, "Hong Kong," April 2017.

130. Mark O'Neill, "Why Reporters Without Borders Chose Taipei over Hong Kong," *Hong Kong Economic Journal*, April 18, 2017.

131. Karen Cheung, "Press Freedom Victory as Hong Kong Gov't Lifts Digital Media Ban Following Years-Long Campaign," *Hong Kong Free Press*, September 19, 2017.

132. Hong Kong Journalists Association, "Press Release: Press Freedom Shows Slight Improvement, but Remains Abysmally Low," April 6, 2017.

133. Hong Kong Journalists Association, "Press Release: Press Freedom Shows Slight Improvement, but Remains Abysmally Low," April 6, 2017.

134. Hong Kong Journalists Association, "Press Release: Press Freedom Shows Slight Improvement, but Remains Abysmally Low," April 6, 2017.

135. Hong Kong Journalists Association, "Press Release: Press Freedom Shows Slight Improvement, but Remains Abysmally Low," April 6, 2017.

136. Committee to Protect Journalists, "Hong Kong Daily Sing Pao Says Its Journalists and Website Are under Attack," February 22, 2017.

137. Committee to Protect Journalists, "Hong Kong Daily Sing Pao Says Its Journalists and Website Are under Attack," February 22, 2017.
138. Committee to Protect Journalists, "Hong Kong Daily Sing Pao Says Its Journalists and Website Are under Attack," February 22, 2017; Elson Tong, "Pro-Beijing, Anti-CY Leung Paper Sing Pao Says Management Has Received 'Serious Threats,' Website Attacked," *Hong Kong Free Press*, February 22, 2017.
139. Elson Tong, "Pro-Beijing, Anti-CY Leung Paper Sing Pao Says Management Has Received 'Serious Threats,' Website Attacked," *Hong Kong Free Press*, February 22, 2017.
140. Radio Television Hong Kong, "Has One Country, Two Systems Been a Success for Hong Kong?" July 2, 2017. Translation. [http://www.rthk.hk/tv/dtt31/programme/city\\_forum/episode/439067](http://www.rthk.hk/tv/dtt31/programme/city_forum/episode/439067).
141. Radio Free Asia, "Hong Kong Broadcaster under Fire for 'Anti-China' Sentiment on Handover Anniversary," July 12, 2017.
142. Hong Kong Journalists Association, "Press Release: Press Freedom Shows Slight Improvement, but Remains Abysmally Low," April 6, 2017.
143. Kimmy Chung, "TVB Hits Back at Criticism to Pull One RTHK Show on Xi Jinping for Another, Less Controversial One," *South China Morning Post*, July 5, 2017; Ellie Ng, "TVB Accused of Self-Censorship over Sudden Suspension of Political Satire Show during Xi Jinping's Visit," *Hong Kong Free Press*, July 5, 2017.
144. Hong Kong Journalists Association, "Two Systems under Siege: Beijing Turns the Screws on Hong Kong Media," July 2017, 6–7; Tom Mitchell, "TVB Paper Trail Maps Out Chinese Influence on Hong Kong Companies," *Financial Times*, May 30, 2017.
145. Ellie Ng, "TVB Accused of Self-Censorship over Sudden Suspension of Political Satire Show during Xi Jinping's Visit," *Hong Kong Free Press*, July 5, 2017.
146. Radio Free Asia, "Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media," August 14, 2017.
147. Radio Television Hong Kong, "National Radio to Replace RTHK's BBC Relay," August 11, 2017; Radio Television Hong Kong, "New Programming Arrangements upon the Termination of Radio Television Hong Kong (RTHK), DAB Services on 3 September 2017," August 11, 2017.
148. Radio Free Asia, "Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media," August 14, 2017; Radio Television Hong Kong, "National Radio to Replace RTHK's BBC Relay," August 11, 2017.
149. Radio Free Asia, "Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media," August 14, 2017.
150. Austin Ramzy, "Asia Society Blames Staff for Barring Hong Kong Activist's Speech," *New York Times*, July 7, 2017.
151. Kris Cheng, "'Disappointed': Joshua Wong's Party Accuses Asia Society of Self-Censorship Following 'Ban,'" *Hong Kong Free Press*, July 7, 2017.
152. Kris Cheng, "Forbes Terminates Contract with Writer after Deleting Article Critical of Asia Society Tycoon," *Hong Kong Free Press*, July 30, 2017; Tom Grundy, "Deleted Forbes Article Criticising Asia Society Tycoon Resurfaces Online amid Accusations of Censorship," *Hong Kong Free Press*, July 20, 2017; Asia Sentinel, "Forbes Magazine Dumps an Article on an Influential HK Tycoon," July 19, 2017.
153. Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016.
154. Ilaria Maria Sala, "In Hong Kong's Book Industry, 'Everybody Is Scared,'" *Guardian*, December 28, 2016.
155. Sonny Lo, Professor at the Hong Kong University School of Professional and Continuing Education, meeting with Commission, Hong Kong, May 18, 2017.
156. Radio Free Asia, "Scuffles as Hong Kong Students Protest at University Council Meeting," January 27, 2016; Chantal Yuen, "HKU Students Stage Class Boycott after Appointment of Pro-Beijing Figure as Council Chair," *Hong Kong Free Press*, January 21, 2016; Jeffie Lam, "More than 3,000 March against Arthur Li's Appointment as Chairman of HKU Governing Council," *South China Morning Post*, January 4, 2016; Joyce Ng, "2,000 HKU Students and Staff Joined Silent March to Protest Liberal Scholar's Rejection from Key Post," *South China Morning Post*, October 7, 2015.
157. Isaac Cheung, "HKU Council Establishes Independent Panel to Review University Governance," *Hong Kong Free Press*, April 27, 2016.
158. Peace Chiu, "University of Hong Kong Council Delays Making Decision to Adopt or Reject Governance Report," *South China Morning Post*, March 1, 2017.
159. Peace Chiu, "University of Hong Kong Refuses to Strip Chief Executive of Powers Despite Recommendation by Review Panel," *South China Morning Post*, June 28, 2017.

160. Peace Chiu, "University of Hong Kong Refuses to Strip Chief Executive of Powers Despite Recommendation by Review Panel," *South China Morning Post*, June 28, 2017.
161. Jun Pang, "Student Union Asks Chinese University to Explain How Hong Kong Independence Banners are 'Illegal,'" *Hong Kong Free Press*, September 6, 2017.
162. Kimmy Chung and Elizabeth Cheung, "Showdown at Chinese University Campus over Posters and Politics," *South China Morning Post*, September 8, 2017; Catherine Lai, "Student Who Tore Down Pro-Independence Posters Abused Online in Hong Kong, But Wins Praise in State Media," *Hong Kong Free Press*, September 8, 2017; Amy Nip, "Battles over Indy Banners," *Standard*, September 7, 2017; Kimmy Chung and Raymond Yeung, "Seven Hong Kong Student Unions Label Removal of Independence Banners an 'Erosion of Academic Autonomy,'" *South China Morning Post*, September 6, 2017.
163. Hong Kong Special Administrative Region, *CE Condemns Improper Remarks Appearing on University Campuses*, September 8, 2017. <http://www.info.gov.hk/gia/general/201709/08/P2017090800644.htm>.
164. Chinese University of Hong Kong Student Union, "Arming Ourselves in Our Darkest Hour—Declaration of Student Unions of Higher Institutions on the Controversy Surrounding Democracy Wall," Facebook, September 10, 2017. <https://www.facebook.com/CUHK.SU/posts/1584780091584394>.
165. Hong Kong Trade and Development Council, "Economic and Trade Information on Hong Kong," June 27, 2017.
166. UN Conference on Trade and Development, "Country Factsheets 2017." <http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Country-Fact-Sheets.aspx>.
167. China's Ministry of Commerce, *The Statistics of Mainland-Hong Kong Trade and Economic Cooperation in January–December 2016*, January 28, 2017.
168. Hong Kong Special Administrative Region Census and Statistics Department, *Balance of Payments*, December 9, 2016.
169. Hong Kong Trade and Development Council, "Economic and Trade Information on Hong Kong," June 27, 2017.
170. Katrina Hamlin, "One Country, Two Systems, Three Decades," *Breaking Views*, June 23, 2017; Lisa Jucca, "Culture Clash," *Breaking Views*, June 26, 2017.
171. Yang Sheng, "Hong Kong Can Play Bigger Role in Belt and Road," *Global Times*, June 27, 2017; Xinhua, "Hong Kong Becomes New Member of AIIB," June 13, 2017; Raymond Cheng, "Green Light Given for Hong Kong to Spend HK\$6 billion over Five Years to Join Beijing-Led AIIB," *South China Morning Post*, May 12, 2017.
172. Wendy Wu and Raymond Cheng, "Hong Kong Hopes for Business Services Boom from AIIB Club," *South China Morning Post*, March 24, 2017.
173. Xinhua, "China Focus: Infrastructure Projects Link Hong Kong Closer with Mainland," June 26, 2017; Catherine Wong et al., "Beijing Throws Weight behind Ambitious 'Greater Bay Area' Plan for HK and Southern China," *South China Morning Post*, June 8, 2017.
174. Sandy Li, "Greater Pearl River Delta Infrastructure to Alleviate Hong Kong Tight Land Supply," *South China Morning Post*, May 23, 2016; HSBC, "Pearl River Delta: Factbook," April 2016; *Economist*, "Special Report: The Pearl River Delta," April 8, 2017.
175. Hong Kong Monetary Authority, *2016 Annual Report*, May 2017, 96.
176. World Bank, "Hong Kong GDP (Current US\$)." <https://data.worldbank.org/>; China's National Bureau of Statistics via CEIC database.
177. Hong Kong Trade and Development Council, "Economic and Trade Information on Hong Kong," June 27, 2017; *China Daily*, "Shenzhen GDP up 9%, Ranks Fourth in Mainland Cities," January 24, 2017.
178. Ben Bland, "Hong Kong: One Country, Two Economies," *Financial Times*, July 19, 2016.
179. Michelle Prince, "Closer Hong Kong, China Ties Creates Corporate Governance Challenges," Reuters, June 30, 2017.
180. Michelle Prince, "Closer Hong Kong, China Ties Creates Corporate Governance Challenges," Reuters, June 30, 2017.
181. Various interlocutors, meetings with Commission, Hong Kong, May 2017.
182. Jennifer Hughes, "China's Communist Party Writes Itself into Company Law," *Financial Times*, August 14, 2017.
183. Michael Martina, "Exclusive: In China, the Party's Push for Influence inside Foreign Firms Stirs Fears," Reuters, August 24, 2017.
184. Jennifer Hughes, "China's Communist Party Writes Itself into Company Law," *Financial Times*, August 14, 2017.
185. Hong Kong Stock Exchange, "Stock Connect: Another Milestone: FAQ," April 10, 2017, 9.

186. Peter Wells and Jennifer Hughes, "Will Foreign Investors Bite at China's Shenzhen Link?" *Financial Times*, November 14, 2016.
187. Hong Kong Exchanges and Clearing via CEIC database.
188. Gabriel Wildau, "Weak Demand for Shenzhen Stock Connect Even as Shares Retreat," *Financial Times*, June 5, 2017.
189. Hong Kong Exchanges and Clearing via CEIC database.
190. Laura He and Karen Yeung, "China Stocks Fall to Three-and-Half Month Low as Commodity Futures Sink," *South China Morning Post*, May 5, 2017.
191. Zhang Shidong, "MSCI Says Chinese Regulator Mulls over Raising Stock Connects' Daily Quotas," *South China Morning Post*, June 27, 2017.
192. Chris Anstey, "China Set to Expand Opening to \$9 Trillion Bond Market," Bloomberg, June 27, 2017.
193. Umesh Desai and Andrew Galbraith, "Brisk Trade Marks Start of China, Hong Kong Bond Connect Scheme," Reuters, July 3, 2017.
194. Karen Yeung, "Investors Turn Cautious towards Chinese Bonds after Second Month of Bond Connect," *South China Morning Post*, September 7, 2017; Andrew Galbraith, "Foreign Holdings of Chinese Debt up in July, Bond Connect Impact Limited," Reuters, August 3, 2017.
195. Karen Yeung, "Investors Turn Cautious towards Chinese Bonds after Second Month of Bond Connect," *South China Morning Post*, September 7, 2017.
196. Chris Anstey, "China Set to Expand Opening to \$9 Trillion Bond Market," Bloomberg, June 27, 2017.
197. United States-Hong Kong Policy Act of 1992, Public Law No. 102-383, 1992.
198. Reuters, "Taiwan's Ruling Party Urges Beijing to Respect Hong Kong's Democratic Aspirations," November 9, 2016.
199. Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Institution Press, 2016, 223-225; Lawrence Chung, "One Country, Two Systems' Right Formula for Taiwan, Xi Jinping Reiterates," *South China Morning Post*, September 27, 2014.
200. Abraham Gerber, "Most View 'Two Systems' as Failure: Poll," *Taipei Times*, July 1, 2017; Richard C. Bush, *Hong Kong in the Shadow of China: Living with the Leviathan*, Brookings Institution Press, 2016, 225-233.
201. Jane Perlez, "Tribunal Rejects Beijing's Claims in South China Sea," *New York Times*, July 12, 2016.
202. J. Michael Cole, "Death of the Sino-British Joint Declaration on Hong Kong Sends Warning to the International Community," *Taiwan Sentinel*, July 3, 2017.
203. U.S. Census Bureau, *Top Trading Partners - December 2016*; U.S. Census Bureau, *Trade in Goods with Hong Kong*, 2016.
204. Hong Kong Census and Statistics Department, *External Direct Investment Statistics of Hong Kong 2015*, 16.
205. U.S. Department of State, *Fact Sheet: Review of Key Developments in Hong Kong*, June 7, 2017.
206. Government of the Hong Kong Special Administrative Region Census and Statistics Department, *Companies in Hong Kong Representing Parent Companies Located outside HK*. <https://www.censtatd.gov.hk/hkstat/sub/sp360.jsp>.
207. Government of the Hong Kong Special Administrative Region Trade and Industry Department, *The United States and the Hong Kong Special Administrative Region: Some Important Facts*, October 2016.
208. U.S. Department of State, *Fact Sheet: Review of Key Developments in Hong Kong*, June 7, 2017.
209. Federal Register, *Support Document Requirements with Respect to Hong Kong*, January 19, 2017.
210. U.S. Department of Commerce Bureau of Industry and Security, *Guidance on Due Diligence to Prevent Unauthorized Transshipment/Reexport of Controlled Items through Hong Kong to China*, 2016.
211. John Haberstock, "Strategic Trade Management," presentation by regional export control officer at the U.S. Department of Commerce at a seminar with the Hong Kong Special Administrative Region Trade and Industry Department on strategic trade control, May 4, 2017. <https://www.stc.tid.gov.hk/english/whatsnew/files/us1.pdf>; Federal Register, *Support Document Requirements with Respect to Hong Kong*, January 19, 2017.
212. U.S. Department of State, *Visa Waiver Program*. <https://travel.state.gov/content/visas/en/visit/visa-waiver-program.html>.
213. Sarah Karacs, "United States Streamlines Visa Process Amid Surge in Applications from Hong Kong," *South China Morning Post*, March 23, 2016.
214. Shirley Zhao, "American Trade Body Urges Visa-Free Access for Hong Kongers," *South China Morning Post*, July 3, 2017.

215. Viola Zhou and Joyce Ng, "What Is the United States Visa Waiver Scheme that Envoy Kurt Tong Wants to Be Applied to Hong Kong?" *South China Morning Post*, June 8, 2017.

216. U.S. Department of State, *Fact Sheet: Review of Key Developments in Hong Kong*, June 7, 2017.

217. United States-Hong Kong Policy Act of 1992, Public Law No. 102-383, 1992.

218. Congressional-Executive Commission on China, *Hearing on "Will the Hong Kong Model Survive?: An Assessment 20 Years after the Handover"*, written testimony by Joshua Wong, May 3, 2017; Nyshka Chandran, "Hong Kong Oath Case Could Have Far-Reaching Implications for 'One Country, Two Systems,'" CNBC, November 3, 2016.

219. *Economist*, "Hong Kong's Tricky Balancing Act," April 6, 2017.

## **SECTION 5: CHINA'S DOMESTIC INFORMATION CONTROLS, GLOBAL MEDIA INFLUENCE, AND CYBER DIPLOMACY**

### **Key Findings**

- China's current information controls, including the government's new social credit initiative, represent a significant escalation in censorship, surveillance, and invasion of privacy by the authorities.
- The Chinese state's repression of journalists has expanded to target foreign reporters and their local Chinese staff. It is now much more difficult for all journalists to investigate politically sensitive stories.
- The investment activities of large, Chinese Communist Party-linked corporations in the U.S. media industry risk undermining the independence of film studios by forcing them to consider self-censorship in order to gain access to the Chinese market.
- China's overseas influence operations to pressure foreign media have become much more assertive. In some cases, even without direct pressure by Chinese entities, Western media companies now self-censor out of deference to Chinese sensitivity.
- Beijing is promoting its concept of "Internet sovereignty" to justify restrictions on freedom of expression in China. These policies act as trade barriers to U.S. companies through both censorship and restrictions on cross-border data transfers, and they are fundamental points of disagreement between Washington and Beijing.
- In its participation in international negotiations on global Internet governance, norms in cyberspace, and cybersecurity, Beijing seeks to ensure continued control of networks and information in China and to reduce the risk of actions by other countries that are not in its interest. Fearing that international law will be used by other countries against China, Beijing is unwilling to agree on specific applications of international law to cyberspace.

### **Recommendations**

The Commission recommends:

- Congress strengthen the Foreign Agents Registration Act to require the registration of all staff of Chinese state-run media entities, given that Chinese intelligence gathering and information warfare efforts are known to involve staff of Chinese state-run media organizations and in light of the present uneven enforcement of the Act.

- Congress require the U.S. Department of Commerce to collect information from U.S. companies that do business in China concerning requests from the Chinese government regarding censorship, surveillance, and data transfers, and report its findings to Congress.
- Congress modify U.S. Federal Communications Commission regulations to require greater transparency regarding Chinese government ownership of media outlets and the clear labeling of media content sponsored by the Chinese government.
- Congress urge the Office of the U.S. Trade Representative, when renegotiating the existing Bilateral Film Agreement between the United States and China, to increase the number of films that have access to Chinese theaters and increase the revenue sharing arrangement to a level reflecting the median arrangement existing around the globe. In addition, the arrangement should reserve a minimum of 50 percent of the quota for films from studios and independent distributors that are not owned or controlled by Chinese interests.

### **Introduction**

The Chinese government has significantly tightened its domestic information controls by introducing “fundamentally abusive” new regulations that “strangle” online freedom and anonymity, according to Human Rights Watch.<sup>1</sup> Measures such as increased surveillance and censorship of the Internet, domestic propaganda operations known as “public opinion guidance,” and repression of journalism are used to support government policies and prevent consensus against the government from forming in Chinese society. These information controls function as a trade barrier by, among other things, keeping U.S. companies from reaching Chinese consumers. They also deprive Chinese citizens of a fuller understanding of differing views on situations where escalating tensions may increase the likelihood of conflict, potentially jeopardizing U.S. national security.

Beijing has also invested heavily in expanding the overseas presence of its official news entities, distorting international reporting on China’s activities by using training programs and expense-paid trips to China to teach foreign journalists to paint Chinese policy in a positive light.<sup>2</sup> Chinese propaganda regularly appears in foreign mainstream news publications—including in the United States—without clear indications of its origins, blurring the line between propaganda and news.

Chinese corporations, many with connections to the Chinese state, have gone on an investment spree in Hollywood over the last few years, raising concerns that the Chinese government may have undue influence over the U.S. film industry even though the Chinese government has since unwound some of these deals and restricted additional investment. This influence may give the Chinese government the ability to both directly and indirectly control an important pillar of the U.S. economy and a critical component of U.S. soft power.

Meanwhile, Beijing is promoting its concept of “Internet sovereignty,” including in international fora, to legitimize its monitoring

and control of the Internet in China. In addition to China, this concept could contribute to legitimizing suppression of the freedom of expression in other countries. Beijing also advocates for a “multilateral” system of Internet governance in which national governments are the main actors. These views sharply contrast with longstanding U.S. support for the “multistakeholder” model, in which governmental, industry, academic, and other non-state organizations have an equal role in the management of the Internet.

This section examines:

- China’s tightening domestic information controls, including the implications for U.S. companies’ ability to effectively conduct business
- China’s new “social credit” system, which will leverage vast data collection capabilities to incentivize thought and behavior that is approved by the Chinese government
- Domestic propaganda in China
- The repression of Chinese journalists domestically and expansion of Chinese government-approved journalism overseas
- China’s media influence in the United States and the U.S. film industry’s access to the Chinese market
- Chinese leaders’ efforts to use media as a soft power weapon against the United States
- China’s concept of “Internet sovereignty,” and its stance on global Internet governance and norms in cyberspace

This section draws from the Commission’s May 2017 hearing on China’s information controls, global media influence, and cyber warfare strategy, open source research and analysis, and consultations with outside experts.

## **China’s Domestic Information Controls**

### ***Increasing Domestic Censorship***

The Chinese government has long maintained stringent information and media controls, but recently the Chinese Communist Party (CCP) has taken steps to tighten its grip with the goal of resisting perceived infiltration by foreign (and especially Western) ideas, which are regarded as “cultural threats.” According to Xiao Qiang, founder and editor-in-chief of *China Digital Times*, an activist website that tracks Chinese censorship, the key driver behind this increase in domestic censorship is the CCP’s fear that the unrestricted flow of information could undermine its legitimacy.<sup>3</sup> Professor Xiao argues that the CCP wants to “re-institutionalize and internalize” its own narrative in the minds of the Chinese people, and that this is the motivation behind strengthening Internet controls in China.<sup>4</sup> David Bandurski, editor of Hong Kong University’s *China Media Project*, argued in September 2017 that the CCP seeks to use these harsh new controls to “re-consolidate and legitimize [its] dominance over public opinion [in China] as a matter of political necessity.”<sup>5</sup> To these ends, the Chinese government has invoked “Internet sovereignty”—a “slogan that calls for each state to exercise absolute con-

trol of its slice of the Web,” according to the *Washington Post’s* Emily Rauhala—to justify its increasing crackdown on online freedoms.<sup>6</sup>

China has implemented several new rules increasing its control over online media. In February 2016, two organizations issued new rules preventing foreign-owned companies or their affiliates from publishing materials online (including digitized materials such as books, maps, and scientific materials) without obtaining approval from the Chinese government.<sup>7</sup> The organizations responsible for these new controls are the State Administration of Press, Publication, Radio, Film and Television (SAPPRFT)—China’s oversight organization governing film censorship—and the Ministry of Industry and Information Technology (MIIT), the government agency responsible for regulation and development of communications technology. The new rule, which allows for a very broad interpretation due to its vagueness, potentially endangers the presence of foreign companies that distribute any online content, including news sources, in China.<sup>8</sup> Chinese companies’ ability to distribute foreign media is already heavily regulated.<sup>9</sup> In May 2017, SAPPRFT punished Tencent—which, until recently, was China’s most valuable tech company<sup>10</sup>—for “making and broadcasting political and societal news programs without a permit,” according to financial newspaper Caixin, by partially suspending Tencent’s approval to import foreign media and video programs.<sup>11</sup>

In May 2017, the Chinese government also issued new regulations mandating that the top editor of any domestic online news service be a Chinese citizen and that the service “promote the formation of a positive, healthy, upright and virtuous Internet culture, and protect the national and public interest.”<sup>12</sup> The regulations also call for stricter enforcement of often-ignored rules mandating that editorial staff at online news services be credentialed by government regulators just like staff of traditional news media.<sup>13</sup> The *Wall Street Journal* reported that the new rules do not appear to apply to foreign news organizations headquartered outside China, but cooperation between Chinese news services and foreign entities requires a security review by government regulators.<sup>14</sup>

*Foreign Policy* reported in July 2017 that the Chinese censorship regime is now “determined to be an all-encompassing ... guardian of socialist morality, even if that comes at the expense of business innovation.”<sup>15</sup> Several regulatory actions in May and June 2017 emphasized the shift from only censoring political media to censoring media regardless of political content, resulting in China’s media and tech companies “closing down hundreds of mobile video platforms, firing thousands of journalists, and promising to promote state media opinions,” according to the *Financial Times*.<sup>16</sup> In May, the Cyberspace Administration of China (CAC), the state agency responsible for online censorship, ordered five leading news portals to stop live news broadcasts.<sup>17</sup> In June, the CAC shut down 32 accounts on WeChat—a widely used messaging and blogging app—focused on “celebrity news.”\* In the same month, SAPPRFT ordered Weibo—a

\*“Celebrity news” gossip blogs are paparazzi-like social media accounts that publish the details of scandals such as divorces and extramarital affairs of prominent Chinese actors and other public figures. The CAC claimed that by shutting down these accounts it was curbing “excessive reporting on the private lives of and gossip about celebrities.” Zhou Xin, “Chinese Censor Shuts Down Dozens of Online Entertainment News Accounts,” *South China Morning Post*, June 8, 2017.

Chinese microblogging service—and two other popular websites to stop video and audio streaming, and the China Netcasting Services Association—the government body regulating online broadcasting—banned the depiction of dozens of topics deemed vulgar or unpatriotic.<sup>18</sup> In August 2017, according to a leaked document from a Guangzhou-based cyber police unit, China’s Ministry of Public Security held a drill to shut down websites “illegally disseminating harmful information.”<sup>19</sup> The same month, the CAC announced it was investigating top social media services in response to their users “spreading violence, terror, false rumors, pornography, and other hazards to national security, public safety, [and] social order;” Tencent, Weibo, and Baidu were later fined the “maximum [amount] allowable”\* under China’s new cybersecurity law.<sup>20</sup> Financial newspaper *Caixin* reported in September 2017 that in the first half of 2017, SAPPFFT removed 125 “vulgar” online video programs and forced 30 to undergo revision before being reposted.<sup>21</sup>

After the CAC shut down the gossip blogs in June, the CCP’s Central Committee for Discipline Inspection criticized the CAC for not pushing the Party line aggressively enough.<sup>22</sup> The *Wall Street Journal* reported that a sustained campaign against celebrity gossip would be a “dramatic reorientation of China’s censorship machinery.”<sup>23</sup> Qiao Mu, a former professor at Beijing Foreign Studies University who researches Chinese media, assessed this indicated a return of the Mao-era Communist ideology that prefers politics and class warfare over apolitical entertainment; Victor Shih, an expert in Chinese politics at the University of California, San Diego said that more “red” content can be expected in Chinese media as a result.<sup>24</sup> In September 2017, Zhejiang University—one of China’s top schools<sup>25</sup>—issued a notice declaring that “outstanding” online products that exhibit “core socialist values”† and apply “correct thinking and culture” are as authoritative as formal academic publications.<sup>26</sup>

When video-streaming websites removed most foreign dramas in July, the *Wall Street Journal* assessed it was because Beijing “wants Chinese youth to watch revolutionary-themed series and other politically inspiring fare” instead of sitcoms.<sup>27</sup> According to Agence France-Presse, in July the CAC ordered some of the biggest Chinese tech companies—Baidu, Sohu, Tencent, Netease, and Phoenix—to close accounts that had published “bad information,” including “misinterpreting policy directives, disseminating false information, distorting Chinese Communist Party history, plagiarizing photos, and challenging public order.”<sup>28</sup>

\*The CAC did not announce the exact amount of the fines, but the cybersecurity law stipulates a fine of up to 500,000 yuan (about \$75,000). Josh Chin, “China Fines Social-Media Giants for Hosting Banned Content,” *Wall Street Journal*, September 25, 2017; National People’s Congress of the People’s Republic of China, *People’s Republic of China Cybersecurity Law*, November 7, 2016. Translation. [http://www.npc.gov.cn/npc/xinwen/2016-11/07/content\\_2001605.htm](http://www.npc.gov.cn/npc/xinwen/2016-11/07/content_2001605.htm).

†The 12 “core socialist values”—freedom, equality, patriotism, dedication, prosperity, democracy, civility, harmony, justice, rule of law, integrity, and friendship—were first described in November 2012 at the CCP’s 18th Party Congress. In December 2013, the CCP released guidelines dictating that these values be “incorporated into the curriculum and classrooms and made a way of thinking for students.” Kiki Zhao, “China’s ‘Core Socialist Values,’ the Song-and-Dance Version,” *New York Times*, September 1, 2016; Bochen Han, “How Much Should We Read into China’s New ‘Core Socialist Values?’” *Council on Foreign Relations*, July 6, 2016; CCTV, “China Promotes Core Socialist Values,” December 23, 2013. <http://english.cntv.cn/20131223/105497.shtml>.

In addition to increasing censorship of blogs and online media, Chinese authorities have taken steps to threaten online anonymity and privacy.<sup>29</sup> The CAC published new rules in August 2017 mandating that commenters on online fora register under their real names.<sup>30</sup> Also in August, in accordance with China's new cybersecurity law, an Internet service provider in Chongqing, a major municipality in southwest China, was penalized for not keeping records of users logging onto its networks.<sup>31</sup> In September 2017, the CAC decreed that Internet service providers must verify the identities of their users and keep records of group chats for no fewer than six months.<sup>32</sup> The new rules order Internet service providers to establish a credit rating system and provide group chat services to users in accordance with their credit ratings (for more information on the Chinese government's plans to implement social credit ratings, see "Social Credit System," later in this section).<sup>33</sup> The rules also make the managers of group chats responsible for the content of the chat.<sup>34</sup> In September 2017, a man in Xinjiang was sentenced to two years in prison for teaching members of a chat group about Islam.<sup>35</sup> Weibo also ordered its users to register their real names in September.<sup>36</sup>

### ***Crackdown on Virtual Private Networks***

According to rules made official in July 2016 but only publicized in March 2017, the government of Chongqing began penalizing users of virtual private networks\* (VPNs), which are commonly used by both foreigners and Chinese to circumvent China's "Great Firewall."<sup>†</sup><sup>37</sup> These new rules—which Chinese activists suggest could constitute a pilot program for a planned nationwide implementation of fines for using VPNs—threaten to cut off Internet access and fine anyone who uses VPNs to earn profits exceeding 5,000 yuan, or about \$730.<sup>38</sup>

In January 2017, the VPN crackdown expanded beyond Chongqing users to include providers nationwide. That month, the MIIT announced a 14 month-long crackdown on unauthorized VPNs.<sup>39</sup> Under this announcement, locally-based VPN providers, data centers, and Internet service providers need government approval to operate.<sup>‡</sup><sup>40</sup> The campaign is ostensibly intended to clean up Internet

\*According to *Wired*, "A VPN is a private, controlled network that connects ... to the internet at large. [The] connection with [the] VPN's server is encrypted, and ... it's difficult for anyone to eavesdrop ... from the outside. VPNs also take [internet service providers] out of the loop on ... browsing habits, because [service providers] just see endless logs of ... connecting to the VPN server." Lily Hay Newman, "If You Want a VPN to Protect Your Privacy, Start Here," *Wired*, March 30, 2017.

†According to the 1997 *Wired* article that is thought to have coined the term "Great Firewall," the Firewall is "designed to keep Chinese cyberspace free of pollutants of all sorts, by ... requiring [Internet service providers] to block access to 'problem' sites abroad." *Wired*, "The Great Firewall," June 1, 1997.

‡According to Chinese court records, in January 2017 Deng Jiewei, a resident of Dongguan, Guangdong Province, was sentenced to nine months in prison for selling VPN software on his website. In August 2017, the Zhejiang branch of the CAC ordered five Chinese e-commerce companies to stop selling VPNs, and the BBC reported that a Chinese VPN developer was forced by plainclothes police, who came to his residence, to remove his app from Apple's online store. In September, a software developer surnamed Zhao in Jiangsu Province was detained for selling VPNs, and his profits—about \$165—were confiscated. Associated Press, "China Detains Man for Service to Evade Internet Firewall," September 18, 2017; *Global Times*, "Software Engineer Detained 3 Days for Selling VPN Service," September 17, 2017; Miranda Barnes and Manya Koetse, "Chinese Man Sentenced to Prison for Selling VPN Software," *What's on Weibo*, September 3, 2017; Cate Cadell, "China Targets Alibaba's Taobao, Other E-Commerce Sites, in VPN Crackdown," Reuters, August 17, 2017; Cyberspace Administration of China Zhejiang Branch, "Cyberspace Administration of

services in China, though the Chinese government insisted it would not affect multinational corporations that had official approval to use “cables or other means of cross-border connectivity.”<sup>41</sup> After popular China-based VPN provider Green announced in late June that it would cease operations by July 1, Chinese Internet users began to speculate that most VPNs would soon be removed from mobile app stores.<sup>42</sup> According to Bloomberg, in July 2017, MIIT ordered state-run telecommunications providers to block access to VPNs by February 2018; MIIT denied the report.<sup>43</sup> That same month, Associated Press reported that China’s biggest telecommunications provider, China Telecom Ltd., had told corporate customers that they may only use VPNs to connect to their own headquarters abroad and that they may no longer use VPNs to link to sites outside China.<sup>44</sup> The letter reportedly also stipulated that companies are required to provide the identities of all personnel who use VPNs.<sup>45</sup>

A purported letter addressing the customers of Hotwon, a Chinese cloud computing services company, claimed China’s Ministry of Public Security was behind the most recent crackdown, not MIIT, and listed several popular VPNs and proxy programs as targets for “cleaning up.”<sup>46</sup> Bill Bishop, a prominent China analyst and the creator of the popular *Sinocism* newsletter, told the Commission he was “reasonably confident” the document was legitimate because it “fits with other things that are going on around VPNs.”<sup>47</sup> He assessed the Ministry of Public Security’s involvement “means this crackdown has much more teeth.”<sup>48</sup> In late July, Apple removed several popular VPN apps from its app store in China, and Beijing Sinnet Technology, the Chinese operator of Amazon Web Services, ordered customers in early August to stop using software to evade censorship.<sup>49</sup> Beijing Sinnet Technology also received a letter from the Ministry of Public Security, according to the *New York Times*.<sup>50</sup> Emily Parker, an expert on social media in authoritarian countries, argued in *Wired* that “Apple and Amazon have simply joined the ranks of companies that abandon so-called Western values in order to access the huge Chinese market.”<sup>51</sup>

### **Censorship “Tax”**

Margaret Roberts, assistant professor of political science at University of California, San Diego, testified at the Commission’s May 2017 hearing that the Great Firewall’s porous nature “makes it seem like it’s not an imposition on freedom because it’s possible to circumvent”; so, both the Chinese government and Chinese Internet users maintain the illusion that the censorship is not really absolute because it is possible to evade with time and money.<sup>52</sup> Although this is true in a sense, Dr. Roberts argues the burdens imposed by censorship amount to a “tax” on Internet use in China that most affects those who are least capable of bearing it. Dr. Roberts testified to the Commission that Internet censorship in China is a “tax” because it “requir[es] people] to spend more time or more money to access in-

China Zhejiang Branch Discusses Severely Punishing Online Illegal and Harmful Information with Taobao, Royalflush Financial, Etc., Five Websites,” August 17, 2017. Translation. <https://mp.weixin.qq.com/s/lcW4gzd4UcMEoQz2x8UKBA>; Robin Brant, “China’s VPN Developers Face Crackdown,” BBC, August 10, 2017; The First Court of Dongguan City, Guangdong Province, *Notice of Penal Judgment*, China Judgments Online, April 25, 2017. Translation. <http://wenshu.court.gov.cn/content/content?DocID=970f7940-1024-4c3e-bdd1-a76000af7d33>.

formation.”<sup>53</sup> Additionally, this “tax” is regressive because it allows “those with more capabilities to access information but largely keep[s] out those who don’t have the knowledge or resources to facilitate evasion.”<sup>54</sup> Dr. Roberts told the Commission in August 2017 that the “tax” imposed by the Great Firewall has “increased substantially” and become more regressive as a result of the VPN crackdowns.<sup>55</sup>

Dr. Roberts argues that fear of punishment is not currently a primary factor deterring Chinese from evading censorship; rather, users are “simply not willing to pay the cost in time and money of evasion.”<sup>56</sup> Emphasizing that the primary barrier is inconvenience, Dr. Roberts testified that certain “pulls”—specific blocked services users want to access—can alter this cost/benefit analysis and spur Chinese Internet users to “jump the Wall” when they had not previously.<sup>57</sup> For example, users tend to begin using VPNs in response to sudden blocks of websites or services they had been accustomed to accessing, as was seen after China blocked Instagram in 2014 in response to the prodemocracy Occupy protests (also called the “Umbrella Revolution”) in Hong Kong.<sup>58</sup> Dr. Roberts testified that this ban resulted in millions of downloads of VPNs in mainland China and expanded use of blocked websites like Twitter, Facebook, and Wikipedia.<sup>59</sup> Increased censorship in response to crises such as the 2015 industrial disaster in Tianjin also correlates with increased VPN use in China.<sup>60</sup> Dr. Roberts told the Commission in August 2017 that an outright ban on VPNs might change this calculus and make fear of punishment, rather than inconvenience, the primary reason not to use VPNs.<sup>61</sup> She argued this would be a “qualitatively different situation” because censorship would no longer function as a “tax.”<sup>62</sup>

According to Dr. Roberts, only about three to five percent of urban Chinese reported having used a VPN; most Chinese are satisfied with using Chinese websites and apps that do not require VPNs.<sup>63</sup> She found that those most likely to evade censorship in China are the “economic and political elite” who “have higher incomes, more education, [are] younger ... have an interest in foreign information, have traveled abroad, and are much more interested in politics and international politics.”<sup>64</sup> In addition to the “tax” posed on regular Internet users, Chinese informational controls function as a trade barrier by “distort[ing] the information sector, reducing the competitiveness of censored information, including that from American businesses,”<sup>‡</sup> according to Dr. Roberts, and they even hamper the innovation of Chinese businesses.<sup>65</sup> According to a January 2016 survey by the American Chamber of Commerce in China, almost four out of five member companies operating in China said Chinese

\*For more information on the Umbrella Revolution and associated events in Hong Kong, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 523–527.

†In August 2015, a series of massive explosions near Tianjin caused by improper storage of volatile industrial chemicals killed at least 165 people and caused more than \$1 billion in losses, leaving a crater 20 feet deep. Forty-nine people, including government officials and employees of the storage company involved, were jailed as a result. Merrit Kennedy, “China Jails 49 over Deadly Tianjin Warehouse Explosions,” National Public Radio, November 9, 2016.

‡In August 2017, the *New York Times* reported that Facebook—long frustrated by the Great Firewall—had introduced a photo-sharing app in China through a separate local company. The *Times*’ Paul Mozur wrote that this showed “the desperation ... and frustration” of foreign tech companies increasingly accepting that “standards for operating in China are different from elsewhere.” Paul Mozur, “In China, Facebook Tests the Waters with a Stealth App,” *New York Times*, August 11, 2017.

ensorship negatively impacted their business, and only five percent had no complaints.<sup>66</sup> Seventy-seven percent said that slow connections while accessing foreign websites were the biggest problem.<sup>67</sup> Carolyn Bigg, of the law firm DLA Piper in Hong Kong, told the *Financial Times* in July 2017 that “the [Chinese business] environment is changing weekly,” and William Zaritt, chairman of the American Chamber of Commerce in China, said these changes “have created uncertainty for cross-border data communication.”<sup>68</sup>

### **Social Credit System**

The Chinese government has begun implementing its so-called “social credit” system, which relies on data accumulated by use of commercial apps and the Internet to produce assessments of Chinese citizens’ political and social trustworthiness in addition to their financial credit.<sup>69</sup> A *Planning Outline* issued by China’s State Council in June 2014 claimed this system would “ensure that sincerity and trustworthiness become conscious norms of action among all the people.”<sup>70</sup> However, the *Economist* wrote in December 2016 that the system’s aims fall in line with the CCP’s long-held practice of “restrict[ing] freedom ... in the name of public order” and would facilitate “the digital totalitarian state” by “vastly increas[ing] snooping and social control.”<sup>71</sup> Rather than transparently deliberating how best to apply this kind of technology for the public good, Mr. Bandurski of the *China Media Project* argued in July 2017 that China’s development of big data in the context of law enforcement and surveillance is occurring “quickly and in the utter absence of scrutiny.”<sup>72</sup>

The Mercator Institute for China Studies (MERICS) assessed in May 2017 that “If implemented successfully, the [social credit] system will strengthen the Chinese government’s capacity to enforce and fine-tune market regulations and industrial policies in a sophisticated manner,” but the full potential impact of the system will likely not be apparent until 2020.<sup>73</sup> According to the *Wall Street Journal*, this system “could be used to govern activities ranging from a person’s ability to set up a business to his or her professional promotion,” and Sophie Richardson, China Director at Human Rights Watch, testified to the Commission that potential consequences could also affect users’ “ability to get a passport, move around the country freely, access a VPN, or rent an apartment.”\*<sup>74</sup> She also added that the planned social credit system lacks privacy protections or a way to challenge or contest a negative rating.<sup>75</sup> Even without the added complications of the social credit system, user data are already vulnerable in China. For example, in June 2017 Chinese police announced they had arrested 22 people—20 of whom worked for Apple contractors or distributors of Apple products in China—for illegally selling the personal information of Apple customers.<sup>76</sup>

As of November 2016, more than three dozen local governments in China had begun to compile social and financial digital records

\*For example, in February 2017, China’s Supreme People’s Court (SPC) announced that since 2013 almost seven million Chinese debtors had been subjected to travel bans. Meng Xiang, chief of the SPC’s enforcement bureau, said the SPC had “signed memos with 44 units including the National Development and Reform Commission to share information of defaulters in order to extend penalty restrictions.” Xinhua, “China Toughens Restrictions on Court Order Defaulters,” February 14, 2017.

ahead of a planned national rollout in 2020, according to the *Wall Street Journal*.<sup>77</sup> Guangdong Province began this process in early 2015, and in April 2017 the capitals of four neighboring provinces signed an agreement to share and integrate social credit data.<sup>78</sup> Dr. Richardson testified that the program is still “a work in progress” and is currently overseen by “at least a dozen different government agencies” ranging from the military to the Ministry of Education with the assistance of Chinese Internet companies.<sup>79</sup> According to MERICS, the National Credit Information Sharing Platform, an inter-agency collaboration, is the “backbone” of the system.\*

Private companies in China are cooperating with the Chinese government by “scooping up unprecedented data on people’s lives through their mobile phones and competing to develop and market surveillance systems for government use,” according to the *Wall Street Journal*.<sup>80</sup> For example, in April 2017, ten companies in the bicycle-sharing industry—a sector of the Chinese tech economy that is “skyrocketing” in growth, according to the respected Internet Trends report<sup>81</sup>—signed an information-sharing agreement with the National Development and Reform Commission and its think tank affiliate.<sup>82</sup> A boom in the development of facial recognition technology—bolstered by the hundreds of millions of surveillance cameras in the country, estimated to reach about 626 million by 2020, according to analysis firm IHS Markit<sup>83</sup>—has proven to be a valuable new source of data for the government.<sup>84</sup>

According to Caixin in April 2017, of the eight credit reporting companies approved to collect and analyze user data, all of them had yet to complete the trial program and obtain a license. Wan Cunzhi, director of the People’s Bank of China’s Credit Information System Bureau, says the companies’ preparation “is far below ... regulatory standards,” suggesting a delayed official rollout.<sup>85</sup> Mr. Wan argues the companies’ focus on their own “business activities” impedes sharing and therefore collaboration with the government.<sup>86</sup> Due to these concerns over potential conflicts of interest, the Chinese government decided in July not to award any of these licenses in 2017.<sup>87</sup>

Some Chinese tech companies have begun to develop their own social credit programs.<sup>88</sup> The *Financial Times* assessed that “the big prize for these companies is ... data,” especially on customers’ usage habits.<sup>89</sup> Alibaba, in addition to cooperating in developing the government’s social credit program, has created its own internal program called Sesame Credit, which uses an algorithm to assess the character of its 400 million users based on their purchase histories.<sup>90</sup> Sesame Credit has declined to explain exactly how the algorithm calculates scores, but the company has given some examples of behavior that is scrutinized.<sup>91</sup> For example, according to *Foreign Policy*, Sesame Credit’s algorithm “explicitly down-rates certain pur-

\*According to MERICS, the top ten government providers of data to the National Credit Information Sharing Platform as of May 2017 were the National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Agriculture, the National Health and Family Planning Commission, the Ministry of Transport, the Ministry of Housing and Urban-Rural Development, the State Food and Drug Administration, the State Supervisory Authority for Production Safety, the People’s Bank of China, and the Ministry of Finance. Mirjam Meissner, “China’s Social Credit System: A Big-Data Enabled Approach to Market Regulation with Broad Implications for Doing Business in China,” *Mercator Institute for China Studies*, May 24, 2017, 6.

chases, such as video games, and up-rates purchasing behavior that suggests responsibility... Alibaba then encourages users to display their Sesame Credit rating on Baihe, the company's online dating site, so that potential partners can factor it in to their romantic decisions.<sup>92</sup> In May 2017, Sesame Credit announced a partnership with state-run wireless carrier China Mobile and electronics recycling company Aihuishou to share user data and provide rewards for users with a minimum credit score.<sup>93</sup>

### ***Domestic Propaganda***

The CCP employs comment spammers referred to as “50-centers” or members of the “50-cent party” due to the persistent rumor that they are paid five Chinese mao, or 50 cents, for each post they make in support of the government.<sup>94</sup> These spammers manipulate online discussion of politically sensitive topics primarily to attempt to distract (rather than directly argue with) critics of the CCP.<sup>95</sup> An April 2009 internal CCP memo directed Party committees and departments to “make repeated postings on [sites] containing related news or reports to guide online public opinion effectively.”<sup>96</sup> A Chinese blogger who hacked a local propaganda department in 2014 revealed that there are 50-centers in “virtually every [propaganda] department [of the CCP],” and according to Professor Xiao, the total ranks of government-sponsored online commentators exceed ten million.<sup>97</sup> Some 50-centers are regular government employees who perform this task in addition to their regular duties, but many others are college students organized through the Communist Youth League or outsourced employees of online marketing companies.<sup>98</sup>

A May 2016 study by professors at Harvard, Stanford, and University of California, San Diego shows that official 50-centers produce approximately 488 million social media posts per year, meaning that about one out of every 178 social media posts on a Chinese commercial website is “fabricated” by the Chinese government.<sup>99</sup> Contrary to the popular conception of 50-centers as “ordinary citizens” hired specifically to conduct public opinion guidance, the study found that almost all of the 50-cent workers sampled were government employees.<sup>100</sup> The study also found that these 50-centers “distract the public and change the subject” from politically sensitive topics, tending to spam generic and supportive platitudes in response to government initiatives instead of directly or aggressively arguing with other posters.<sup>101</sup> The study's authors argue that although they cannot conclusively identify the causes of specific “bursts” of posts by 50-centers, the bursts are “consistent with a strategy of distraction” in the context of unusually sensitive or important events during which the CCP might want to be especially assiduous in its public opinion guidance.<sup>102</sup> The study also assessed that the main goal of this type of official Chinese propaganda is not to inspire either patriotism or jingoism but rather to counteract posts with “collective action potential” and thus prevent any anti-CCP consensus from coalescing among the Chinese public.<sup>103</sup>

\*This rumor has not been shown to be true. The term is now used to generically refer to enthusiastic online supporters of the Chinese government, regardless of whether or not they are paid, or how much. Anonymous, translated by David Wertime, “How to Spot a State-Funded Chinese Internet Troll,” *Foreign Policy*, June 17, 2015.

Gary King, director of Harvard University's Institute for Quantitative Social Science and the main author of the study, told the Commission that China employs both human and automated censors, and that each method has different qualities.<sup>104</sup> Bao Pu, a Hong Kong-based publisher of political books banned on the Mainland, told the *Wall Street Journal*, "If you have a machine doing [the censoring], it can instantly block everything. It doesn't matter if it's a billion messages or 10 billion."<sup>105</sup> Dr. King assessed that the human censors—who manually delete posts after they have been made—are fallible and inefficient due to their poor choice of keywords, whereas the automated censors use keywords to prevent online posts from being made in the first place.<sup>106</sup> Nonetheless, Dr. King said that artificial intelligence and machine learning, which China is aggressively developing, have the potential to further refine Chinese censors' ability to choose effective keywords (for more information on China's development of artificial intelligence and machine learning, see Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology").<sup>107</sup>

#### **Censorship of the Death of Liu Xiaobo**

Liu Xiaobo, the Nobel Peace Prize-winning activist who had been serving an 11-year prison sentence for "subversion," died of liver cancer in July 2017 after Chinese authorities refused to let him receive treatment outside of the country.<sup>108</sup> Mr. Liu participated in the 1989 Tiananmen Square protests and was imprisoned by the Chinese government several times afterward for his advocacy of democratic reforms in China.<sup>109</sup> In December 2008, he was detained again after coauthoring Charter 08, a prodemocracy manifesto originally signed by about 350 Chinese intellectuals and human rights activists and then later by thousands of other Chinese.<sup>110</sup> In recognition of Mr. Liu's "long and non-violent struggle for fundamental human rights in China," he received the Nobel Peace Prize in 2010.<sup>111</sup> Since he was in prison at the time, Mr. Liu's award was presented to an empty chair, which became a symbol for his prize.<sup>112</sup> According to *China Digital Times*, after the Nobel Prize ceremony, the term "empty chair" (*kong yizi*) became a sensitive word in Chinese cyberspace, and the accounts of some bloggers who used it or who participated in a campaign to post pictures of empty chairs were blocked.<sup>113</sup>

Although Mr. Liu was recognized internationally as an influential civil society activist, most Chinese remain unaware of his existence. According to prominent Chinese activist Hu Jia, who was imprisoned for more than three years, 99 out of 100 people in Beijing likely have never heard of Liu Xiaobo.<sup>114</sup> Willy Wo-Lap Lam, senior fellow at the Jamestown Foundation and adjunct professor at the Chinese University of Hong Kong, argues the CCP keeps the Chinese populace ignorant of such figures through "control over information and its relentless efforts in hunting down critics of the regime."<sup>115</sup> Professor Lam says this is made possible by what Meng Jianzhu, Politburo member and secretary of the CCP Central Political and Legal Affairs Commission, calls a "multidimensional, all-weather, and foolproof ... prevention and control ...

### **Censorship of the Death of Liu Xiaobo—Continued**

grid.”<sup>116</sup> According to Professor Lam, specialized “stability maintenance” officials work with social media companies, e-commerce platforms, cloud computing firms, and other tech companies to establish “a seamless and all-encompassing intelligence network that would do George Orwell’s Big Brother proud.”<sup>117</sup>

After Mr. Liu’s death, these capabilities were deployed to censor terms such as “Nobel Peace Prize,” “Charter 08,” “sea burial,”\* the initials RIP, and even the candle emoji on messaging apps.<sup>118</sup> Pictures of Mr. Liu were automatically blocked in transmission on WeChat and WhatsApp.†<sup>119</sup> To evade online censorship while honoring Mr. Liu, some Chinese Internet users posted pictures of empty chairs, pictures containing the text “1955–2017” (the years of Mr. Liu’s life), and pictures of Tiananmen Square, a reference to his participation in the 1989 protests.<sup>120</sup> Professor Xiao told the Commission in August 2017 that Chinese censors have possessed the technology to automatically block pictures for at least two years, but images of chairs pose a bigger challenge to automated censors because they are so irregular.<sup>121</sup>

It is difficult to measure the effectiveness of this type of public opinion guidance, but Dr. King and his associates used an article published by *Global Times*—a hawkish newspaper that is backed by the CCP but not authoritative—as an illustrative example.<sup>122</sup> In response to the May 2016 study, *Global Times* published a piece defending the CCP’s opinion guidance programs.<sup>123</sup> Dr. King and his colleagues found that 82 percent of the comments on the paper’s website “expressed an opinion [that] supported China’s system of public opinion guidance,” reflecting the fact that *Global Times* readers tend to be more nationalistic.<sup>124</sup> However, in the much more politically diverse discussion on Weibo, 63 percent of comments disapproved of these opinion guidance techniques.<sup>125</sup>

### **Repression of Domestic Chinese Journalism**

In March 2017, Liu Qibao, head of the CCP’s Central Propaganda Department, said the media should “confidently ... tell good China stories,” reflecting the general trend of tightened state control of news media.<sup>126</sup> Since Chinese President and General Secretary of the CCP Xi Jinping announced in February 2016 that Chinese media “must serve the Party” and “must bear the surname ‘Party,’” the CCP has cracked down on domestic Chinese journalism to the point that “during 2016, it was difficult to discern any difference between

\*Mr. Liu’s ashes were scattered at sea. Hu Jia told the BBC this was “a deliberate move by the Chinese government to hastily arrange the funeral so that no-one can visit [Mr. Liu’s] body.” Tom Phillips and Benjamin Haas, “China’s Ocean Burial of Liu Xiaobo Backfires as Activists Stage Sea Protests,” *Guardian*, July 18, 2017; BBC, “Liu Xiaobo: Chinese Dissident’s Ashes Scattered at Sea,” July 15, 2017.

†In September 2017, WhatsApp was “largely blocked” in China, according to the *New York Times*. The CAC declined to confirm whether it had censored the encrypted chat program. Some observers assessed the service disruption was part of tightening security in preparation for the 19th National Congress of the CCP in October. Lulu Yilun Chen, “China Disrupts WhatsApp Texts as Censor Tools Grow More Powerful,” *Bloomberg*, September 26, 2017; Alyssa Abkowitz and Georgia Wells, “China Clamps Down on WhatsApp, Ironman, and Tibet Travel,” *Wall Street Journal*, September 25, 2017; Keith Bradsher, “China Blocks WhatsApp, Broadening Online Censorship,” *New York Times*, September 25, 2017.

a report from one media outlet and a report from another,” according to the International Federation of Journalists’ 2016 *China Press Freedom Report*.<sup>127</sup> Mr. Bandurski assessed that since 2014 Chinese media have remained “virtually silent on major breaking stories [of sensitive events] ... that in years past might have drawn more aggressive coverage.”<sup>128</sup> He wrote that the 2015 Tianjin industrial disaster was the only “truly notable exception to the lull in quality reporting by China’s domestic media” because “the explosions were a story of such immense scale, unfolding in a highly populated urban area, that coverage was impossible to quell entirely.”<sup>129</sup>

The *New York Times* assessed President Xi’s “new policy remove[d] any doubt that in the view of the president and party chief, the media should be first and foremost a party mouthpiece.”<sup>130</sup> During the Commission’s 2017 trip to Hong Kong, Professor Lam told the Commission President Xi believes insufficient Communist Party control over media was a key factor in the collapse of the Soviet Union, and he assessed President Xi is determined not to make the same mistake.<sup>131</sup> John Hemmings of the Henry Jackson Society, a British think tank that advocates for liberal democratic principles, assessed in July 2017 that “a centralizing of ... media ... functions to the [CCP] and to Xi personally” is now occurring.<sup>132</sup> Relatively liberal or dissenting media organizations, such as the well-respected Caixin and especially the *Southern Weekend* newspapers, have been censored or pressured more heavily in response to perceived disobedience since President Xi’s February 2016 directive.\*<sup>133</sup>

Sarah Cook, senior research analyst for East Asia at the watchdog organization Freedom House, reported that 2016 was “a particularly bad year for non-state controlled media outlets in China.”<sup>134</sup> For example, the Chinese National Academy of Arts-affiliated political journal *China through the Ages*, which was known for publishing articles that disputed the CCP’s official version of history, closed rather than accept new leadership foisted upon it by the government.<sup>135</sup> Online forum Consensus Net, which was known for relatively open political debate and balanced content, also was shut down.<sup>136</sup> Ms. Cook noted that commercial web portals such as Tencent, Sina, and Netease were also subjected to increased pressure not to produce original, unofficial news content.<sup>137</sup> According to Ms. Cook, in recent years several high-profile prison sentences for professional journalists have also served as a warning to journalists investigating corruption, some of whom ultimately changed careers out of concern for their wellbeing.<sup>138</sup> Deng Fei, a former investigative journalist, told National Public Radio in 2017 that many Chinese journalists “feel demoralized and have been quitting the business in droves.”<sup>139</sup> Many Chinese journalists, according to Dan Southerland, former executive editor at Radio Free Asia, are young and inexperienced and

\*For example, Dr. Richardson of Human Rights Watch testified to the Commission that in *Southern Weekend’s* annual editorial summarizing the major events of the past year, the 2004 edition “explicitly” criticized the CCP for limitations on “citizens and rights”; the 2008 edition “implicitly called for ‘democracy and freedom and human rights’”; the 2013 edition substituted President Xi’s slogan about the “great rejuvenation and dreams of the Chinese nation” for any mention of human rights; and the 2017 edition was “utterly devoid of any political language and focused only on, quote, ‘hopes and dreams.’” U.S.-China Economic and Security Review Commission, *Hearing on China’s Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017.

tend to move on to better jobs\* quickly, leaving a dearth of older, experienced reporters.<sup>140</sup> According to a May 2017 report from the All-China Journalists Association, 39 percent of China's approximately 224,000 journalists are aged 30–40 and 34 percent are aged 40–50, and according to Mr. Southerland, more than 80 percent of “front-line” journalists in China are aged 30 or younger.<sup>141</sup>

The International Federation of Journalists assessed in its 2016 *China Press Freedom Report* that until 2013, there were Chinese reporters willing to report on “cases of great general concern and even on some so-called ‘sensitive’ topics such as negative stories about the leadership,” but this kind of reporting has “gradually diminished” to the point that some journalists claimed in 2016 that they were “completely mute.”†<sup>142</sup> The Foreign Correspondents’ Club of China’s Working Conditions Survey 2016 reported that sources and local staff of foreign reporters are subjected to intimidation, which presents “major challenges” for these journalists.<sup>143</sup> According to the International Federation of Journalists’ report, there were two “major incidents” in China in 2016 involving the detention of Chinese journalists: one involving three reporters in Wuwei, Gansu Province, and ongoing developments stemming from the October 2015 disappearance of five booksellers in Hong Kong.‡<sup>144</sup>

Mr. Southerland testified to the Commission that local assistants, who are instrumental to foreign journalists in their capacity as translators and in arranging interviews with witnesses, are often subjected to “intimidation sessions”§ in which police interrogate them about their work.<sup>145</sup> Steven Butler, Asia program coordinator at watchdog organization Committee to Protect Journalists, told the Commission in August 2017 that these assistants are “subject to continuing manipulation, and reporters in the field are subject to arbitrary treatment by local officials in violation of established rules.”<sup>146</sup> Mr. Southerland testified that due to the significantly increased risks faced by Chinese reporters, most of the best investigative reporting in China over roughly the past six years has been done by foreign reporters, but the harassment that foreign reporters face has also increased.<sup>147</sup>

According to PEN America, a prominent literary organization that advocates for freedom of expression, foreign journalists in

\*A common reason to change careers is a desire for higher pay. According to a survey of Chinese journalists by PR Newswire, 80 percent of the 1,477 respondents said they earned less than 10,000 yuan (\$1,494) per month, and 60 percent cited low pay as the main reason to change careers. PR Newswire, *The Influence of the Digitized Broadcasting Environment on Working Habits of Reporters and Relationships with Public Relations Media*, 2016, 2. Translation. <http://static.prnasia.com/pro/marketing/whitepaper/2016/PRNewswireSurveyOnJournalist2016.pdf>.

†Luo Changping, an award-winning former investigative journalist, told National Public Radio in August 2017 that the magazine *Caijing*, which he called “the [Chinese] media outlet with the most freedom,” can now only publish about 10 percent of their material, compared to about 90 percent prior to 2014. Mr. Luo’s social media accounts have been repeatedly shut down by Chinese censors beginning in 2013. Anthony Kuhn, “China’s Few Investigative Journalists Face Increasing Challenges,” National Public Radio, August 6, 2017.

‡In October 2015, five booksellers tied to Mighty Current Media, a Hong Kong publisher of political gossip books, were apparently detained by mainland Chinese security personnel, raising concerns about the status of Hong Kong’s legal autonomy. For more information on these events and their implications, see U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 409–413.

§These intimidation sessions are often referred to as being “made to drink tea” since Public Security Bureau officials sometimes invite activists and journalists to come to the local police station for tea in order to interrogate them. Yuwen Wu, “Tea? Reining in Dissent the Chinese Way,” BBC, January 17, 2013.

China face more restrictions now than at any other time in recent history.<sup>148</sup> In November 2016, BBC journalists in China attempting to interview a house-arrested candidate legally running for local political office were physically impeded by plainclothes minders, apparently to the greatest extent that the minders could without being caught on camera using overt physical violence.<sup>149</sup> After an interview attempt with a would-be petitioner in March 2017, plainclothes police seized the BBC crew's cameras, smashed them, and forced members of the crew to sign confessions for "trying to conduct an 'illegal interview,'" according to the *Guardian*.<sup>150</sup> Mr. Southerland testified that this kind of assault of foreign journalists is "something new"; in years past, the worst a foreign journalist had to fear from the Chinese state was "just to be expelled," but this has changed for the worse recently.<sup>151</sup> For example, Michael Forsythe, the lead reporter on a 2012 Bloomberg story investigating the wealth of President Xi's family, was subjected to death threats from people "tied to Xi's family" after the story's publication, according to Leta Hong Fincher, a prominent China scholar and Mr. Forsythe's spouse.<sup>152</sup> Even reporters investigating nonsensitive stories, however, are now subject to "extreme" surveillance, according to the *Australian Financial Review's* Lisa Murray.<sup>153</sup> Ms. Murray wrote that while she and her colleagues researched "relatively benign [economic] topics" in August 2017 in Wenzhou, China, security personnel followed them and local officials sat in on meetings pretending to be affiliated with the companies or organizations the journalists visited.<sup>154</sup>

## **China's Global Media Influence**

### ***Global Development of Chinese Journalism***

While the CCP has increasingly suppressed reporting on politically sensitive stories within China, it has made a strong push to develop the overseas presence of state-approved journalists to bolster China's international image. Mr. Southerland testified to the Commission that CCP leaders believe Western reporting has damaged China's international image ever since the Tiananmen Massacre; he assessed that China has "worked hard since then to present itself as a peace-loving nation whose rise threatens no one."<sup>155</sup> This effort to manage China's international image has in part relied on the rapid development of Chinese news services in foreign languages; Mr. Southerland testified that "Beijing's overseas media is impressive and should not be underestimated."<sup>156</sup> Shanthi Kalathil, director of the National Endowment for Democracy's International Forum for Democratic Studies, testified to the Commission that "China has mobilized information resources on a massive scale to project power and maximize desired outcomes."<sup>157</sup> Ms. Kalathil testified that in the process of building up its overseas presence in news media, the Chinese government has attempted to exert this pressure primarily in three ways: "influencing foreign reporting on China; extending its presence abroad through its international broadcasting and publication arms; and influencing the structure and values of news organizations, primarily in developing countries, through funding, training and cooperation."<sup>158</sup>

*Influencing foreign reporting on China:* According to the *New York Times*, “The Chinese Communist Party’s efforts at shaping the world’s view of its country, culture, and government have grown into an aggressive transnational censorship program that seeks to quash critical voices globally.”<sup>159</sup> These media influence activities have been documented in several countries on China’s periphery:

- Ms. Cook reported in 2013 that local government officials in Asia, Africa, and Latin America “have taken steps to restrict or punish reporting damaging to China’s reputation ... either at the behest of Chinese representatives or to preemptively avoid tensions with a large donor and trading partner.”<sup>160</sup>
- A leaked Chinese government document from 2015, *Long-Term Plan on China-Pakistan Economic Corridor*,\* included plans for a Chinese-built national fiber optic network in Pakistan that will be used not only for a large surveillance system but also as a “cultural transmission carrier” to “cooperate with Chinese media in the ‘dissemination of Chinese culture,’” according to the Pakistani newspaper *Dawn*.<sup>161</sup>
- During the Commission’s 2017 trip to South Korea, General Kim Hee-sang, deputy director of the South Korea Ministry of Foreign Affairs, told the Commission the South Korean government is concerned about Chinese investments in the country’s entertainment and film industry.<sup>162</sup>
- An Australian Broadcasting Corporation report in June 2017 assessed the CCP wields influence in Australia by, among other things, controlling most Chinese-language media in Australia.<sup>163</sup>
- In August 2017, Turkish Foreign Minister Mevlüt Çavuşoğlu said Turkey would “take measures to eliminate any media reports targeting China,” noting that “Turkey regards China’s security as its own security and will definitely not allow any activities to undermine China’s sovereignty and security in its territory.”<sup>164</sup>
- In August 2017, at the request of the Chinese government, Cambridge University Press censored more than 300 academic articles and book reviews in the academic journal *China Quarterly* related to issues such as “the 1989 Tiananmen Square massacre, Tibet, Xinjiang, Hong Kong, and the Cultural Revolution.”<sup>165</sup> The university press denied reports it had also censored more than 1,000 e-books a few months earlier; the Press said it “does not and will not block e-books for the Chinese market,” but “Chinese importers decide which books they will purchase for resale within China.”<sup>166</sup> The decision to censor the *China Quarterly* articles prompted widespread criticism in the China-watching community. Zhan Jiang, a professor at Beijing

\*The China-Pakistan Economic Corridor (CPEC) is a \$46 billion infrastructure investment plan under the One Belt, One Road umbrella. For China, the goals of CPEC are threefold: to create an alternative trade route through Pakistan and gain access to ports on the Arabian Sea; to contain Islamic terrorism and insurgency in Xinjiang, Pakistan, and Afghanistan through economic development; and to stabilize Pakistan’s economic and security environment. For Pakistan, CPEC presents an opportunity to address major infrastructure shortfalls, particularly energy shortages. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 17–18.

Foreign Studies University, called this censorship of the academic sphere “unprecedented,” and James Millward, a professor at Georgetown University, called the Press’s acquiescence “a craven, shameful, and destructive concession to [China’s] growing censorship regime.”<sup>167</sup> Several days later, the university press reversed its decision to censor *China Quarterly*.<sup>168</sup>

In addition, the Chinese government requested Cambridge University Press censor approximately 100 items from a second journal, the *Journal of Asian Studies*,<sup>169</sup> and approximately 27 items—mostly book reviews—from the *American Political Science Review*.<sup>170</sup> The publisher refused both requests. In late August, the *Journal of Asian Studies* sent a letter to the authors of the items in question—including Larry M. Wortzel, a Commissioner at the U.S.-China Economic and Security Review Commission—informing them of the *Journal’s* intent to publish a list of all the items Beijing requested to be censored and asking whether they objected to the inclusion of their articles in the list.<sup>171</sup> The fact that this question was asked shows how China’s censorship creates fears among some researchers that views objectionable to Beijing might interfere with their future work in China.

- LexisNexis, a provider of legal, regulatory, and business information, revealed in August 2017 that it had removed two databases from the Chinese market in March after being asked by Chinese authorities to remove some content.<sup>172</sup>
- Chinese authorities have used the process of digitizing academic archives to mask the removal of dozens of Chinese journal articles from the 1950s that questioned the CCP’s adherence to the rule of law, according to Glenn Tiffert, a postdoctoral fellow at the University of Michigan.<sup>173</sup> Dr. Tiffert wrote in August 2017 that “the Chinese government is leveraging technology to quietly export its domestic censorship regime abroad and ... enlisting [observers] without their consent in an alarming project to sanitize the historical record and globalize its own competing narratives.”<sup>174</sup>

Newspapers viewed by Chinese officials as “anti-China” have been pressured to drop negative stories “through a combination of direct action, economic pressure to induce self-censorship by international media owners, indirect pressure applied via proxies such as advertisers, and cyber attacks and physical assaults,” according to Ms. Kalathil.<sup>175</sup> Australia has been a major target of these operations. John Garnaut, a former adviser to Australian Prime Minister Malcolm Turnbull, wrote in August 2017 that the All-China Journalists Association—which he said is “directly subordinate to [the] United Front Work Department\* with intimate ties to the [CCP] Propagan-

\*In addition to having broad responsibility for domestic Chinese policies, the United Front Work Department under the CCP Central Committee is responsible for building and managing relationships with actors overseas to expand China’s soft power and further the CCP’s political agenda. United Front Work Department personnel are often “dual hatted” officials working in more than one role. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 291; Marcel Anglivièl de la Beaumelle, “The United Front Work Department: ‘Magic Weapon’ at Home and Abroad,” *China Brief*, July 6, 2017; Mark Stokes and Russell Hsiao, “The People’s Liberation Army General Political Department: Political Warfare with Chinese Characteristics,” *Project 2049 Institute*, October 14, 2013, 33–34.

da [Department]”<sup>176</sup>—had become the “key gateway to China for Australian journalists.”<sup>177</sup> Ms. Kalathil testified to the Commission that local analysts in Australia have reported that “the formerly lively, independent Chinese language media space [in Australia] now hews largely to the pro-China line, in part because pro-China media groups now control much of the Chinese language media sector.”<sup>178</sup> For example, Yan Xia, editor-in-chief of the independent Chinese-language Australian newspaper *Vision China Times*, wrote in September 2016 that a Beijing-based immigration agency felt compelled to stop placing ads in Mr. Yan’s paper as a result of harassment from Chinese immigration officials.<sup>179</sup> Mr. Yan wrote that Chinese-language media in Australia are “under pressure to support President Xi Jinping and Beijing’s foreign policy,” and he fears this influence will be more easily wielded in the future as “increasing numbers of Australian politicians, Chinese community groups, and Chinese media companies are becoming more reliant on commercial and political ties with China.”<sup>180</sup>

In addition to exerting pressure through and on members of the Chinese community in Australia, the Chinese government has pursued more traditional forms of cooperation with Australian media. In May 2016, six major agreements<sup>†</sup> were signed between Chinese and Australian media organizations, which were “a victory for Chinese propaganda” according to John Fitzgerald, director of the Center for Social Impact Swinburne’s Program for Asia-Pacific Social Investment and Philanthropy at Swinburne University, and Wanning Sun, professor of media and communication studies at the University of Technology Sydney.<sup>181</sup> Radio National, part of the Australian Broadcasting Corporation, said the agreement meant “China’s colossal [public relations] machine [would] have a say in what news [Australians] get from China.”<sup>182</sup> Liu Qibao, head of the Central Propaganda Department of the CCP, personally attended the signing of the agreements, suggesting the significance of the deal for the Chinese government.<sup>183</sup> Under the arrangement, the Australian company Fairfax Media will distribute the monthly *China Daily* supplement *China Watch* in the *Sydney Morning Herald*, the *Age*, and the *Australian Financial Review*, and Fairfax will have no editorial control over the content.<sup>184</sup> *China Watch* has also been distributed by newspapers in the United States. (For more information on Chinese government-sponsored news content in U.S. publications, see “China’s Media Influence in the United States,” later in this section.)

\*According to an editor at a pro-Beijing publication in Australia cited by the *Sydney Morning Herald*, “Nearly 95 percent of the Australian Chinese newspapers have been brought in by the Chinese government to some degree.” Australian National University professor Bates Gill and independent researcher Linda Jakobson cited the *Australian New Express Daily*—which is owned by Chau Chak Wing, a Chinese real estate tycoon and member of a CCP advisory body in Guangdong Province who praised the paper for “never hav[ing] any negative reporting [about China]”—as a particularly striking example. For a list of the major Chinese-language print publications in Australia, including their circulation numbers, see Wanning Sun, “Chinese-Language Media in Australia: Development, Challenges and Opportunities,” *Australia-China Relations Institute*, 2016, 67–69.

†The agreements were between Xinhua, *China Daily*, China Radio International, *People’s Daily*, and Qingdao Publishing Group (all of which are state-run) on the Chinese side and Fairfax Media, Sky News Australia, the Global China-Australia Media Group, Weldon International, and the Australia-China Relations Institute (ACRI) at the University of Technology, Sydney, on the Australian side. John Fitzgerald and Wanning Sun, “Australian Media Deals Are a Victory for Chinese Propaganda,” *Lowy Institute*, May 31, 2016.

### China's Discrediting of Guo Wengui in International Media

In March 2017, Guo Wengui, a Chinese real estate tycoon living in the United States since 2015, began to publicly criticize the effectiveness of the CCP's anticorruption campaign and allege high-level corruption in the CCP.<sup>185</sup> Chinese state-run media called him a "criminal suspect" and launched an international publicity campaign, including releasing a videotaped confession by a former senior intelligence official accusing Mr. Guo of corruption and uploading videos to YouTube on a channel called "Truth about Guo Wengui," to discredit him.<sup>186</sup> In an unbylined\* story, the *South China Morning Post* called the campaign "unprecedented" and "unusually sophisticated," and Professor Xiao testified to the Commission that he had "never seen something like this."<sup>187</sup> After Mr. Guo threatened to drop a "nuclear bomb" of corruption allegations involving relatives of powerful CCP officials in April 2017, the Chinese government asked the International Criminal Police Organization (INTERPOL) to issue a red notice† for Mr. Guo.<sup>188</sup> Meng Hongwei, a former Chinese vice-minister of public security, has been president of INTERPOL since November 2016.<sup>189</sup> According to *Foreign Policy's* Bethany Allen-Ebrahimian, countries such as Russia, Turkey, and China issue "politically motivated red notices against dissidents, activists, and journalists," and she argues the timing in this case suggests that "China's motive is purely political and that INTERPOL is in danger of becoming an extension of the increasingly long reach of the Chinese state."<sup>190</sup> In August 2017, the Associated Press reported that Chinese police had requested a second INTERPOL arrest notice for Mr. Guo.<sup>191</sup>

Chinese social media mentions of the story in April were heavily censored: FreeWeibo.com, a site that tracks censored posts on Weibo, listed Mr. Guo as the top censored subject in the week prior to April 20.<sup>192</sup> Mr. Guo's Facebook and Twitter accounts were briefly suspended, raising concerns of pressure by Chinese officials.<sup>193</sup> GreatFire, an anticensorship activism organization, claimed the Chinese government had targeted Mr. Guo's Twitter account with a direct denial of service‡ (DDoS) attack.<sup>194</sup> Charlie Smith, GreatFire's cofounder, told the Commission in September 2017 that this cyber attack was still ongoing.<sup>195</sup>

\*According to National Public Radio, a byline—the line at the top of an article naming the author—is an important part of transparency, and "transparency fosters accountability." For example, when the *South China Morning Post* published an interview with a detained Chinese legal assistant, David Bandurski noted the lack of a byline and said that questionable details of the article, including the refusal by the paper's senior staff to clarify how they arranged an interview with a detained person, raised "very serious questions about the newspaper's commitment to editorial independence." Sara Goo, "Guidance for Bylines on NPR.org," National Public Radio, March 1, 2017; David Bandurski, "The Mea Culpa Machine," *China Media Project*, July 15, 2016.

†According to INTERPOL, a red notice is "a request to locate and provisionally arrest an individual pending extradition. It is issued ... at the request of a member country or an international tribunal based on a valid national arrest warrant. It is not an international arrest warrant. INTERPOL cannot compel any member country to arrest an individual who is the subject of a Red Notice. Each member country decides for itself what legal value to give a Red Notice within their borders." INTERPOL, "Red Notices," 2017.

‡A DDoS is a type of cyber attack designed to force a server to shut down by overwhelming it with requests for information from multiple sources in a coordinated fashion. Kim Zetter, "Hacker Lexicon: What Are DoS and DDoS Attacks?" *Wired*, January 16, 2016.

**China's Discrediting of Guo Wengui in International  
Media—Continued**

In April 2017, Voice of America's (VOA) Chinese-language service conducted a live interview with Mr. Guo in which he made new allegations of corruption involving powerful Party officials, claiming "If [Chinese officials] weren't so corrupt, they wouldn't be scared" of him.<sup>196</sup> According to VOA's Mandarin Service Chief, Sasha Gong, Mr. Guo explained during a pre-interview that he paid for "office rentals, private jets, surveillance systems, personnel, and many other expenses" for Chinese security services personnel in exchange for their help in "dealing with his business rivals."<sup>197</sup> Although the interview was advertised beforehand as scheduled to run for three hours, VOA cut off the interview early after Mr. Guo made new corruption allegations, citing a prior agreement to only air one hour of it.<sup>198</sup> According to Dr. Gong, the Chinese Foreign Ministry complained to VOA's Beijing correspondent that the interview would "disturb" China's upcoming 19th Party Congress in October 2017, and the Ministry threatened to "respond seriously" if the interview proceeded.<sup>199</sup> Dr. Gong refused to cancel the interview but said VOA's upper management ordered that it run for "no longer than 15 minutes," although it ultimately ran for one hour and 19 minutes, after which Dr. Gong and four colleagues were suspended without pay.<sup>200</sup>

Mr. Guo claimed the interview had been sabotaged by a Chinese state-affiliated "liaison person" within VOA.<sup>201</sup> Dr. Gong wrote in the *Wall Street Journal* that she was "not aware of another instance in the 75-year history of [VOA] in which a foreign government has attempted to intervene with such force in the network's broadcast decisions."<sup>202</sup> She told CNBC she suspected "somebody [at VOA] caved in to the Chinese government's demand, because the timing itself was very suspicious ... Someone very, very powerful must be very, very afraid of this."<sup>203</sup> In June, CNBC reported James McGregor, chairman of Greater China for communications consultancy APCO Worldwide, had been appointed by the Broadcasting Board of Governors to investigate whether VOA had been pressured by Beijing, although VOA director Amanda Bennett denied that pressure from Beijing had influenced VOA's decision.<sup>204</sup> In June, Secretary of State Rex Tillerson said he would support an investigation by the U.S. State Department Inspector General into whether VOA had been pressured by Beijing if it was deemed necessary.<sup>205</sup> In late August, four members of Congress, including the co-chairs of the Congressional-Executive Commission on China, sent a letter to the Office of the U.S. Department of State Inspector General and the Broadcasting Board of Governors to request an investigation into the matter.<sup>206</sup>

The Chinese government began trying associates of Mr. Guo in June, marking the first official allegations made.<sup>207</sup> According to the *Wall Street Journal*, the authorities "went to unusual lengths to open the proceedings to public view" by posting videos of the proceedings in addition to transcripts, emphasizing the degree to which the publicity campaign remained in full force.<sup>208</sup> Three em-

**China's Discrediting of Guo Wengui in International  
Media—Continued**

ployees of Beijing Pangu Investment, one of Mr. Guo's companies, were convicted of fraud.<sup>209</sup> In September 2017, Mr. Guo applied for political asylum in the United States because his allegations against Chinese officials had made him “a political opponent of the Chinese regime,” according to his then lawyer.<sup>210</sup>

Later in September, after Mr. Guo posted additional personal details of Chinese officials on Facebook, the company blocked his profile and an associated page due to violations of its terms of service, according to a Facebook spokesperson.<sup>211</sup> In late September, the Hudson Institute, a think tank in Washington, DC, announced plans to host Mr. Guo for an invitation-only speaking event in early October, but the event was abruptly postponed the day before it had been scheduled to occur.<sup>212</sup> According to the *Wall Street Journal* and Mr. Guo, Hudson Institute staff—including at least one scholar with a pending visa application for a trip to China—received telephone calls from the Chinese Embassy pressuring them not to go through with the event.<sup>213</sup> David Tell, director of public affairs at the Hudson Institute, told the Commission the event was postponed not due to pressure from Beijing but because Hudson staff “weren’t able to pull together the event on short notice,” citing complications such as the need for heavy security.\*<sup>214</sup> According to internal Hudson Institute e-mails reviewed by the Commission, at least two senior Hudson staff said they received telephone calls from the Chinese Embassy, and one senior fellow said a “counselor” from the Embassy “asked about [the senior fellow’s] entry visa application [to China]”; the counselor claimed hosting Mr. Guo would “embarrass [the] Hudson Institute and hurt [its] ties with the Chinese government.”<sup>215</sup>

*Extending presence abroad:* According to a May 2017 report from the Council on Foreign Relations, China has “thrown its weight behind its foreign language news outlets to establish greater control over narratives about China.”<sup>216</sup> Unconstrained by the budget pressures facing private sector international media companies, Chinese news media have expanded into the international media market aggressively.<sup>217</sup> According to the *Economist*, Xinhua, China’s official state-run news agency, opened 40 new foreign news bureaus between 2009 and 2011 to reach a total of 162, and the number of Xinhua correspondents based overseas also doubled during that time; Xinhua reported in March 2015 that it operated about 180 overseas bureaus.<sup>218</sup> The *Economist* said Xinhua plans to have 200 overseas bureaus by 2020.<sup>219</sup> Xinhua’s North American bureau supervises bureaus in the UN, Washington, DC, Chicago, Los Angeles, Houston, and San Francisco.<sup>220</sup> At the same time, the Chinese government denies or delays visas for foreign journalists and otherwise interferes with their activities. For example, Mr. Butler at the Committee to Protect Journalists told the Commission in August 2017

\*Mr. Tell told the Commission the Hudson Institute had in the previous weeks been subjected to an unsuccessful “large-scale, sophisticated” cyber attack originating in Shanghai. David Tell, director of public affairs, Hudson Institute, interview with Commission staff, October 3, 2017.

that in one recent incident, a visa application for one press agency was held up by Chinese officials until it was established that another reporter the agency had recently hired would not be covering human rights.<sup>221</sup> New York-based New Tang Dynasty TV (NTDTV), which is known for reporting on human rights in China, said in September 2017 that one of its veteran journalists, Yang Lixin, had been denied accreditation by the UN General Assembly as a result of Chinese pressure.<sup>222</sup>

**Table 1: U.S. Media (I) Visas Issued to Chinese Citizens 2006–2016**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
751	845	848	783	616	868	989	1,029	962	1,041	836

Source: U.S. Department of State, *Nonimmigrant Visa Issuances by Visa Class and by Nationality*, 2016. [https://travel.state.gov/content/dam/visas/Statistics/Non-Immigrant-Statistics/NIVDetailTables/FYs97-16\\_NIVDetailTable.xls](https://travel.state.gov/content/dam/visas/Statistics/Non-Immigrant-Statistics/NIVDetailTables/FYs97-16_NIVDetailTable.xls).

According to research conducted by the China Africa Research Initiative at the Johns Hopkins University School of Advanced International Studies, Xinhua bureaus have become a primary news source in Africa competing with Western agencies like the Associated Press and Reuters.<sup>223</sup> Private Chinese media companies have expanded their reach in Africa, as well. For example, Beijing-based StarTimes Group—Africa’s leading digital television operator—reportedly has ten million subscribers in more than 30 African countries and reaches 90 percent of Africa’s population through its distribution network, according to Chinese State Council Information Office-affiliated state-run news portal China.org.<sup>224</sup> Although StarTimes is an ostensibly private company, according to the *Los Angeles Times* it operates in Africa with an “explicit political mandate” from the Chinese government.<sup>225</sup> Dani Madrid-Morales, a doctoral candidate at the City University of Hong Kong, argued in August 2017 that StarTimes’ operations in Africa have “a huge ideological element” and include “very specific shows that showcase an urban China, a growing China, a noncontroversial view of China.”<sup>226</sup>

At the same time, Chinese authorities have increasingly blocked foreign sources of news within China, including the *New York Times*, which was officially blocked in 2012 in retaliation for publishing an article on the personal wealth of then Chinese Premier Wen Jiabao’s family members.<sup>227</sup> In August 2017, Radio Television Hong Kong (RTHK) announced it would stop broadcasting BBC World Service radio around the clock\*—which it had done in Hong Kong since 1978—beginning in September, replacing it with content from China National Radio Hong Kong Edition in Mandarin.<sup>228</sup> RTHK spokesperson Amen Ng cited a desire to “enhance the cultural exchange between mainland China and Hong Kong” as the reason but denied it was a “political arrangement.”<sup>229</sup> RTHK employees told Reuters the decision had been “forced through without broad consideration,” and one senior employee said “Nobody [at RTHK] knew anything about it. [RTHK staff members] were told in a meeting just before it was announced.”<sup>230</sup>

\*RTHK still broadcasts BBC World Service after the nightly shutdown of RTHK Radio 4. Lam Kwok-lap, “Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media,” Radio Free Asia, August 14, 2017.

Xinhua's rapid overseas growth has raised concerns due to its connection to the Chinese government. Xinhua serves some of the functions of an intelligence agency by gathering information and producing classified reports for the Chinese leadership on both domestic and international events.<sup>231</sup> For example, a Canadian former Xinhua reporter, Mark Bourrie, quit his job there after he realized he was expected to act as a spy for China; he said he was asked to find out what the Dalai Lama and Canadian Prime Minister Stephen Harper discussed in a private meeting.<sup>232</sup> Chen Yonglin, a former Chinese diplomat who defected to Australia in 2005, told the *Epoch Times* in September 2011 that "Some [Xinhua] reporters ... have political missions; to do propaganda, using selective reporting to influence foreign politics. This includes defaming western countries in order to make the CCP look good."<sup>233</sup> Mr. Chen also claimed Xinhua is an "outreach organ of [China's] intelligence agencies."<sup>234</sup>

Distancing themselves somewhat from the often terse and humorless voice of official propaganda, Chinese official and semiofficial media have experimented with relatively flashy and snappy publications that are more approachable for foreign audiences; in most cases, it is not immediately apparent that this material is Chinese state-backed propaganda. For example, *Foreign Policy* described the new English-language website Sixth Tone—an affiliate of Party-controlled *The Paper*—as "Vox ... acquired by the Chinese Communist Party."<sup>235</sup> The *Washington Post* and *New York Times* have also featured inserts from the Chinese official media outlet *China Daily* without clearly marking them as Chinese propaganda, and state-run China Central Television (CCTV) hired many experienced U.S. reporters to run its Washington bureau.<sup>236</sup> CCTV International was rebranded as China Global Television Network (CGTN) at the end of 2016 and now oversees all new foreign language channels and digital content.<sup>237</sup>

*Influencing the structure and values of news organizations:* Although China's news influence operations have encountered obstacles in developed countries like Australia, they have found success in developing countries.<sup>238</sup> A 2013 report by Ms. Cook notes that China has granted media development aid to developing countries,\* training journalists in those countries so they are unlikely to report on negative stories about China.<sup>239</sup> According to Ms. Kalathil, China has provided extensive assistance to countries in Latin America, Central and East Asia, and Africa in developing their communications and media sectors.<sup>240</sup> It has primarily done so by providing "financial resources, infrastructure and equipment, study tours in China, and training."<sup>241</sup> According to state-run *China Daily* in October 2016, a Chinese government-backed program at China Communications University for training foreign journalists is a way to boost China's soft power.<sup>242</sup> *China Daily* also said the School of Journalism and Communication at Renmin University has trained

\*For example, in 2008, China officially provided \$18 million in international direct media assistance, but this figure does not account for the hundreds of millions of dollars—as much as \$6 billion—that China has spent on "enhancing the global reach of its state-run media enterprises, focused on the Xinhua news agency, CCTV, and the People's Daily newspaper." Douglas Farah and Andy Mosher, "Winds from the East: How the People's Republic of China Seeks to Influence the Media in Africa, Latin America, and Southeast Asia," *Center for International Media Assistance*, September 8, 2010, 8–9.

at least 10 African journalists each year since 2014, and Tsinghua University's master's degree program in global business journalism has produced 200 graduates from 50 countries.<sup>243</sup>

Unlike most traditional media development assistance, according to Ms. Kalathil, "China does not support the typical normative goals of this kind of assistance: freedom of expression, editorial independence, technologically neutral protocols, and developing the professional and investigatory capacity of local journalists."<sup>244</sup> A report from the National Endowment for Democracy's Center for International Media Assistance said that international media conferences hosted by China "consistently [push] the theme that the Western media is biased and deliberately slanders developing nations. The solution proposed is the creation of a global media alliance against the West ... to present a more positive image of the developing world."<sup>245</sup>

Chinese media, according to Mr. Southerland, have received the approval of African governments by "present[ing] African developments in a favorable light while countering what some African governments regard as mostly negative news reports carried by Western media," such as discussion of famine, disease, and corruption.<sup>246</sup> At the same time, Emeka Umejei, a doctoral candidate at the University of the Witwatersrand in Johannesburg, argues that "China media organizations based in Africa make sure that content provided by their African employees doesn't offend Chinese interests on the continent. Story ideas proposed by African journalists have to be approved or rejected by Beijing."<sup>247</sup> The resulting mutual positive coverage between Chinese media in Africa and African media reporting on China serves the purposes of both the Chinese and African governments. China's Ministry of Foreign Affairs said after the August 2017 China-Africa Media Dialogue in Johannesburg that Chinese and foreign media "sing beautiful songs of cooperation."<sup>248</sup>

Journalists in some African countries have long been harassed, intimidated, and jailed by repressive governments, and China's involvement in the development of African news media has reportedly emboldened these repressive tendencies.<sup>249</sup> Anne Nelson, adjunct associate professor of international and public affairs at Columbia University, assessed in 2013 that as a result of "China's integrated approach to media investment ... African leaders are assured that they can practice censorship with impunity."<sup>250</sup> Mr. Southerland testified to the Commission in May 2017 that some African academics and human rights advocates now worry that "China's media links and African government connections are encouraging some African leaders to feel that they can control, harass, and repress African journalists with impunity."<sup>251</sup>

### ***China's Media Influence in the United States***

According to Ms. Cook, CCP influence campaigns in the United States primarily target overseas Chinese and the remainder of the U.S. audience "[first,] to promote a positive view of China and the CCP regime; second, to encourage U.S.-China investment; and third, to suppress voices that present the Chinese government negatively."<sup>252</sup> As in Australia, an important part of this strategy in the United States, according to Ms. Cook, is "insinuating state-media content into mainstream media or other existing dissemination channels."<sup>253</sup>

This propaganda campaign in the United States has increasingly targeted English-language media with both regular inserts of *China Watch* into newspapers and an entire English-language edition of *China Daily*, the *Wall Street Journal's* partnership with Xinhua called *China Messenger*, the launch of CGTN, and more prominent deals such as Xinhua's leasing of a 60-foot LED sign in New York City's Times Square.<sup>254</sup> The Chinese government has used this sign, for example, to show propaganda claiming China has "indisputable sovereignty" over the South China Sea, according to VOA.<sup>255</sup> The Chinese government also pursues "friendly" relationships with private media owners and reporters to incentivize them to portray China positively without explicit direction; for example, according to a Reuters report, the messaging of independently-produced content broadcast by G&E, a California studio partnering with the state-run radio network China Radio International, "matches that of Chinese state propaganda."<sup>256</sup>

Chinese state-run media and CCP-friendly private networks such as Phoenix\* have a virtual monopoly in Chinese-language U.S. cable television, distorting the information available to the Chinese-speaking community in the United States. According to Ms. Cook, CCTV News is available in 90 million U.S. households, and Phoenix TV and CTI, a pro-China network based in Taiwan, are each available in more than 70 million U.S. households.<sup>257</sup> However, ETTV—a Taiwanese station that Ms. Cook described in her testimony as pro-independence—reaches just 12 million households, and NTDTV reaches just six million.<sup>258</sup> Ms. Cook testified to the Commission that NTDTV's website "significantly outranks" those of both Xinhua and CCTV in popularity.<sup>†</sup><sup>259</sup> This suggests that if NTDTV—and other independent Chinese-language cable networks—were more widely available in the United States, they would be more popular than CCTV, as well, reducing Chinese state-run media's dominance.

### ***U.S. Access to the Chinese Film Market***

China is now a major target audience for U.S. film studios. Donna Langley, chairman of Universal Pictures, told the *Hollywood Reporter* in October 2016 that "China is very important to the movie industry today. The number of movie theaters and filmgoers ... [is] extraordinary."<sup>260</sup> According to the *Wall Street Journal*, "Hollywood has become so entangled with China that the movie industry can't run without it," since Chinese ticket sales continue to increase rapidly while U.S. sales remain flat.<sup>261</sup> From 2011 to 2015, the Chinese entertainment industry grew at a rate of about 17 percent per year to an estimated total of about \$180 billion, according to analysis by the Wharton School of the University of Pennsylvania.<sup>262</sup> In 2016, China's total film ticket sales were about \$6.6 billion, more than half of the U.S. total of \$11.4 billion.<sup>263</sup> In contrast to previous rapid growth, Chinese film industry analysis company Entgroup assessed that China's domestic film ticket sales only increased 2.4 percent

\*Although Phoenix is not state-run, CCTV reportedly has a 10 percent stake in the network. Philip P. Pan, "Making Waves, Carefully, on the Air in China," *Washington Post*, September 19, 2005.

†According to Amazon's Alexa, as of April 25, 2017, NTDTV, Xinhua, and CCTV were ranked 947th; 2,103rd; and 2,475th in the United States, respectively. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.

in 2016—compared with 49 percent in 2015—and only 3.7 percent in the first half of 2017.<sup>264</sup> In spite of anemic growth, the Chinese market still has a significant impact on Hollywood movies. For example, although the June 2017 film *The Mummy*'s domestic debut was poor, according to Hollywood trade publication *Variety* it had a “significantly greater” opening in China, earning \$52 million.<sup>265</sup>

U.S.-China tensions over exports of U.S. films to China have persisted since at least 2007, when the United States brought a case to the World Trade Organization accusing China of unfairly restricting these exports.<sup>266</sup> China maintains a film import quota, ostensibly limited to 34 U.S. films each year.<sup>267</sup> But, according to Patrick Frater, Asia bureau chief of *Variety*, this number is “a minimum, not a maximum, and Chinese officials [often apply] a degree of flexibility.”<sup>268</sup> Mr. Frater reported that in 2016 China allowed in 40 revenue-sharing films plus additional films on a flat-fee basis “to counter an unexpected downturn at the [Chinese] box office.”<sup>269</sup> The 34-film agreement expired in February 2017, but the guidelines will remain in place until a new one is made.<sup>270</sup> Li Ruigang, head of China Media Capital, speculated in January 2017 that the quota might be increased to 50–70.<sup>271</sup>

U.S. film studios have adopted various methods to circumvent these limits, such as making films in joint ventures with Chinese companies, but each method presents different challenges.\*<sup>272</sup> According to Bloomberg, “The number of boxes that foreign studios have to check to qualify as a Chinese co-production may seem onerous, but the payoff can be huge.”<sup>273</sup> China issued a record 89 permits in 2016, 11 percent more than in 2015, according to *China Film Insider*.<sup>274</sup> According to Miao Xiaotian, president of China Film Co-Production Co.—the largest producer and distributor of films in China—in order to qualify as a co-production, a movie must be jointly financed by Chinese and foreign studios, have Chinese actors cast in at least a third of the leading roles, and have a sufficient amount of “Chinese elements.”<sup>275</sup> However, the vagueness of Chinese requirements is often troubling for U.S. filmmakers attempting to manage these co-productions.<sup>276</sup> In a high-profile case, U.S. studio Legendary Entertainment formed Legendary East in 2011, based in Hong Kong, with “Chinese management and international investors,” according to *Variety*, in order to have “a fully funded studio operating from China.”<sup>277</sup> In 2013, Legendary East formed a partnership with China Film Co. and announced an agreement to produce multiple films over a three-year period “designed for the Chinese and global markets.”<sup>278</sup>

\*The methods available are revenue sharing, granting foreign studios only 25 percent of the domestic Chinese box office revenues; flat fee access, which is generally unprofitable for the studios that produce the movies, though these profits have begun to increase recently; and co-productions, granting 50 percent of the total domestic Chinese box office revenues. The *Wall Street Journal* reported in June 2017 that some Hollywood studios had begun conducting an audit of 2016 box office receipts from China due to concerns they had been shortchanged. According to the *Hollywood Reporter*, the audit concluded Chinese ticket sales in 2016 were underrepresented to U.S. studios by about nine percent, or \$40 million. Patrick Brzeski, “Hollywood Cheated of Millions at China Box Office, MPAA Audit Finds (Report),” *Hollywood Reporter*, October 3, 2017; Wayne Ma, “Hollywood Studios, Suspicious of China’s Box-Office Numbers, Conduct Audit,” *Wall Street Journal*, June 27, 2017; Patrick Brzeski, “How Hollywood Is Squeezing More from China Film Deals,” *Hollywood Reporter*, June 16, 2017; Bloomberg, “Hollywood Has 1.4 Billion Reasons to Play Nice with China,” April 19, 2017.

***China's Ideological Conflict with the United States and Its Influence over Hollywood***

Mareike Ohlberg, a research associate at MERICS, argues that the CCP under President Xi “considers itself to be involved in an ideological confrontation with ‘the West’” and primarily the United States. Ms. Ohlberg assesses that top Party leaders “are fearful that a lack of a widely shared Chinese ideology at home could lead to cadre and elite defection, resulting in a collapse similar to the fate of the Soviet Union.”<sup>279</sup> To strengthen China’s “voice” and defend against what the Party perceives as the outsized influence of U.S. soft power, China has adopted new tactics to increase its own soft power. According to Ms. Kalathil, China’s soft power promotion previously focused on “the transmission of Chinese culture to the outside world,” but more recently the Chinese government has shifted to “committing to support Chinese investment in global entertainment.”<sup>280</sup> According to the *New York Times*’ Mr. Forsythe, a CCP Central Committee communiqué in 2011 cited an “urgency for China to strengthen its cultural soft power and global cultural influence.”<sup>281</sup> Ms. Kalathil wrote in March 2017 that Beijing has been “us[ing] the soft power strength of the United States for [China’s] own purposes.”<sup>282</sup>

In 2017, Congress has raised concerns over Chinese acquisitions of U.S. assets in the film industry and the implications for the kinds of movies Hollywood will be able to produce and screen as a result. In September 2016, 16 Members of Congress cosigned a letter to Gene L. Dodaro, Comptroller General of the Government Accountability Office (GAO), expressing concern over the activities of Dalian Wanda Group, a Chinese conglomerate that acquired U.S. film studio Legendary Entertainment in January 2016, and AMC Theaters, one of the largest cinema chains in the United States, in 2012.<sup>283</sup> The congressional letter requested that GAO produce a report assessing whether the authority of the Committee on Foreign Investment in the United States (CFIUS) had “effectively kept pace with the growing scope of foreign acquisitions in strategically important sectors in the [United States]” and cited the lack of updates to CFIUS’s authority since its inception “despite a rapidly changing foreign investment climate ... and new state-owned or -controlled companies that are structured as independent entities but are largely directed by foreign governments.”<sup>284</sup> The letter also cited the Commission’s *2012 Annual Report to Congress*, which recommended modifications to CFIUS’s mandate in response to these concerns.<sup>285</sup> In October 2016, GAO agreed to review CFIUS’s authority.<sup>286</sup> In November 2016, Senator Charles Schumer (D–NY) sent a letter to then Treasury Secretary Jack Lew and then U.S. Trade Representative Michael Froman calling for reviews of CFIUS’s mandate and added scrutiny on Dalian Wanda’s acquisitions.<sup>287</sup> Senator Schumer wrote of his concern that “these acquisitions reflect the strategic goals of China’s government” and promised that “the new Congress in 2017 will work on legislation to further expand CFIUS oversight authority.”<sup>288</sup> See Addendum I for a list of major investments and acquisitions in Hollywood by Chinese companies since 2011.

Dalian Wanda’s chairman Wang Jianlin—one of the richest men in China—said in January 2017 that Wanda sets aside \$5 billion to

\$10 billion each year for overseas investment.<sup>289</sup> Zhang Lihua, a professor at Tsinghua University, connected Mr. Wang's push to develop China's "cultural industry" to the 2011 CCP Central Committee communiqué, and Mr. Forsythe argued "it's pretty clear" Mr. Wang is trying to help expand "China's cultural influence and cultural soft power around the world," though Mr. Wang has insisted Dalian Wanda's sole motive is profit.<sup>290</sup> Li Ruigang, chairman of China Media Capital, argued in January 2017 that "China is using its market size to influence Hollywood's way of thinking and how they make films," but he later downplayed the "flood" of Chinese investment in Hollywood, calling it more of a "trickle."<sup>291</sup> Wanda-owned AMC purchased Carmike Cinemas in 2016, making Dalian Wanda the owner of the largest theater chain in the United States with "easily more than 600 theaters," according to the *Los Angeles Times*.<sup>292</sup> Ms. Cook testified to the Commission that there has been at least one case in which AMC screened a "Chinese propaganda film,"\* which she told the Commission would probably not have occurred had AMC not had a distribution partnership with China Lion Film Distribution.<sup>293</sup> She also testified it is possible Chinese-owned U.S. theater chains might not screen films of which the Chinese government disapproves, though Chinese officials would never confirm the reasons a particular film might not have been screened; however, she added she had not heard of any complaints about this happening.<sup>294</sup>

Primarily as a result of more stringent Chinese capital controls, some prospective Chinese acquisitions of U.S. media assets have either fallen through or been held up by regulators. In December 2016, Chinese government agencies warned against "irrational" outbound investments in some sectors, including cinemas and entertainment, which financial newspaper Caixin assessed was intended to stem capital outflows and stabilize the yuan; rising debt is also a concern.<sup>295</sup> Mr. Frater of *Variety* argued, "Unconventional dealings such as off-balance-sheet borrowing or building up stakes in American movie producers ... are a no-go under the straitlaced regime of Chinese President Xi Jinping."<sup>296</sup> Mr. Wang of Dalian Wanda Group told the *Financial Times* in May 2017 that he intended to shift his investment focus to domestic Chinese ventures in response to the tighter capital controls.<sup>297</sup>

In August 2017, China's State Council officially restricted overseas investment in the media industry (among others), but even prior to that new regulation, outbound Chinese investments had slowed.<sup>298</sup> According to CNBC, "at least a dozen" cross-border U.S.-Chinese tech, media, and entertainment deals dried up from November 2016 to April 2017.<sup>299</sup> A prospective \$1 billion deal for Dalian Wanda Group to acquire Dick Clark Productions—which runs both the Golden Globe and American Music Award ceremonies—was blocked by Beijing in April 2017, and Huahua Media defaulted on a \$1 billion, three-year deal with Shanghai Film Group and Paramount Pictures in June.<sup>300</sup> The *New York Times* reported in July 2017 that Chinese

\*The film in question is *The Founding of a Party*, a historical drama marking the 90th anniversary of the founding of the CCP. It was produced by state-run China Film Group and released in the United States as *The Beginning of a Great Revival*. According to review aggregator *Rotten Tomatoes*, the film grossed only \$151,000 in the United States. *Rotten Tomatoes*, "The Beginning of a Great Revival (2011)"; Jonathan Landreth, "China Lion to Release Chinese Communist Party Epic in North America, Australia, New Zealand," *Hollywood Reporter*, May 20, 2011.

government regulators had forbidden large state-owned banks from lending to debt-laden Dalian Wanda Group to finance its overseas investments, and *Variety* reported that Wanda was being punished for breaching capital control regulations.<sup>301</sup> According to the *Wall Street Journal*, President Xi personally approved these measures.<sup>302</sup> AMC Entertainment tried in July to publicly distance itself from Wanda's debt problems, but in August its value fell more than 26 percent, according to CNBC.<sup>303</sup> Mr. Frater, at *Variety*, wrote that the August 2017 State Council guidance ended the roughly three and a half year-long "acquisition frenzy" of Chinese companies investing in Hollywood.<sup>304</sup> According to Alex Wong, director of asset management at Hong Kong-based Ample Capital, "[The CCP means] business this time. This is not a policy that will change right after the [19th National Congress of the CCP in October 2017]."<sup>305</sup>

To capitalize on the growing Chinese film audience, "major studios have sought to appease Chinese censors in exchange for a foothold in China's extremely limited release market," according to Ms. Kalathil.<sup>306</sup> In order to be approved for release in China, all films must receive permission from SAPPRFT.\* According to Ying Zhu, professor of media culture at the College of Staten Island at the City University of New York, "[Hollywood] films critical of the Chinese government will be absolutely taboo" and will not be able to get financing.<sup>307</sup> For example, Richard Gere, who has publicly criticized Beijing's treatment of Tibetans, told the *Hollywood Reporter* in April 2017, "There are definitely movies that I can't be in because the Chinese will say, 'Not with him,'" and that he "recently had an episode where someone said they could not finance a film with [him] because it would upset the Chinese."<sup>308</sup>

Mr. Southerland wrote on Radio Free Asia's website that Hollywood industry leaders have "curtailed their creative freedom in deference to China" and that this self-censorship "can work through casting decisions, the elimination of content viewed in Beijing as 'sensitive,' and the insertion of content, images, or story lines considered 'positive' by the Chinese side."<sup>309</sup> U.S. film studios hoping to secure a China release for their products must keep in mind the need to portray China positively. For example, *Time* pointed out that the 2014 film *Transformers 4*—which grossed \$320 million in China—depicted beleaguered Hong Kong policemen insisting on calling the central government in Beijing for help.<sup>310</sup> Similarly, the 2013 film *Gravity* appealed to Chinese audiences by portraying China's space program in a positive light: a stranded astronaut saves herself by utilizing a fictional state-of-the-art Chinese space station and lands on Earth in a Chinese space capsule.<sup>311</sup> According to leaked correspondence from Sony's president of worldwide distribution Rory Bruer regarding the 2013 film *Captain Phillips*, the film was not approved for release in China because it showed "the big military machine of the U.S. saving one U.S. citizen. China would never do the same and in no way would want to promote this idea."<sup>312</sup>

---

\*SAPPRFT bans content that endangers national territorial integrity and state sovereignty, incites the division of ethnic groups and undermines national solidarity, divulges state secrets, propagates obscenity and superstition or glorifies violence, slanders or insults others, or is prohibited for publication and dissemination by other government provisions. *China Copyright and Media*, "Audiovisual Products Management Regulations," February 28, 2011.

### Beijing's Concept of "Internet Sovereignty"

To legitimize its monitoring and control of the Internet in China, Beijing advocates for a concept widely referred to as "Internet sovereignty."<sup>313</sup> This concept entails that a government has the right to monitor and control the networks in its territory and the content that Internet users there access and transmit.<sup>314</sup> China's *National Cyberspace Security Strategy*, which was approved by the CCP's Central Leading Group for Cyberspace Affairs headed by President Xi, states that "national sovereignty has expanded and extended to cyberspace. Internet sovereignty has become an important part of national sovereignty."<sup>315</sup> This document also states that countries should "respect each country's right to independently choose its development path, cyber regulation model, and Internet public policy..."<sup>316</sup> It adds that "each country has the right, according to its national situation and learning from international experience, to establish laws and regulations related to cyberspace, to take necessary measures according to law, and regulate the country's information systems and cyber activities in its territory..."<sup>317</sup>

### Beijing's Stance on Governance and Norms in Cyberspace

To Beijing, Internet sovereignty also means that national governments should be the dominant actors in making the rules of the Internet, what Beijing calls a "multilateral" system of global Internet governance.<sup>318</sup> According to this view, other actors, such as the private sector and civil society, should have a diminished role.<sup>319</sup> Beijing's position contrasts with the "multistakeholder" model advocated for by the United States, the European Union, and others.<sup>320</sup> In the multistakeholder model, governmental, industry, academic, and other non-state organizations have an equal role in the management of the Internet.<sup>321</sup> Based on this model, the Internet Corporation for Assigned Names and Numbers (ICANN)<sup>†</sup> coordinates the Internet's naming system, including oversight of the operators of top-level domains (for example, .com, .org, .mil, and .edu).<sup>322</sup> Beijing, however, has pushed for the UN's International Telecommunications Union to have a greater role in Internet governance.<sup>323</sup>

Beijing promotes its concepts of Internet sovereignty and multilateral Internet governance in international fora, including the World Internet Conference—an annual summit the Chinese government established and first hosted in 2014.<sup>324</sup> At the 2015 World Internet Conference, President Xi delivered the keynote speech in which he laid out his "four principles" and "five proposals" regarding the Internet, which included "respecting cyber sovereignty" among the principles and "building an Internet governance system, advancing fairness and justice" among the proposals.<sup>325</sup> Another of his proposals was to "establish sound order."<sup>326</sup> In what *China Daily* described as an assertion of the need to balance freedom and order, President Xi said, "Freedom is the end of order, and order the guarantee of freedom."<sup>327</sup>

\*This concept is also referred to as "cyber sovereignty" or "cyberspace sovereignty."

†ICANN was under U.S. government oversight until October 2016. Washington rarely attempted to exercise any control over it, however. Dave Lee, "US Ready to 'Hand Over' the Internet's Naming System," BBC, August 18, 2016.

### **The Internet as a Global Commons**

A commons can be defined as a “resource shared by a group of people.”<sup>328</sup> According to the UN Environment Program’s Law Division, the global commons “refers to resource domains or areas that lie outside of the political reach of any one nation state.”<sup>329</sup> In her testimony to the Commission, Chris C. Demchak, RADM Grace M. Hopper Professor of Cybersecurity at the U.S. Naval War College, explained that the concept of the Internet as a commons originated in the 1990s.<sup>330</sup> Regarding the Internet’s development, she writes, “In the early 1990s after almost three decades of development built in and for universities by public funding, cyberspace emerged for public and commercial use as the ‘Internet.’ It was already embedded with the ideology of a public good thereby meant to be free and benignly useful.”<sup>331</sup>

However, Professor Demchak argues that the Internet is not a commons. She states that the Internet is “man-made, -owned, -maintained, -updated, and -monitored” and consists of infrastructure located in sovereign territory.<sup>332</sup> She adds that information technology firms comply with local laws wherever they operate, which contrasts with the idea of the Internet being beyond government regulation.<sup>333</sup>

Other experts have described the Internet as a “pseudo commons.”<sup>334</sup> In an article published in 2010, James A. Lewis, Senior Vice President at the Center for Strategic and International Studies, wrote, “Cyberspace is a ‘pseudo commons,’ more like a condominium or a shopping mall. It is a shared global infrastructure.”<sup>335</sup>

Although U.S. government statements do not describe the Internet as a commons, the most recent U.S. international cyberspace policy document, the 2011 “International Cyberspace Strategy,” supports an “open” Internet and the “free flow of information.”<sup>336</sup> Furthermore, President Donald Trump’s executive order on cybersecurity issued in May 2017 states, “It is the policy of the executive branch to promote an open, interoperable, reliable, and secure Internet...”<sup>337</sup>

In its participation in international negotiations on global Internet governance, norms in cyberspace, and cybersecurity, Beijing seeks to ensure continued control of networks and information in China and to reduce the risk of actions by other countries that are not in its interest.<sup>338</sup> In 2013 Beijing agreed that international law and the UN charter apply to cyberspace by signing on to a report produced by the UN Group of Governmental Experts on Developments in the Field of Information and Telecommunications in the Context of International Security on norms governing the actions of countries in cyberspace, despite opposing such commitments for most of the negotiations.<sup>339</sup> Fearing that international law will be used by other countries against China, however, Beijing is unwilling to agree on specific applications of international law to cyberspace.<sup>340</sup> Dr. Lewis, in his testimony to the Commission, said, “In particular, the Chinese are opposed to anything that would appear to legitimize U.S. attack or U.S. retaliation upon them, and I’ve heard this directly from se-

nior Chinese diplomats. [They argue,] We do not agree with the Law of Countermeasures or the application of the laws of armed conflict because it would legitimize your attack, your retaliation.”<sup>341</sup> In his written testimony, he explained that countermeasures are “retaliatory actions that do not involve the use of force, such as sanctions or indictments.”<sup>342</sup>

### ***China-Russia Cooperation on Cyberspace***

The Chinese and Russian governments take similar stances on cybersecurity, norms in cyberspace, and Internet governance and partner in their efforts in these areas, but deep cooperation appears to be limited by a lack of mutual trust and respect.<sup>343</sup> Since 2011, Beijing and Moscow have promoted an International Code of Conduct for Information Security, which asserts, among other positions, that “policy authority for Internet-related public issues is the sovereign right of states.”<sup>344</sup> Also, in 2015, the two governments reached an agreement on “cooperation in ensuring international information security.”<sup>345</sup> Included in the agreement is the statement that “Each party shall have an equal right to protection of information resources of their state against misuse and unauthorized intervention, including by cyber attacks on them.”<sup>346</sup> Nonetheless, Russian cybersecurity firm Kaspersky Lab reported that China-origin cyber intrusions against Russian defense firms had occurred in the first half of 2016, and Chinese cybersecurity firm Qihoo 360 reported in February 2017 that a cyber threat group associated with the Russian intelligence apparatus was active on networks in China.<sup>347</sup> Adam Segal of the Council on Foreign Relations writes that the agreement “does not seem to cover, or at least prevent, espionage.”<sup>348</sup>

Dr. Lewis described the China-Russia cyber diplomacy partnership as “a marriage of convenience, not love.”<sup>349</sup> He said, “I have not seen evidence that Russia and China have cooperated in cyber activities the way we would cooperate with our NATO allies or with Australia or Japan.”<sup>350</sup> Nigel Inkster, special adviser at the International Institute for Strategic Studies, wrote, “While China and Russia share important aims in cyber governance and security, levels of strategic trust between them remain far below that which has facilitated the Five Eyes intelligence alliance (between Australia, Canada, New Zealand, the UK, and the United States).”<sup>351</sup>

### **Implications for the United States**

China’s domestic censorship regime, in addition to suppressing Chinese civil society and violating the privacy of Internet users in China, functions as a trade barrier and materially harms the interests of U.S. companies operating in China. These companies already face an unfair business environment, and the information controls function as an additional impediment to their operations by making it difficult for them to use blocked online services—such as Facebook for public relations and advertising—and slowing down their Internet connections.<sup>352</sup>

China’s global media influence strategy is designed to undermine U.S. soft power by inducing self-censorship in Hollywood.<sup>353</sup> Although Chinese acquisitions of U.S. media companies have tapered off recently due to restrictions in China’s capital controls, the influ-

ence already gained through purchasing or investing in these U.S. assets is alarming. Manipulation of U.S. news coverage of China's activities through paid inserts of state-sponsored content into widely read and otherwise reputable publications also risks undermining U.S. policy by portraying China's troubling actions, such as territorial expansion in the South China Sea, as justified.<sup>354</sup>

There are several primary tools available in the U.S. regulatory framework to curtail Beijing's influence on U.S. media and its efforts to influence what people in the United States read and see regarding China.<sup>355</sup> The Foreign Agents Registration Act (FARA), which is intended to counter foreign influence in the United States,\* CFIUS, and the U.S. Federal Communications Commission may all have important roles to play. For example, according to Ms. Cook's testimony, based on FARA's current mandate, "It would appear that [FARA] can encompass foreign state-owned media operating in the United States."<sup>†</sup><sup>356</sup> However, the Project on Government Oversight and the U.S. Department of Justice found that "compliance with [FARA] is unacceptably low, and it's rarely enforced."<sup>357</sup> Ms. Cook testified that it is a "loophole" that "individuals working for agencies like Xinhua and *People's Daily* who are likely collecting intelligence" are not encompassed under FARA.<sup>358</sup> The National Defense Authorization Act for Fiscal Year 2017 also called for the establishment of a Global Engagement Center tasked with "identify[ing] ... trends in foreign propaganda and disinformation ... to coordinate and shape the development of tactics, techniques, and procedures to expose and refute foreign misinformation and disinformation."<sup>359</sup>

In addition to justifying its control of information within China, Beijing's concept of Internet sovereignty provides an example for other repressive governments, and it contributes to legitimizing the suppression of the freedom of expression in other countries. Furthermore, Professor Demchak writes:

*China has provided an alternate model of success to the one advanced by the western countries, a strong voice against western domination in international institutions, and alternative sources of technology and capital more suited to the desires for surveillance and interception of leaders with authoritarian tendencies. With Chinese support, they have the option of operating more aggressively on their internal Internet, confident of relatively strong similarly-inclined allies outside the western dominated institutions and norms.*<sup>360</sup>

These developments pose challenges to U.S. values and the U.S. policy of support for an open Internet.

---

\*The Foreign Agents Registration Act of 1938 "requires persons acting as agents of foreign principals in a political or quasi-political capacity to make periodic public disclosure of their relationship with the foreign principal, as well as activities, receipts and disbursements in support of those activities." U.S. Department of Justice, "FARA: Foreign Agents Registration Act."

<sup>†</sup>The registrations under FARA of the U.S. distributors of Chinese state-run newspapers *China Daily* and *People's Daily* were most recently renewed on May 17, 2017 and July 25, 2017, respectively. U.S. Department of Justice, *Supplemental Statement Pursuant to the Foreign Agents Registration Act of 1938, as Amended*, July 25, 2017. <https://www.fara.gov/docs/5143-Supplemental-Statement-20170725-25.pdf>; U.S. Department of Justice, *Supplemental Statement Pursuant to the Foreign Agents Registration Act of 1938, as Amended*, May 17, 2017. <https://www.fara.gov/docs/3457-Supplemental-Statement-20170517-24.pdf>.

**Addendum I: Major Investments and Acquisitions in Hollywood by  
Chinese Companies since 2011**

<b>Date</b>	<b>Company Name</b>	<b>Deal Type</b>	<b>Chinese Investor(s)</b>	<b>Reported Value (US \$)</b>	<b>Status</b>
Jan. 2011	Endgame Entertainment	Co-production	DMG Entertainment	Undisclosed—1 film	Finalized
Jun. 2011	Legendary East (Legendary Entertainment)	Joint venture, co-production	Huayi Brothers Media	Undisclosed	Ended in Jan. 2012
Feb. 2012	Oriental DreamWorks (DreamWorks Animation)	Joint venture	China Media Capital, Shanghai Media Group (SMG), and Shanghai Alliance Investment, Ltd. (SAIL)	330 million	Finalized
Apr. 2012	Marvel Studios	Co-production	DMG Entertainment	Undisclosed—1 film	Finalized
May 2012	AMC Entertainment	Acquisition	Dalian Wanda Group (DWG)	2.6 billion	Finalized
Aug. 2012	DreamWorks Animation	Co-production, investment	China Media Capital, SMG, and SAIL	350 million	Finalized
Apr. 2013	Millennium	Co-production	Le Vision Pictures	Undisclosed—2 films	Finalized
Apr. 2013	Radical Vision China (Radical Studios)	Joint venture	Le Vision Pictures	Undisclosed	Finalized
May 2013	Legendary East	Co-production	China Film Group	Undisclosed—Multiple films	Finalized
Jul. 2013	Alcon Entertainment	Co-production	DMG Entertainment	Undisclosed—2 films	Finalized
Mar. 2014	Walt Disney Studios	Co-production	SMG	Undisclosed	Finalized
Mar. 2014	Studio 8	Investment	Huayi Brothers Media	120–150 million	Canceled
Mar. 2014	STX Entertainment (TPG Capital)	Joint venture	Hony Capital	1 billion	Finalized
Apr. 2014	Legendary Entertainment	Investment	China Film Co. Ltd.	“Eight figures”—2 films	Finalized
Jun. 2014	Studio 8	Investment	Fosun International	200 million	Finalized
Nov. 2014	Walt Disney Studios	Co-production	SMG	Undisclosed	Finalized
Mar. 2015	Legendary Entertainment, Atlas Entertainment	Co-production	China Film Co. Ltd., Le Vision Pictures	Undisclosed—1 film	Finalized
Mar. 2015	Lionsgate	Co-production	Hunan TV, Leomus Pictures	375 million	Finalized

**Addendum I: Major Investments and Acquisitions in Hollywood by  
Chinese Companies since 2011—Continued**

<b>Date</b>	<b>Company Name</b>	<b>Deal Type</b>	<b>Chinese Investor(s)</b>	<b>Reported Value (US \$)</b>	<b>Status</b>
Mar. 2015	STX Entertainment	Co-production	Huayi Brothers Media	1 billion	Finalized
Apr. 2015	Dick Cook Studios	Joint venture	CITIC Guoan	150 million	Finalized
May 2015	Symbolic Exchange	Co-production	Meridian Entertainment	Undisclosed	Finalized
Jun. 2015	Paramount Pictures	Co-production	Alibaba Pictures	Undisclosed—1 film	Finalized
Sep. 2015	Legendary Entertainment	Co-production	Tencent Pictures	Undisclosed—1 film	Finalized
Sep. 2015	Flagship Entertainment (Warner Bros.)	Joint venture	China Media Capital, Television Broadcasts Limited	Undisclosed	Finalized
Nov. 2015	TSG Entertainment Finance (20th Century Fox)	Co-production	Bona Film Group	235 million	Finalized
Jan. 2016	Legendary Entertainment	Acquisition	DWG	3.5 billion	Finalized
Jan. 2016	Universal Pictures	Co-production	Perfect World	500 million	Finalized
Mar. 2016	Imagine Entertainment	Investment	China Media Capital	100 million	Finalized
Mar. 2016	Anthem and Song (Russo Brothers)	Joint venture	United Entertainment Partners, HDQH Fund	200–300 million	Finalized
Apr. 2016	Skydance Media	Co-production	Alibaba Pictures	Undisclosed—1 film	Finalized
Apr. 2016	Dick Cook Studios	Co-production	Film Carnival	500 million	Finalized
Apr. 2016	Paramount Pictures	Co-production	Alibaba Pictures	Undisclosed—2 films	Finalized
Jun. 2016	IM Global	Co-production	Tencent Pictures	100 million	Finalized
Jun. 2016	WME-IMG	Joint venture, investment	Tencent Holdings, Ltd., Sequoia Capital China, and Fountainvest Partners	Undisclosed	Finalized
Jul. 2016	Paramount Pictures	Acquisition	DWG	5 billion	Canceled
Jul. 2016	FremantleMedia North America	Co-production	Meridian Entertainment	Undisclosed	Finalized
Aug. 2016	STX Entertainment	Investment	Tencent Pictures, PCCW	700 million	Finalized

**Addendum I: Major Investments and Acquisitions in Hollywood by  
Chinese Companies since 2011—Continued**

<b>Date</b>	<b>Company Name</b>	<b>Deal Type</b>	<b>Chinese Investor(s)</b>	<b>Reported Value (US \$)</b>	<b>Status</b>
Sep. 2016	Dichotomy Creative (Le Vision Entertainment)	Acquisition	Le Vision Pictures	Undisclosed	Finalized
Sep. 2016	David S. Goyer	Co-production	Tencent Pictures	Undisclosed	Finalized
Sep. 2016	Sony Pictures Entertainment	Co-production	DWG	Undisclosed	Finalized
Oct. 2016	Amblin Entertainment	Investment, co-production	Alibaba Pictures Group	Undisclosed	Finalized
Nov. 2016	Carmike Cinemas	Acquisition	AMC Entertainment (DWG)	1.2 billion	Finalized
Late 2016	MGM	Acquisition	Undisclosed	Undisclosed	Canceled
Jan. 2017	Paramount Pictures	Co-production	Shanghai Film Group, Huahua Media	1 billion	Huahua defaulted Jun. 2017
Jan. 2017	Voltage Pictures	Acquisition	Anhui Xinke New Materials	345 million	Canceled
Feb. 2017	Millennium Films	Acquisition	Recon Group	100 million	Finalized
Mar. 2017	Dick Clark Productions	Acquisition	DWG	1 billion	Canceled
Mar. 2017	Free Association	Co-production	Tencent Pictures	Undisclosed—1 film	Finalized
Apr. 2017	CAA China (Creative Artists Agency)	Joint venture, investment	China Media Capital Capital Partners	Undisclosed	Finalized
Apr. 2017	Blumhouse Entertainment	Co-production	Meridian Entertainment	Undisclosed	Finalized
Apr. 2017	Tom DeSanto	Co-production	CITIC Guoan	120 million	Finalized
May 2017	Creative Artists Agency	Co-production	Bona Film Group	150 million	Finalized
Jun. 2017	Perfect Village Entertainment (Village Roadshow Pictures, WME/IMG)	Joint venture	Perfect World Entertainment	Undisclosed	In progress
Jun. 2017	Paramount Pictures	Investment	Weying Technology	Undisclosed—1 film	Finalized

Source: Various.<sup>361</sup>

## ENDNOTES FOR SECTION 5

1. Human Rights Watch, "China: Abusive Cybersecurity Law Set to be Passed," November 6, 2016.
2. Jákup Emil Hansen, "Media Training for Africa: Is China Exporting Its Journalism?" *China-Africa Research Initiative*, 2016, 2.
3. Xiao Qiang, founder and editor-in-chief, *China Digital Times*, interview with Commission staff, March 24, 2017.
4. Xiao Qiang, founder and editor-in-chief, *China Digital Times*, interview with Commission staff, March 24, 2017.
5. David Bandurski, "The Great Hive of Propaganda," *China Media Project*, September 16, 2017.
6. Emily Rauhala, "Forget Xi's 'Defense' of Globalization. China Just Fortified the Great Firewall," *Washington Post*, January 23, 2017.
7. David Barboza and Paul Mozur, "New Chinese Rules on Foreign Firms' Online Content," *New York Times*, February 19, 2016.
8. David Barboza and Paul Mozur, "New Chinese Rules on Foreign Firms' Online Content," *New York Times*, February 19, 2016.
9. Congressional-Executive Commission on China, *New Internet Regulations Tighten State Control over Audio and Video Content*, May 5, 2008.
10. Saheli Roy Chaudhury, "Tencent Overtakes Alibaba as China's Most Valuable Tech Company," CNBC, August 18, 2016.
11. Shi Rui and Wu Gang, "Regulators Fine Tencent over Unlicensed News Broadcasts," Caixin, May 26, 2017.
12. Cyberspace Administration of China, *Regulations on the Management of Internet News Services*, May 2, 2017. Translation. [http://www.cac.gov.cn/2017-05/02/c\\_1120902760.htm](http://www.cac.gov.cn/2017-05/02/c_1120902760.htm).
13. DD Wu, "Want to Be Chief Editor in China? Better Have a Chinese Passport," *Diplomat*, May 6, 2017; Josh Chin, "Beijing Reins In Online News Services," *Wall Street Journal*, May 2, 2017; Cyberspace Administration of China, *Regulations on the Management of Internet News Services*, May 2, 2017. Translation. [http://www.cac.gov.cn/2017-05/02/c\\_1120902760.htm](http://www.cac.gov.cn/2017-05/02/c_1120902760.htm).
14. Josh Chin, "Beijing Reins In Online News Services," *Wall Street Journal*, May 2, 2017.
15. Christopher Balding, "How Badly Is China's Great Firewall Hurting the Country's Economy?" *Foreign Policy*, July 18, 2017.
16. Yuan Yang, "China's Tech Groups Bow to Beijing Censorship Demands," *Financial Times*, June 29, 2017.
17. April Ma, "Cyberspace Officials Order Unqualified Portals to End Live News," Caixin, May 9, 2017.
18. China Netcasting Services Association, *China Netcasting Services Association Publishes 'General Rules for Auditing Network Audiovisual Programs'*, June 30, 2017. Translation. <http://www.cnsa.cn/2017/06/30/ARTI0Qg4cp7jtd1Z5o0RnfzM170630.shtml>; Jinghua Qian, "China's Online Multimedia Sector Bans Portrayal of Homosexuality," *China Film Insider*, June 30, 2017; Han Wei, "Weibo and Other Websites Barred from Video Streaming by Authority," Caixin, June 22, 2017; April Ma, "WeChat Widens Crackdown on Celebrity Gossip," April Ma, "WeChat Widens Crackdown on Celebrity Gossip," Caixin, June 12, 2017; Amy Qin, "Chinese Censors Have New Target: Celebrity News," *New York Times*, June 9, 2017.
19. Sijia Jiang, "China Holds Drill to Shut Down 'Harmful' Websites," Reuters, August 3, 2017.
20. Josh Chin, "China Fines Social-Media Giants for Hosting Banned Content," *Wall Street Journal*, September 25, 2017; Cyberspace Administration of China, *Tencent WeChat, Sina Weibo, and Baidu Tieba Are Suspected of Violating 'Network Security Rules,' Are under Investigation*, August 11, 2017. Translation. [http://www.cac.gov.cn/2017-08/11/c\\_1121467425.htm](http://www.cac.gov.cn/2017-08/11/c_1121467425.htm); Cate Cadell, "China Investigates Top Local Social Media Sites in Push to Control Content," Reuters, August 10, 2017.
21. Mo Yelin and Shi Rui, "China Keeps It Clean, Patriotic in Scrubbing of 155 Online Videos," *Caixin*, September 6, 2017.
22. Josh Chin and Eva Dou, "Communist Party Pushes China's Internet Censors to 'Ensure Political Security,'" *Wall Street Journal*, June 12, 2017.
23. Josh Chin and Eva Dou, "Communist Party Pushes China's Internet Censors to 'Ensure Political Security,'" *Wall Street Journal*, June 12, 2017.
24. Josh Chin and Eva Dou, "Communist Party Pushes China's Internet Censors to 'Ensure Political Security,'" *Wall Street Journal*, June 12, 2017.
25. U.S. News, "Zhejiang University."

26. Viola Zhou, "Chinese Universities Encourage Professors, Students to Post Online Content that Promotes 'Socialist Values,'" *South China Morning Post*, September 21, 2017; Zhejiang University, "New Zhejiang University Rule: Outstanding Products of Network Culture Ultimately Count as Publications of Authoritative Chinese Academic Journals," September 16, 2017. Translation. <http://www.news.zju.edu.cn/2017/0916/c775a639473/page.htm>.

27. Li Yuan, "Censors Scrub Korean Soaps Off China's Screens," *Wall Street Journal*, July 21, 2017.

28. Joanna Chiu, "China Orders Tech Firms to Ramp Up Censorship," Agence France-Presse, July 20, 2017.

29. Reuters, "China Tightens Control of Chat Groups ahead of Party Congress," September 7, 2017; Cyberspace Administration of China, *Regulation on the Service Management of Internet Users' Public Account Information*, September 7, 2017. Translation. [http://www.cac.gov.cn/2017-09/07/c\\_1121624269.htm](http://www.cac.gov.cn/2017-09/07/c_1121624269.htm).

30. Samm Sacks, "Shrinking Anonymity in Chinese Cyberspace," *Lawfare*, September 25, 2017; Reuters, "China Tightens Control of Chat Groups ahead of Party Congress," September 7, 2017; Nikhil Sonnad, "In China You Now Have to Provide Your Real Identity if You Want to Comment Online," *Quartz*, August 26, 2017; Cyberspace Administration of China, *Internet Forum Service Management Regulation*, August 25, 2017. Translation. [http://www.cac.gov.cn/2017-08/25/c\\_1121541921.htm](http://www.cac.gov.cn/2017-08/25/c_1121541921.htm); Cyberspace Administration of China, *Internet Thread Comments Service Management Regulation*, August 25, 2017. Translation. [http://www.cac.gov.cn/2017-08/25/c\\_1121541842.htm](http://www.cac.gov.cn/2017-08/25/c_1121541842.htm).

31. Chongqing Municipal Public Security Bureau, *Chongqing Investigates and Handles the First Violation of the Cybersecurity Law in Chongqing: A Company Did Not Retain User Log-on Network Logs in Accordance with the Law*, August 1, 2017. Translation. <http://www.cqga.gov.cn/jfzx/53137.htm>.

32. Samm Sacks, "Shrinking Anonymity in Chinese Cyberspace," *Lawfare*, September 25, 2017; Reuters, "China Tightens Control of Chat Groups ahead of Party Congress," September 7, 2017; Cyberspace Administration of China, *Internet User Public Account Information Services Management Regulation*, September 7, 2017. Translation. [http://www.cac.gov.cn/2017-09/07/c\\_1121624269.htm](http://www.cac.gov.cn/2017-09/07/c_1121624269.htm).

33. Samm Sacks, "Shrinking Anonymity in Chinese Cyberspace," *Lawfare*, September 25, 2017; Reuters, "China Tightens Control of Chat Groups ahead of Party Congress," September 7, 2017; Cyberspace Administration of China, *Management Rules of Internet Group Information Services*, September 7, 2017. Translation. [http://www.cac.gov.cn/2017-09/07/c\\_1121623889.htm](http://www.cac.gov.cn/2017-09/07/c_1121623889.htm); Cyberspace Administration of China, *Internet User Public Account Information Services Management Regulation*, September 7, 2017. Translation. [http://www.cac.gov.cn/2017-09/07/c\\_1121624269.htm](http://www.cac.gov.cn/2017-09/07/c_1121624269.htm).

34. Samm Sacks, "Shrinking Anonymity in Chinese Cyberspace," *Lawfare*, September 25, 2017; Reuters, "China Tightens Control of Chat Groups ahead of Party Congress," September 7, 2017; Cyberspace Administration of China, *Internet User Public Account Information Services Management Regulation*, September 7, 2017. Translation. [http://www.cac.gov.cn/2017-09/07/c\\_1121624269.htm](http://www.cac.gov.cn/2017-09/07/c_1121624269.htm).

35. *Global Times*, "Xinjiang Man Jailed For 2 Years for Teaching Family, Friends about Koran on WeChat," September 11, 2017; China Judgments Online, *Judgment in the Case of Huang Shike's Illegal Use of Network Information*, June 12, 2017. Translation. <http://wenshu.court.gov.cn/content/content?DocID=6740b8cd-bad8-4fae-b59c-a78c00c7e475>.

36. Nectar Gan, "China's Twitter-Like Weibo Orders Users to Register Their Real Names," *South China Morning Post*, September 8, 2017.

37. Eva Li, "Chongqing Police to Punish Those Skirting China's Great Firewall," *South China Morning Post*, March 29, 2017.

38. Xi Wang, "China Could Roll Out Chongqing VPN Ban, Fines Nationwide: Activists," *Radio Free Asia*, April 3, 2017; Eva Li, "Chongqing Police to Punish Those Skirting China's Great Firewall," *South China Morning Post*, March 29, 2017.

39. Chinese Ministry of Industry and Information Technology, *Ministry of Industry and Information Technology Notice regarding Cleanup and Regulation of VPN Services*, January 22, 2017. Translation. <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757020/c5471946/content.html>.

40. Cheang Ming, "China's Great Firewall Is Doubling Up on VPN Regulation," *CNBC*, January 24, 2017; Chinese Ministry of Industry and Information Technology, *Ministry of Industry and Information Technology Notice regarding Cleanup and Regulation of VPN Services*, January 22, 2017. Translation. <http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757020/c5471946/content.html>.

41. Josh Ye and Nectar Gan, "China Tries to Ease Fears over Impact of VPN Crackdown," *South China Morning Post*, January 26, 2017; Sidney Leng, Josh Ye, and

- Nectar Gan, "The Who, What, and Why in China's Latest VPN Crackdown," *South China Morning Post*, January 26, 2017.
42. Oiwan Lam and Jack Hu, "China's Great Firewall Grows Ever-Stronger as Virtual Private Networks Disappear," *Global Voices*, June 27, 2017.
43. Bloomberg, "China Says It Will Not Disrupt Legitimate Internet Access," July 12, 2017; Bloomberg, "China Tells Carriers to Block Access to Personal VPNs by February," July 10, 2017.
44. Associated Press, "China Clamping Down on Use of VPNs To Evade Great Firewall," July 20, 2017.
45. Associated Press, "China Clamping Down on Use of VPNs To Evade Great Firewall," July 20, 2017.
46. Hotwon, "Notice from Ministry of Public Security Regarding Cleaning Up of Wall-Crossing Software," July 17, 2017. Translation. <https://pbs.twimg.com/media/DFJCJgDUwAAppbu.jpg>; Hotwon, "About Us," 2017. <http://hotwon.cn/aboutus>.
47. Bill Bishop, creator, *Sinocism* newsletter, interview with Commission staff, July 20, 2017.
48. Bill Bishop (@niubi), "Ministry of public security means this crackdown has much more teeth," July 19, 2017, 9:35 P.M. Tweet.
49. Paul Mozur, "Joining Apple, Amazon's China Cloud Service Bows to Censors," *New York Times*, August 1, 2017; Josh Chin, "Apple Removes Apps that Allowed China Users to Get around Filters," *Wall Street Journal*, July 29, 2017.
50. Paul Mozur, "Joining Apple, Amazon's China Cloud Service Bows to Censors," *New York Times*, August 1, 2017.
51. Emily Parker, "Apple Caved to China, Just Like Almost Every Other Tech Giant," *Wired*, August 2, 2017.
52. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
53. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
54. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
55. Margaret Roberts, assistant professor, University of California, San Diego, interview with Commission staff, August 11, 2017.
56. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
57. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
58. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017.
59. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017.
60. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017.
61. Margaret Roberts, assistant professor, University of California, San Diego, interview with Commission staff, August 11, 2017.
62. Margaret Roberts, assistant professor, University of California, San Diego, interview with Commission staff, August 11, 2017.
63. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017.
64. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017.
65. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Margaret Roberts, May 4, 2017.
66. American Chamber of Commerce in China, "Who's in Favor of Internet Controls?" June 13, 2016.

67. Erik Crouch, "79% of American Companies Say China's Internet Restrictions Are Hurting Them," *Tech in Asia*, January 20, 2016.
68. Yuan Yang, "Multinationals in China Brace for Online Crackdown," *Financial Times*, July 31, 2017.
69. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017; *China Copyright and Media*, "Planning Outline for the Construction of a Social Credit System (2014–2020)," June 14, 2014.
70. *China Copyright and Media*, "Planning Outline for the Construction of a Social Credit System (2014–2020)," June 14, 2014.
71. *Economist*, "China Invents the Digital Totalitarian State," December 17, 2016.
72. David Bandurski, "Big Data, Big Concerns," *China Media Project*, July 20, 2017.
73. Mirjam Meissner, "China's Social Credit System: A Big-Data Enabled Approach to Market Regulation with Broad Implications for Doing Business in China," *Mercator Institute for China Studies*, May 24, 2017, 1, 8.
74. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017; Chuin-Wei Yap and Gillian Wong, "China Wants to Tap Big Data to Build a Bigger Brother," *Wall Street Journal*, November 6, 2015.
75. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017.
76. Paul Mozur, "Apple Customer Data in China Was Sold Illegally, Police Say," *New York Times*, June 9, 2017.
77. Josh Chin and Gillian Wong, "China's New Tool for Social Control: A Credit Rating for Everything," *Wall Street Journal*, November 28, 2016.
78. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017.
79. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sophie Richardson, May 4, 2017.
80. Josh Chin and Liza Lin, "China's All-Seeing Surveillance State Is Reading Its Citizens' Faces," *Wall Street Journal*, June 26, 2017.
81. Josh Constine, "Read Mary Meeker's Essential 2017 Internet Trends Report," *TechCrunch*, May 31, 2017.
82. Bibek Bhandari, "National Credit System Puts Bike-Sharing Bandits in Cross-hairs," *Sixth Tone*, April 28, 2017.
83. Josh Chin and Liza Lin, "China's All-Seeing Surveillance State Is Reading Its Citizens' Faces," *Wall Street Journal*, June 26, 2017.
84. Josh Chin and Liza Lin, "China's All-Seeing Surveillance State Is Reading Its Citizens' Faces," *Wall Street Journal*, June 26, 2017; Will Knight, "Paying with Your Face," *MIT Technology Review*, March/April 2017.
85. Zhang Yuzhe and Dong Tongjian, "Guinea-Pig Firms Slow to Help China Create Credit-Reporting System," *Caixin*, April 25, 2017.
86. Zhang Yuzhe and Dong Tongjian, "Guinea-Pig Firms Slow to Help China Create Credit-Reporting System," *Caixin*, April 25, 2017.
87. Lucy Hornby, "China Changes Tack on 'Social Credit' Scheme Plan," *Financial Times*, July 4, 2017.
88. Amy Hawkins, "Chinese Citizens Want the Government to Rank Them," *Foreign Policy*, May 24, 2017.
89. Louise Lucas, "Sharing Economy Takes Mercantile Twist in China," *Financial Times*, May 29, 2017.
90. Amy Hawkins, "Chinese Citizens Want the Government to Rank Them," *Foreign Policy*, May 24, 2017; Celia Hatton, "China 'Social Credit': Beijing Sets Up Huge System," *BBC*, October 26, 2015.
91. Celia Hatton, "China 'Social Credit': Beijing Sets Up Huge System," *BBC*, October 26, 2015.
92. Amy Hawkins, "Chinese Citizens Want the Government to Rank Them," *Foreign Policy*, May 24, 2017.
93. Yang Ge, "Ant Financial's Credit Scoring Ambitions Crawl Ahead with Two New Deals," *Caixin*, May 10, 2017.
94. Joyce Lau, "Who Are the Chinese Trolls of the '50 Cent Army?'" *Voice of America*, October 7, 2016; Gary King, Jennifer Pan, and Margaret Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, not En-

- gaged Argument," *American Political Science Review* 111:3 (2017), 484; Zhang Lei, "Invisible Footprints of Online Commentators," *Global Times*, February 5, 2010.
95. David Wertime, "Meet the Chinese Trolls Pumping Out 488 Million Fake Social Media Posts," *Foreign Policy*, May 19, 2016.
96. Xiao Qiang, "An Inside Look at a 50 Cent Party Meeting," *China Digital Times*, August 4, 2010.
97. Xiao Qiang, Founder and Editor-in-Chief, *China Digital Times*, interview with Commission staff, April 18, 2017; Nikhil Sonnad, "Hacked Emails Reveal China's Elaborate and Absurd Internet Propaganda Machine," *Quartz*, December 18, 2014.
98. Xiao Qiang, Founder and Editor-in-Chief, *China Digital Times*, interview with Commission staff, April 18, 2017.
99. Gary King, Jennifer Pan, and Margaret E. Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 494–495; Kaveh Waddell, "Look, a Bird! Trolling by Distraction," *Atlantic*, January 27, 2017; David Wertime, "Meet the Chinese Trolls Pumping Out 488 Million Fake Social Media Posts," *Foreign Policy*, May 19, 2016.
100. Gary King, Jennifer Pan, and Margaret E. Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 497.
101. Gary King, Jennifer Pan, and Margaret E. Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 484.
102. Gary King, Jennifer Pan, and Margaret Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, not Engaged Argument," *American Political Science Review* 111:3 (2017), 488.
103. Nikhil Sonnad, "China's Internet Propaganda Is More Subtle and Sophisticated than It Ever Has Been," *Quartz*, May 23, 2016; Gary King, Jennifer Pan, and Margaret Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 485.
104. Gary King, director, Harvard University Institute for Quantitative Social Science, interview with Commission staff, March 31, 2017.
105. Eva Dou, "China's Stopchat: Censors Can Now Erase Images Mid-Transmission," *Wall Street Journal*, July 18, 2017.
106. Gary King, director, Harvard University Institute for Quantitative Social Science, interview with Commission staff, March 31, 2017.
107. Gary King, director, Harvard University Institute for Quantitative Social Science, interview with Commission staff, March 31, 2017; Brian Fung, "China Has Now Eclipsed Us in AI Research," *Washington Post*, October 13, 2016.
108. BBC, "Liu Xiaobo: Chinese Dissident's Ashes Scattered at Sea," July 15, 2017; Chris Buckley, "Liu Xiaobo, Chinese Dissident Who Won Nobel While Jailed, Dies at 61," *New York Times*, July 13, 2017; Tom Phillips, "Activists Call on China to Release Liu Xiaobo for Cancer Treatment Abroad," *Guardian*, July 9, 2017.
109. Adam Smith, "Fighting with Words for Freedom of Expression," *Nobel Prize*, October 8, 2010.
110. Perry Link, "China's Charter 08," *New York Review of Books*, January 15, 2009; Jean-Philippe Beja, Fu Hualing, and Eva Pils, eds. *Liu Xiaobo, Charter 08 and the Challenges of Political Reform in China*, Hong Kong University Press, 2012.
111. *Nobel Prize*, "The Nobel Peace Prize 2010."
112. Xiao Qiang, "Empty Chairs on the Cover of Southern Metropolis Daily Interpreted as Nobel Tribute," *China Digital Times*, December 13, 2010.
113. Xiao Qiang, "Empty Chairs on the Cover of Southern Metropolis Daily Interpreted as Nobel Tribute," *China Digital Times*, December 13, 2010.
114. Javier C. Hernandez, "In China, Despair for Cause of Democracy after Nobel Laureate's Death," *New York Times*, July 20, 2017; Luo Yuanshao, "Liu Xiaobo Seeks Democratic Reform; Few People in China Know," *Mingjing News*, July 13, 2017;
115. Cholpon Orozobekova, "China's War on Dissent," *Diplomat*, August 30, 2017; Willy Wo-Lap Lam, "Beijing Harnesses Big Data & AI to Perfect the Police State," *China Brief*, July 21, 2017.
116. Willy Wo-Lap Lam, "Beijing Harnesses Big Data & AI to Perfect the Police State," *China Brief*, July 21, 2017.
117. Willy Wo-Lap Lam, "Beijing Harnesses Big Data & AI to Perfect the Police State," *China Brief*, July 21, 2017.
118. Willy Wo-Lap Lam, "Beijing Harnesses Big Data & AI to Perfect the Police State," *China Brief*, July 21, 2017.

119. Eva Dou, "China's Stopchat: Censors Can Now Erase Images Mid-Transmission," *Wall Street Journal*, July 18, 2017.
120. Javier C. Hernandez, "Chinese Citizens Evade Internet Censors to Remember Liu Xiaobo," *New York Times*, July 14, 2017.
121. Xiao Qiang, founder and editor-in-chief, *China Digital Times*, interview with Commission staff, August 23, 2017.
122. Eric Fish, "China's Angriest Newspaper Doesn't Speak for China," *Foreign Policy*, April 28, 2017; Zheping Huang, "Inside the Global Times, China's Hawkish, Belligerent State Tabloid," *Quartz*, August 9, 2016.
123. *Global Times*, "Editorial: Harvard Team Has an Amateur Understanding of the So-Called '50-Cent Party,'" May 21, 2016. Translation. <http://opinion.huanqiu.com/editorial/2016-05/8958840.html>.
124. Gary King, Jennifer Pan, and Margaret Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 499.
125. Gary King, Jennifer Pan, and Margaret Roberts, "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument," *American Political Science Review* 111:3 (2017), 499.
126. State Council Information Office of the People's Republic of China, *Media People Have the Responsibility to Tell Good "China Stories,"* March 9, 2017. Translation. <http://www.scio.gov.cn/32621/32629/32754/document/1544567/1544567.htm>.
127. International Federation of Journalists, "China Press Freedom Report 2016—Strangling the Media: China Tightens Its Grip," January 20, 2017, 10; Chun Han Wong, "As Xi's Grip on Media Tightens, Chinese Newspaper Editor Resigns in Protest," *Wall Street Journal*, March 29, 2016; Edward Wong, "Xi Jinping's News Alert: Chinese Media Must Serve the Party," *New York Times*, February 22, 2016.
128. David Bandurski, "For Journalism in China, a Millennial Shift," *China Media Project*, April 24, 2017.
129. David Bandurski, "For Journalism in China, a Millennial Shift," *China Media Project*, April 24, 2017.
130. Edward Wong, "Xi Jinping's News Alert: Chinese Media Must Serve the Party," *New York Times*, February 22, 2016.
131. Willy Wo-Lap Lam, senior fellow, Jamestown Foundation, meeting with Commission, Hong Kong, May 19, 2017.
132. John Hemmings, "Safeguarding our Systems: Managing Chinese Investment into the UK's Digital and Critical National Infrastructure," *Henry Jackson Society*, July 2017, 16.
133. Chun Han Wong, "As Xi's Grip on Media Tightens, Chinese Newspaper Editor Resigns in Protest," *Wall Street Journal*, March 29, 2016; Andrew Browne, "China's Censors Battle Mounting Defiance," *Wall Street Journal*, March 15, 2016.
134. Sarah Cook, "Independent Journalism in China Struggles to Survive," *Diplomat*, December 21, 2016.
135. Lucy Hornby, "Liberal Chinese Magazine Folds in Defiance of Beijing Controls," *Financial Times*, July 19, 2016.
136. Sarah Cook, "Independent Journalism in China Struggles to Survive," *Diplomat*, December 21, 2016.
137. Sarah Cook, "Independent Journalism in China Struggles to Survive," *Diplomat*, December 21, 2016.
138. Sarah Cook, "Independent Journalism in China Struggles to Survive," *Diplomat*, December 21, 2016.
139. Anthony Kuhn, "China's Few Investigative Journalists Face Increasing Challenges," National Public Radio, August 6, 2017.
140. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017.
141. Xinhua, "China Focus: China Has 223,925 Journalists: Report," May 31, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017.
142. International Federation of Journalists, "China Press Freedom Report 2016—Strangling the Media: China Tightens Its Grip," January 20, 2017, 10.
143. Committee to Project Journalists, "Foreign Correspondents' Club of China: Working Conditions Survey 2016," 1.
144. International Federation of Journalists, "China Press Freedom Report 2016—Strangling the Media: China Tightens Its Grip," January 20, 2017, 20.

145. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017.
146. Steven Butler, Asia program coordinator, Committee to Protect Journalists, interview with Commission staff, August 28, 2017.
147. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017.
148. PEN America, *Darkened Screen: Constraints on Foreign Journalists in China*, September 22, 2016, 5.
149. BBC, "BBC Returns to Would-Be China Candidate," November 24, 2016.
150. Benjamin Haas, "BBC Crew Attacked in China and Forced to Sign Confession," *Guardian*, March 3, 2016.
151. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017.
152. Leta Hong Fincher (@LetaHong), "@KaiserKuo they were tied to Xi family, but did not come from central government," October 26, 2012, 10:29 P.M. Tweet; Leta Hong Fincher (@LetaHong), "Now that NYT has gone public about Chinese govt pressure, I can admit that we got death threats after Bloomberg story on Xi Jinping," October 26, 2012, 9:31 P.M. Tweet.
153. Lisa Murray, "Big Brother Is Alive and Watching in Xi's China," *Australian Financial Review*, September 7, 2017.
154. Lisa Murray, "Big Brother Is Alive and Watching in Xi's China," *Australian Financial Review*, September 7, 2017.
155. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017.
156. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017; James Wan, "Propaganda or Proper Journalism? China's Media Expansion in Africa," *African Arguments*, August 18, 2015.
157. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Shanthi Kalathil, May 4, 2017.
158. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.
159. Craig S. Smith, "The New York Times vs. the 'Great Firewall' of China," *New York Times*, March 31, 2016.
160. Sarah Cook, "The Long Shadow of Chinese Censorship: How the Communist Party's Media Restrictions Affect News Outlets around the World," *Center for International Media Assistance*, October 22, 2013, 9.
161. Khurram Husain, "Exclusive: CPEC Master Plan Revealed," *Dawn*, June 21, 2017.
162. Kim Hee-sang, deputy director, South Korea Ministry of Foreign Affairs, meeting with Commission, Seoul, South Korea, May 22, 2017.
163. Nick McKenzie et al., "Australian Sovereignty under Threat from Influence of China's Communist Party," Australian Broadcasting Corporation, June 4, 2017.
164. Ministry of Foreign Affairs of the People's Republic of China, "Wang Yi: Promote China-Turkey Strategic Cooperative Relations to Develop at a Higher Level," August 3, 2017; Michael Martina, "Turkey Promises to Eliminate Anti-China Media Reports," Reuters, August 3, 2017.
165. Ian Johnson, "Cambridge University Press Removes Academic Articles on Chinese Site," *New York Times*, August 18, 2017.
166. Cambridge University Press, "Clarification," August 24, 2017; Tim Pringle, letter to Editorial Board of China Quarterly, August 17, 2017. <https://pbs.twimg.com/media/DHd0aGrUQAATq8z.jpg>.
167. James A. Millward, "Open Letter to Cambridge University Press about Its Censorship of the China Quarterly," *Medium*, August 19, 2017; Ian Johnson, "Cambridge University Press Removes Academic Articles on Chinese Site," *New York Times*, August 18, 2017.
168. *China Quarterly* (@ChinaQuarterly), "China Quarterly Editor's Statement: Cambridge University Press to unblock censored material today," August 21, 2017. Tweet.

169. Viola Zhou, "Second Academic Journal Published by Cambridge University Press Says China Tried to Block Articles," *South China Morning Post*, August 22, 2017.
170. David Lake, president, American Political Science Association, e-mail to James Millward, September 7, 2017.
171. Maura Cunningham, digital media manager, Association for Asian Studies, interview with Commission staff, September 12, 2017.
172. Reuters, "LexisNexis Withdrew Two Products from Chinese Market," August 22, 2017.
173. Ben Bland, "China Rewrites History with New Censorship Drive," *Financial Times*, September 4, 2017.
174. Glenn Tiffert, "Peering Down the Memory Hole: History, Censorship and the Digital Turn," *Washington Post*, August 21, 2017, 1–2.
175. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.
176. John Garnaut (@jgarnaut), "I think directly subordinate to United Front Work Department with intimate ties to Propaganda Dept." August 8, 2017, 10:17 P.M. Tweet.
177. John Garnaut (@jgarnaut), "The new bit is that [All-China Journalists Association] has become the key gateway to China for Australian journalists via the Asia Pacific Journalism Center and ACRI." August 8, 2017, 11:26 P.M. Tweet.
178. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.
179. Yan Xia, "Local Chinese Newspapers Feel Bite of Beijing's Running Dogs," *Australian*, October 10, 2016.
180. Yan Xia, "Local Chinese Newspapers Feel Bite of Beijing's Running Dogs," *Australian*, October 10, 2016.
181. John Fitzgerald and Wanning Sun, "Australian Media Deals Are a Victory for Chinese Propaganda," *Lowy Institute*, May 31, 2016.
182. Helen Clark, "China's Foothold in Struggling Australian Media," *Diplomat*, June 10, 2016; John Fitzgerald and Wanning Sun, "Australian Media Deals Are a Victory for Chinese Propaganda," *Lowy Institute*, May 31, 2016.
183. John Fitzgerald and Wanning Sun, "Australian Media Deals Are a Victory for Chinese Propaganda," *Lowy Institute*, May 31, 2016.
184. Bates Gill and Linda Jakobson, *China Matters: Getting It Right for Australia*, La Trobe University Press, 2017; Helen Clark, "China's Foothold in Struggling Australian Media," *Diplomat*, June 10, 2016.
185. Chun Han Wong and Felicia Schwartz, "China Wants Fugitive Guo Wengui Back—but He's Applied for U.S. Asylum," *Wall Street Journal*, September 7, 2017; Josh Rudolph, "The Publicity War between Beijing and Guo Wengui," *China Digital Times*, April 21, 2017; Michael Forsythe, "As Trump Meets Xi at Mar-a-Lago, There's a 'Wild Card,'" *New York Times*, April 4, 2017.
186. Michael Forsythe and Alexandra Stevenson, "The Billionaire Gadfly in Exile Who Stared Down Beijing," *New York Times*, May 30, 2017; Chun Han Wong, "Chinese Tycoon on His High-Level Corruption Claims: 'Everything Is Just Getting Started'" *Wall Street Journal*, May 3, 2017; *South China Morning Post*, "China Launches Unprecedented International Publicity War against Wanted Tycoon Guo Wengui," April 20, 2017.
187. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Xiao Qiang, May 4, 2017; *South China Morning Post*, "China Launches Unprecedented International Publicity War against Wanted Tycoon Guo Wengui," April 20, 2017.
188. Michael Forsythe, "China Seeks Arrest of Billionaire Who Accused Officials' Relatives of Graft," *New York Times*, April 19, 2017.
189. BBC, "Chinese Official Meng Hongwei to Head Interpol," November 10, 2016.
190. Bethany Allen-Ebrahimian, "Interpol Is Helping Enforce China's Political Purges," *Foreign Policy*, April 21, 2017.
191. Steven Lee Myers and Chris Horton, "Emboldened China Wields Its Laws to Silence Critics from Abroad," *New York Times*, September 20, 2017; Gerry Shih, "AP Exclusive: China Accuses Outspoken Tycoon in US of Rape," *Associated Press*, September 1, 2017.
192. Mimi Lau, "How the Social Media Buzz in China and the West Differ over Wanted Tycoon Guo Wengui," *South China Morning Post*, April 21, 2017.

193. Samuel Wade, "Tycoon's Facebook, Twitter Accounts Suspended," *China Digital Times*, April 27, 2017; Michael Forsythe, "He Tweeted about Chinese Government Corruption. Twitter Suspended His Account," *New York Times*, April 26, 2017; Paul Mozur, "Facebook Briefly Suspends Account of Outspoken Chinese Billionaire," *New York Times*, April 21, 2017.
194. Charlie Smith, "Is China Establishing Cyber Sovereignty in the United States?" *GreatFire*, May 23, 2017.
195. Charlie Smith, cofounder, GreatFire, interview with Commission staff, September 25, 2017.
196. Michael Forsythe, "China Seeks Arrest of Billionaire Who Accused Officials' Relatives of Graft," *New York Times*, April 19, 2017.
197. Sasha Gong, "How China Managed to Muffle the Voice of America," *Wall Street Journal*, May 23, 2017.
198. Nectar Gan, "Wanted Chinese Tycoon Guo Wengui Blames 'Spy' in US Broadcaster Voice of America for Pulling Plug on Interview," *South China Morning Post*, April 22, 2017; Robert Delaney, "Plug Pulled on US Interview with Wanted Chinese Tycoon Guo Wengui," *South China Morning Post*, April 20, 2017.
199. Sasha Gong, "How China Managed to Muffle the Voice of America," *Wall Street Journal*, May 23, 2017.
200. Sasha Gong, "How China Managed to Muffle the Voice of America," *Wall Street Journal*, May 23, 2017.
201. Nectar Gan, "Wanted Chinese Tycoon Guo Wengui Blames 'Spy' in US Broadcaster Voice of America for Pulling Plug on Interview," *South China Morning Post*, April 22, 2017.
202. Sasha Gong, "How China Managed to Muffle the Voice of America," *Wall Street Journal*, May 23, 2017.
203. Evelyn Cheng, "How an Interview with One Chinese Billionaire Threw a US Broadcaster into Turmoil," CNBC, June 9, 2017.
204. Evelyn Cheng, "How an Interview with One Chinese Billionaire Threw a US Broadcaster into Turmoil," CNBC, June 9, 2017.
205. Bill Gertz, "Congress Seeks IG Probe of VOA China Interview," *Washington Free Beacon*, June 15, 2017; C-SPAN, "Secretary Tillerson Supports OIG Investigation of Voice of America China Controversy," June 13, 2017.
206. Marco Rubio et al., letter to Steve A. Linick, August 28, 2017. <http://bbgwatch.com/bbgwatch/wp-content/uploads/2017/09/8-28-17-Letter-re-VOA-congressional-letter.pdf>.
207. Bill Gertz, "Congress Seeks IG Probe of VOA China Interview," *Washington Free Beacon*, June 15, 2017; C-SPAN, "Secretary Tillerson Supports OIG Investigation of Voice of America China Controversy," June 13, 2017.
208. Josh Chin, "China Cranks Up Heat on Exiled Tycoon Guo Wengui," *Wall Street Journal*, June 9, 2017.
209. Alice Woodhouse, "Three Linked to Exiled Billionaire Guo Wengui Sentenced in China," *Financial Times*, June 16, 2017.
210. Michael Forsythe, "Billionaire Who Accused Top Chinese Officials of Corruption Asks U.S. for Asylum," *New York Times*, September 7, 2017.
211. Cezary Podkul and Chun Han Wong, "Chinese Fugitive Guo Wengui Amasses War Chest to Battle Beijing," *Wall Street Journal*, October 3, 2017; Alexandra Stevenson, "Facebook Blocks Chinese Billionaire Who Tells Tales of Corruption," *New York Times*, October 1, 2017.
212. Hudson Institute, "POSTPONED - A Conversation With Guo Wengui," October 4, 2017; Hudson Institute, "A Conversation with Guo Wengui - by Hudson Institute Event," September 22, 2017.
213. Cezary Podkul, Kate O'Keefe, and Aruna Viswanatha, "U.S. Confronts China Over Suspected Cyberattack as Fugitive Guo Wengui Appears in Washington," *Wall Street Journal*, October 6, 2017; Guo Wengui, *Guo Wengui's Press Conference on Chinese Kleptocracy*, October 5, 2017. Translation.
214. David Tell, director of public affairs, Hudson Institute, interview with Commission staff, October 3, 2017.
215. Richard Weitz, senior fellow, Hudson Institute, e-mail to Hudson Institute colleagues, September 29, 2017.
216. Eleanor Albert, "China's Big Bet on Soft Power," Council on Foreign Relations, May 11, 2017.
217. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.

218. *Economist*, "China Is Spending Billions to Make the World Love It," March 23, 2017; Xinhua, "Xinhua Officially Launches Global Social Media Presence," March 1, 2015.
219. *Economist*, "China Is Spending Billions to Make the World Love It," March 23, 2017.
220. Xinhua North American bureau, interview with Commission staff, September 11, 2017.
221. Steven Butler, Asia program coordinator, Committee to Protect Journalists, interview with Commission staff, August 28, 2017.
222. New Tang Dynasty TV, "UN Blocks Largest Independent Chinese News Network in US from Covering General Assembly," September 21, 2017.
223. Jákup Emil Hansen, "Media Training for Africa: Is China Exporting Its Journalism?" *China-Africa Research Initiative*, 2016, 2.
224. Eric Olander, "[Audio] China's Startimes Is Now One of Africa's Most Important Media Companies," *China-Africa Project*, August 27, 2017; Mary Poni Yugu, "StarTimes DTV Set to Dominate Africa," *China.org*, November 29, 2016.
225. Jonathan Kaiman, "China Has Conquered Kenya: Inside Beijing's New Strategy to Win African Hearts and Minds," *Los Angeles Times*, August 7, 2017.
226. Jonathan Kaiman, "China Has Conquered Kenya: Inside Beijing's New Strategy to Win African Hearts and Minds," *Los Angeles Times*, August 7, 2017.
227. Craig S. Smith, "The New York Times vs. the 'Great Firewall' of China," *New York Times*, March 31, 2016.
228. Lam Kwok-lap, "Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media," *Radio Free Asia*, August 14, 2017; Radio Television Hong Kong, "New Programming Arrangements upon the Termination of Radio Television Hong Kong (RTHK) DAB Services on 3 September 2017," August 11, 2017.
229. Lam Kwok-lap, "Outcry after Hong Kong Broadcaster Axes BBC World Service in Favor of Chinese State Media," *Radio Free Asia*, August 14, 2017.
230. James Pomfret, "Hong Kong Scraps 24-Hour BBC World Service Radio Channel despite Criticism," *Reuters*, September 4, 2017.
231. U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress*, November 2009, 153.
232. Matthew Little, "Canadian Reporter Used as Spy for China," *Epoch Times*, August 23, 2012.
233. Luo Ya, "Former Chinese Diplomat: Xinhua Part of Spy Network," *Epoch Times*, September 27, 2011.
234. Luo Ya, "Former Chinese Diplomat: Xinhua Part of Spy Network," *Epoch Times*, September 27, 2011.
235. Bethany Allen-Ebrahimian, "China, Explained," *Foreign Policy*, June 3, 2016.
236. Lily Kuo, "China Is Getting Better at Influencing Media outside China," *Quartz*, October 22, 2013.
237. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.
238. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017.
239. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017; Sarah Cook, "The Long Shadow of Chinese Censorship: How the Communist Party's Media Restrictions Affect News Outlets around the World," *Center for International Media Assistance*, October 22, 2013, 22.
240. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017, 2.
241. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.
242. Yuan Zhou and Zhang Zhihao, "China Boosts Soft Power by Training Foreign Journalists," *China Daily*, October 17, 2016.
243. Yuan Zhou and Zhang Zhihao, "China Boosts Soft Power by Training Foreign Journalists," *China Daily*, October 17, 2016.
244. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.

245. Douglas Farah and Andy Mosher, "Winds From the East: How the People's Republic of China Seeks to Influence the Media in Africa, Latin America, and Southeast Asia," *Center for International Media Assistance*, September 8, 2010, 9.

246. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Dan Southerland, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017.

247. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017.

248. China Ministry of Foreign Affairs, "Chinese and Foreign Media Sing 'Beautiful Songs' of Cooperation," August 24, 2017. <http://www.fmprc.gov.cn/zflt/eng/zxxx/t1486985.htm>.

249. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017; Committee to Protect Journalists, *Attacks on the Press: The New Face of Censorship*, Bloomberg Press, 2017, 133-5; Freedom House, "Freedom on the Net 2016: Sudan Country Profile," 2016; Joshua Masinde, "Kenyan Journalists Have Been Dealing with a Violent Run-Up to Next Year's Elections," *Quartz*, October 6, 2016; Salem Solomon, "Activists Seek Release of Eritrean Journalist Jailed 15 Years," *Voice of America*, September 28, 2016; Committee to Protect Journalists, "Eritrea Most Censored Country in the World," April 21, 2015.

250. Paul Rothman, "China's Quest for International 'Discourse Influence' Threatens Media Environments in Africa," *Center for International Media Assistance*, January 25, 2016.

251. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Dan Southerland, May 4, 2017.

252. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sarah Cook, May 4, 2017.

253. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.

254. *Wall Street Journal*, "China Messenger," U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017; Stuart Elliott, "Sign of Arrival, for Xinhua, Is 60 Feet Tall," *New York Times*, July 25, 2011.

255. Fang Bing and Zhang Zhen, "China Airs Propaganda Video over New York's Times Square," *Voice of America*, August 7, 2016.

256. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017; Koh Gui Qing and John Shiffman, "Beijing's Covert Radio Network Airs China-Friendly News across Washington, and the World," *Reuters*, November 2, 2015.

257. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.

258. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sarah Cook, May 4, 2017.

259. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.

260. Natalie Jarvey, "Universal Chairman Donna Langley Talks Diversity in Hollywood, Embracing China," *Hollywood Reporter*, October 18, 2016.

261. Erich Schwartzel, "Hollywood's New Script: You Can't Make Movies without China," *Wall Street Journal*, April 18, 2017.

262. Shanthi Kalathil, "Beyond the Great Firewall: How China Became a Global Information Power," *Center for International Media Assistance*, March 2017, 24.

263. Erich Schwartzel, "Hollywood's New Script: You Can't Make Movies without China," *Wall Street Journal*, April 18, 2017.

264. Patrick Brzeski, "China Box Office Remains Sluggish in 2017, Despite Big Hollywood Gains," *Hollywood Reporter*, July 5, 2017; Sherry Fei Ju and Charles

- Clover, "China's Hollywood War Chest Threatened by Poor Ticket Sales," *Financial Times*, April 2, 2017.
265. Patrick Frater, "China Box Office: 'The Mummy' Takes \$52 Million Opening Weekend Win," *Variety*, June 11, 2017.
266. Sean O'Connor and Nicholas Armstrong, "Directed by Hollywood, Edited by China: How China's Censorship and Influence Affect Films Worldwide," *U.S.-China Economic and Security Review Commission*, October 28, 2015, 4.
267. Patrick Frater, "Hollywood Blockbusters Drive China's Box Office as Local Fare Stumbles," *Variety*, June 22, 2017.
268. Patrick Frater, "Hollywood Blockbusters Drive China's Box Office as Local Fare Stumbles," *Variety*, June 22, 2017.
269. Patrick Frater, "Hollywood Blockbusters Drive China's Box Office as Local Fare Stumbles," *Variety*, June 22, 2017.
270. Sean Burch, "US Congressional Leaders Bound for China to Challenge Hollywood Movie Quota," *Wrap*, May 23, 2017.
271. Celine Ge, "Soft Power: China's Hollywood Dreams Not Just about Making Money, Says Media Tycoon Li Ruigang," *South China Morning Post*, January 19, 2017.
272. Bloomberg, "Hollywood Has 1.4 Billion Reasons to Play Nice with China," April 19, 2017.
273. Bloomberg, "Hollywood Has 1.4 Billion Reasons to Play Nice with China," April 19, 2017.
274. Steven Schwankert, "2016 Sets Record for Co-Production Permits in China," *China Film Insider*, January 31, 2017.
275. Bloomberg, "Hollywood Has 1.4 Billion Reasons to Play Nice with China," April 19, 2017; Marc Graser, "Legendary East Finds Key Partner in China Film Co." *Variety*, May 30, 2013.
276. Sean O'Connor and Nicholas Armstrong, "Directed by Hollywood, Edited by China: How China's Censorship and Influence Affect Films Worldwide," *U.S.-China Economic and Security Review Commission*, October 28, 2015, 9.
277. Nikke Finke, "Legendary East to Raise \$220.5M through Hong Kong for Film Studio from China," *Variety*, August 21, 2011.
278. Marc Graser, "Legendary East Finds Key Partner in China Film Co." *Variety*, May 30, 2013.
279. Marieke Ohlberg, "Boosting the Party's Voice: China's Quest for Global Ideological Dominance," *Mercator Institute for China Studies*, July 21, 2016, 1.
280. Shanthi Kalathil: "Beyond the Great Firewall: How China Became a Global Information Power," *Center for International Media Assistance*, March 2017, 23.
281. Michael Forsythe, "Wang Jianlin, a Billionaire at the Intersection of Business and Power in China," *New York Times*, April 28.
282. Shanthi Kalathil: "Beyond the Great Firewall: How China Became a Global Information Power," *Center for International Media Assistance*, March 2017, 23.
283. Edward Wong, "Chinese Purchases of U.S. Companies Have Some in Congress Raising Eyebrows," *New York Times*, September 30, 2016.
284. Robert Pittenger et al., letter to Gene L. Dodaro, September 15, 2016. <https://pmcdeadline2.files.wordpress.com/2016/10/cfius-letter-wm.pdf>.
285. Robert Pittenger et al., letter to Gene L. Dodaro, September 15, 2016. <https://pmcdeadline2.files.wordpress.com/2016/10/cfius-letter-wm.pdf>; U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, 22.
286. Nancy Tartaglione, "Hollywood & China: U.S. Gov't Agency Agrees to Review Foreign Investment Panel," *Deadline*, October 4, 2016.
287. Nancy Tartaglione, "More Scrutiny for Wanda? Chuck Schumer Raises Concern over China's U.S. Acquisitions—Report," *Deadline*, December 1, 2016.
288. Erich Schwartzel and Siobhan Hughes, "China's Dalian Wanda Group Faces Renewed U.S. Regulatory Scrutiny," *Wall Street Journal*, December 1, 2016.
289. Celine Ge, "Jack Ma Unseats Wang Jianlin as China's Richest Man with US\$31 Billion Fortune," *South China Morning Post*, May 18, 2017; Patrick Brzeski, "China's Wanda Plans to Invest Billions More in U.S. Entertainment Despite 'Trade Tensions,'" *Hollywood Reporter*, January 17, 2017.
290. Lionel Barber and Charles Clover, "Wang Jianlin Confirms China Blocked Wanda's US TV Deal," *Financial Times*, April 19, 2017; Nigel M. Smith, "Wang Jianlin: Does China's Richest Man Have a Plan to Take over Hollywood?" *Guardian*, October 19, 2016; Brooks Barnes, "Dalian Wanda of China Offers a Carrot to Hollywood," *New York Times*, October 17, 2016; Michael Forsythe, "Wang Jianlin, a Billionaire at the Intersection of Business and Power in China," *New York Times*, April 28, 2015.
291. Debra Kamin, "China Media Capital Chief on Hollywood Investment: 'We Should Be Smart Money, Not Dumb Money,'" *Variety*, March 6, 2017; Celine Ge, "Soft

Power: China's Hollywood Dreams Not Just about Making Money, Says Media Tycoon Li Ruigang," *South China Morning Post*, January 19, 2017.

292. Ryan Faughdner, "China-Owned AMC Seals Deal to Buy Carmike Cinemas, Making It the Largest Theater Chain in U.S.," *Los Angeles Times*, November 15, 2016.

293. Sarah Cook, senior research analyst for East Asia, Freedom House, interview with Commission staff, August 16, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sarah Cook, May 4, 2017.

294. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Sarah Cook, May 4, 2017.

295. Stella Qiu and Elias Glenn, "China to Keep Monitoring 'Irrational' Overseas Investments: State Planner," Reuters, July 17, 2017; Bloomberg, "China's \$162 Billion of Dealmaker Debt Raises Alarm," July 4, 2017; Sui-Lee Wee, "Shares Plunge as China Voices Concern over 'Systemic Risks,'" *New York Times*, June 22, 2017; Han Wei and Fran Wang, "China to Issue Negative List for State Firms' Outbound Investment," Caixin, January 19, 2017.

296. Patrick Frater, "China Pulls Rug Out from under Wanda as It Plans Restructuring ahead of IPO," *Variety*, July 20, 2017.

297. Dan Southerland, "China Soft Power Part II: Beijing Turns to Hollywood to Win Hearts and Minds," *Radio Free Asia*, May 22, 2017.

298. State Council of China, *General Office of the State Council Issues Notice of Opinion Guidance to the National Development and Reform Commission, the Ministry of Commerce, the People's Bank of China, and the Ministry of Foreign Affairs Regarding Further Guiding and Standardizing the Direction of Overseas Investment*, August 18, 2017. Translation. [http://www.gov.cn/zhengce/content/2017-08/18/content\\_5218665.htm](http://www.gov.cn/zhengce/content/2017-08/18/content_5218665.htm); Kane Wu, James T. Areddy, and Chao Deng, "Anbang, after a Whirlwind of Western Deals, Has Been Benched by China," *Wall Street Journal*, June 1, 2017; Bloomberg, "China Reserves Rise a Third Month amid Tighter Capital Controls," May 6, 2017.

299. Rebecca A. Fannin, "Why China-Hollywood Deals Have Come to a Screeching Halt," CNBC, April 20, 2017.

300. NASDAQ, "Viacom Shares Hit after Delay in Chinese Studio Payments, Weak Ad Outlook," August 3, 2017; Rebecca A. Fannin, "Why China-Hollywood Deals Have Come to a Screeching Halt," CNBC, April 21, 2017; Lionel Barber and Charles Clover, "Wang Jianlin Confirms China Blocked Wanda's US TV Deal," *Financial Times*, April 19, 2017.

301. Patrick Frater, "China Pulls Rug Out from under Wanda as It Plans Restructuring ahead of IPO," *Variety*, July 20, 2017; Keith Bradsher and Sui-Lee Wee, "Mysterious Document Is Latest Blow for Dalian Wanda," *New York Times*, July 17, 2017.

302. Lingling Wei and Chao Deng, "Xi's Sign-Off Deals Blow to China Inc.'s Global Spending Spree," *Wall Street Journal*, July 23, 2017.

303. Christine Wang, "Theater Chain AMC Craters 26% after Previewing Dramatic Quarterly Loss, Cost-Cutting Measures," CNBC, August 1, 2017; Amie Tsang and Sui-Lee Wee, "AMC Tries to Steer Clear of Chinese Owner's Debt Worries," July 18, 2017.

304. Patrick Frater, "Chinese Companies Turn to Resetting Relationship with Hollywood," *Variety*, August 21, 2017.

305. Patrick Frater, "Chinese Companies Turn to Resetting Relationship with Hollywood," *Variety*, August 21, 2017.

306. Shanthi Kalathil: "Beyond the Great Firewall: How China Became a Global Information Power," *Center for International Media Assistance*, March 2017, 23.

307. Frank Langfitt, "How China's Censors Influence Hollywood," National Public Radio, May 18, 2015.

308. Tatiana Siegel, "Richard Gere's Studio Exile: Why His Hollywood Career Took an Indie Turn," *Hollywood Reporter*, April 18, 2017.

309. Dan Southerland, "China Soft Power Part II: Beijing Turns to Hollywood to Win Hearts and Minds," *Radio Free Asia*, May 22, 2017.

310. Clifford Coonan, "China Box Office 2014: 'Transformers 4,' Homegrown Films on Top," *Hollywood Reporter*, December 29, 2014; Nash Jenkins, "How Transformers 4 Became the No. 1 Film in Chinese History," *Time*, July 8, 2014.

311. Sean O'Connor and Nicholas Armstrong, "Directed by Hollywood, Edited by China: How China's Censorship and Influence Affect Films Worldwide," *U.S.-China Economic and Security Review Commission*, October 28, 2015, 10.

312. Gus Lubin, "Why 'Captain Phillips' Was Banned in China," *Business Insider*, October 28, 2016.

313. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written

testimony of James A. Lewis, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sophie Richardson, May 4, 2017.

314. Cyberspace Administration of China, *Full Text of "National Cyberspace Security Strategy,"* December 27, 2016. Translation. [http://www.cac.gov.cn/2016-12/27/c\\_1120195926.htm](http://www.cac.gov.cn/2016-12/27/c_1120195926.htm); U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017.

315. Cyberspace Administration of China, *Full Text of "National Cyberspace Security Strategy,"* December 27, 2016. Translation. [http://www.cac.gov.cn/2016-12/27/c\\_1120195926.htm](http://www.cac.gov.cn/2016-12/27/c_1120195926.htm).

316. Cyberspace Administration of China, *Full Text of "National Cyberspace Security Strategy,"* December 27, 2016. Translation. [http://www.cac.gov.cn/2016-12/27/c\\_1120195926.htm](http://www.cac.gov.cn/2016-12/27/c_1120195926.htm).

317. Cyberspace Administration of China, *Full Text of "National Cyberspace Security Strategy,"* December 27, 2016. Translation. [http://www.cac.gov.cn/2016-12/27/c\\_1120195926.htm](http://www.cac.gov.cn/2016-12/27/c_1120195926.htm).

318. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017; Cyberspace Administration of China, *Full Text of "National Cyberspace Security Strategy,"* December 27, 2016. Translation. [http://www.cac.gov.cn/2016-12/27/c\\_1120195926.htm](http://www.cac.gov.cn/2016-12/27/c_1120195926.htm).

319. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sophie Richardson, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthi Kalathil, May 4, 2017.

320. Dean Cheng, *Cyber Dragon: Inside China's Information Warfare and Cyber Operations*, Praeger, 2017, 60–61; Dan Levin, "At U.N., China Tries to Influence Fight over Internet Control." *New York Times*, December 16, 2015.

321. Dean Cheng, *Cyber Dragon: Inside China's Information Warfare and Cyber Operations*, Praeger, 2017, 61; Dan Levin, "At U.N., China Tries to Influence Fight over Internet Control." *New York Times*, December 16, 2015.

322. Internet Corporation for Assigned Names and Numbers, "What Does ICANN Do?"

323. Dean Cheng, *Cyber Dragon: Inside China's Information Warfare and Cyber Operations*, Praeger, 2017, 62; Dan Levin, "At U.N., China Tries to Influence Fight over Internet Control." *New York Times*, December 16, 2015.

324. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sophie Richardson, May 4, 2017; Nigel Inkster, *China's Cyber Power*, Routledge, 2016, 120–122.

325. Xi Jinping's Remarks during the Opening Ceremony of the Second World Internet Conference (Full Text), December 16, 2015. Translation. [http://news.xinhuanet.com/politics/2015-12/16/c\\_1117481089.htm](http://news.xinhuanet.com/politics/2015-12/16/c_1117481089.htm); World Internet Conference website "Xi Jinping Delivers Remarks by Video during the Opening of the Third World Internet Conference," November 16, 2016. Translation. <http://www.wicwuzhen.cn/system/2016/11/16/021369955.shtml>.

326. Xi Jinping's Remarks during the Opening Ceremony of the Second World Internet Conference (Full Text), December 16, 2015. Translation. [http://news.xinhuanet.com/politics/2015-12/16/c\\_1117481089.htm](http://news.xinhuanet.com/politics/2015-12/16/c_1117481089.htm).

327. *China Daily*, "Internet Sovereignty Should be Respected: President," December 16, 2015.

328. Scott J. Shackelford, *Managing Cyber Attacks in International Law, Business, and Relations*, Cambridge University Press, 2014, 57.

329. UN Environment Program, "IEG of the Global Commons."

330. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Chris C. Demchak, May 4, 2017.

331. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Chris C. Demchak, May 4, 2017.

332. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Chris C. Demchak, May 4, 2017; U.S.-China Economic and Security Re-

view Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Chris C. Demchak, May 4, 2017.

333. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of Chris C. Demchak, May 4, 2017.

334. James A. Lewis, "Sovereignty and the Role of Government in Cyberspace," *Brown Journal of World Affairs* 16:2 (Spring/Summer 2010): 62; James A. Lewis, "The 'Korean' Cyber Attacks and Their Implications for Cyber Conflict," *Center for Strategic and International Studies*, October 2009.

335. James A. Lewis, "Sovereignty and the Role of Government in Cyberspace," *Brown Journal of World Affairs* 16:2 (Spring/Summer 2010): 62.

336. White House, *International Strategy for Cyberspace*, May 16, 2011, 5, 8.

337. White House, *Presidential Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure*, May 11, 2017.

338. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of James A. Lewis, May 4, 2017.

339. Jen Psaki, "Statement on Consensus Achieved by the UN Group of Governmental Experts on Cyber Issues," U.S. Department of State, June 7, 2013; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017.

340. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of James A. Lewis, May 4, 2017; James A. Lewis, Senior Vice President, Center for Strategic and International Studies, interview with Commission staff, July 19, 2017; Adam Segal, "Chinese Cyber Diplomacy in a New Era of Uncertainty," *Hoover Institution*, June 2, 2017.

341. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of James A. Lewis, May 4, 2017.

342. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017.

343. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of James A. Lewis, May 4, 2017; Nigel Inkster, *China's Cyber Power*, Routledge, 2016, 132.

344. Liu Jieyi, *Letter Dated 9 January 2015 from the Permanent Representatives of China, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, and Uzbekistan to the United Nations Addressed to the Secretary-General*, UN General Assembly, January 13, 2015. <https://ccdcoe.org/sites/default/files/documents/UN-150113-CodeOfConduct.pdf>; Li Baodong et al., *Letter Dated 12 September 2011 from the Permanent Representatives of China, the Russian Federation, Tajikistan, and Uzbekistan to the United Nations Addressed to the Secretary-General*, UN General Assembly, September 14, 2011. [https://ccdcoe.org/sites/default/files/documents/UN-110912-CodeOfConduct\\_0.pdf](https://ccdcoe.org/sites/default/files/documents/UN-110912-CodeOfConduct_0.pdf).

345. Government of the Russian Federation, *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on Cooperation in Ensuring International Information Security*, April 30, 2015. [https://cyberpeace.org/wp-content/uploads/2013/05/RUS-CHN\\_CyberSecurityAgreement201504\\_InofficialTranslation.pdf](https://cyberpeace.org/wp-content/uploads/2013/05/RUS-CHN_CyberSecurityAgreement201504_InofficialTranslation.pdf).

346. Government of the Russian Federation, *Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on Cooperation in Ensuring International Information Security*, April 30, 2015. [https://cyberpeace.org/wp-content/uploads/2013/05/RUS-CHN\\_CyberSecurityAgreement201504\\_InofficialTranslation.pdf](https://cyberpeace.org/wp-content/uploads/2013/05/RUS-CHN_CyberSecurityAgreement201504_InofficialTranslation.pdf).

347. Stepan Kravchenko, "Russia More Prey Than Predator to Cyber Firm Wary of China," *Bloomberg*, August 25, 2016; Adam Segal, "Chinese Cyber Diplomacy in a New Era of Uncertainty," *Hoover Institution*, June 2, 2017.

348. Adam Segal, "Chinese Cyber Diplomacy in a New Era of Uncertainty," *Hoover Institution*, June 2, 2017.

349. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of James A. Lewis, May 4, 2017.

350. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, oral testimony of James A. Lewis, May 4, 2017.
351. Nigel Inkster, *China's Cyber Power*, Routledge, 2016, 132.
352. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Margaret Roberts, May 4, 2017; Erik Crouch, "79% of American Companies Say China's Internet Restrictions Are Hurting Them," *Tech in Asia*, January 20, 2016.
353. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Shanthy Kalathil, May 4, 2017.
354. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.
355. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.
356. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.
357. Lydia Dennett, "Take Action to Strengthen Foreign Lobbying Laws," Project on Government Oversight, June 12, 2017. <http://www.pogo.org/strauss/issues/other-items/take-action-to-strengthen-foreign-lobbying-laws.html>.
358. National Defense Authorization Act for Fiscal Year 2017 §1287, Public Law No. 114-328, 2016. <https://www.congress.gov/bill/114th-congress/senate-bill/2943/text?q=%7B%22search%22%3A%5B%22countering+disinformation+and+propaganda+act%22%5D%7D&r=13>
359. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Sarah Cook, May 4, 2017.
360. U.S.-China Economic and Security Review Commission, *Hearing on China's Information Controls, Global Media Influence, and Cyber Warfare Strategy*, written testimony of Chris C. Demchak, May 4, 2017.
361. David Lieberman, "Paramount CEO: Still Waiting for Huahua Cash, but with A 'Replacement' Plan," *Deadline*, September 8, 2017; Mike Fleming Jr., "Paramount Lands Blake Lively Spy Thriller 'The Rhythm Section' by 007 Producers & IM Global," *Deadline*, August 16, 2017; Jessica Toonkiel and Aishwarya Venugopal, "Viacom Sees Weak Affiliate Sales, Shares Plummet," Reuters, August 3, 2017; Patrick Frater, "Perfect World, Village Roadshow, WME Launch China Production Venture," *Variety*, June 20, 2017; Patrick Frater, "China's Weying Boards Paramount's 'Transformers: The Last Knight,'" *Variety*, June 14, 2017; Patrick Brzeski, "Fox Partners with China's Tencent to Co-Produce 10 Online Movies," *Hollywood Reporter*, June 1, 2017; Justin Kroll, "Bona Film Group and CAA Establish Film Fund," *Variety*, May 25, 2017; Gene Maddaus and Patrick Frater, "Paramount's New Chief Jim Gianopolos Revives \$1 Billion China Slate Deal (Exclusive)," April 26, 2017; Vivienne Chow, "Tom DeSanto Set for China Project with CITIC Guoan," *Variety*, April 25, 2017; Brent Lang, "Blumhouse, Meridian Form Multi-Year Co-Financing Agreement (Exclusive)," *Variety*, April 25, 2017; Rebecca Sun, "CAA China Launches with CMC Capital Partners," *Hollywood Reporter*, April 17, 2017; Justin Kroll, "Channing Tatum's Production Banner and Tencent Pictures Team on 'Zombie Brother,'" *Variety*, March 29, 2017; Beatrice Verhoeven, "China's Recon Group Buys Majority Stake in Millennium Films for \$100 Million," *Wrap*, February 23, 2017; Cynthia Littleton, "Dalian Wanda Group's Acquisition of Dick Clark Productions Officially Dead," *Variety*, March 10, 2017; Erich Schwartzel, Kane Wu, and Wayne Ma, "Hollywood Is Left Hanging as China Reins In Investments," *Wall Street Journal*, February 24, 2017; Gene Maddaus, "Voltage Sues Xinke over Busted Acquisition Deal," *Variety*, January 20, 2017; Leon Lazaroff, "Viacom Gets to Keep Paramount but It Still Has to Make Hit Movies," *Street*, January 20, 2017; Mike Fleming Jr., "Paramount Gets China Infusion: \$1 Billion, 3-Year Slate Co-Financing Deal With Shanghai Film Group & Huahua Media," *Deadline*, January 19, 2017; Nancy Tartaglione, "Scaling 'The Great Wall': Has Legendary Built a New China-Hollywood Model?," *Deadline*, December 7, 2016; Ryan Faughdner, "China-Owned AMC Seals Deal to Buy Carmike Cinemas, Making It the Largest Theater Chain in U.S.," *Los Angeles Times*, November 15, 2016; Abid Rahman, "Steven Spielberg's Amblin Pacts with China's Alibaba Pictures Group," *Hollywood Reporter*, October 9, 2016; Christian Shepherd, "China's Richest Man Targets Golden Globes and Miss America," *Financial Times*, September 27, 2016; Patrick Brzeski, "Wanda Con-

firms Major Sony Alliance," *Hollywood Reporter*, September 22, 2016; Patrick Frater, "David Goyer Strikes Deal with China's Tencent Pictures," *Variety*, September 18, 2016; Nancy Tartaglione, "Adam Goodman Resurfaces as President of China-Backed Le Vision Entertainment," *Deadline*, September 14, 2016; Ryan Faughdner, "STX Entertainment Secures Funding from China's Tencent and PCCW," *Los Angeles Times*, August 11, 2016; David Lieberman, "FremantleMedia Buys Random House Studio with New TV-Movie Alliance," *Deadline*, July 18, 2016; Meg James, "Redstone Family Reaffirms Opposition to Paramount Sale," *Los Angeles Times*, July 15, 2016; Anita Busch, "Chaotic Good Studios Launches Franchise Lab with Industry Advisory Board; Will Give Writers Ownership in Their Work," *Deadline*, June 30, 2016; Cynthia Littleton, "WME/IMG, Sequoia Capital China, Tencent Set Joint Venture Targeting Sports and Entertainment," *Variety*, June 9, 2016; Patrick Frater, "IM Global Sold to Tang Media, Launches TV Venture with China's Tencent," June 2, 2016; Patrick Brzeski, "China's Alibaba Pictures Invests in Paramount's 'Teenage Mutant Ninja Turtles 2,' 'Star Trek Beyond,'" *Hollywood Reporter*, May 17, 2016; Ryan Faughdner, "China's Wanda to Invest in Paramount's 'Ninja Turtles' Sequel," *Los Angeles Times*, May 11, 2016; Eunice Yoon and Huileng Tan, "Huayi Brothers Eyes Hollywood as Chinese Moviemakers Expand," CNBC, April 26, 2016; Justin Kroll, "Skydance, Alibaba Team Up on World War II Movie 'Flying Tigers,'" *Variety*, April 6, 2016; Patrick Brzeski, "China's Film Carnival: 5 Things to Know about Dick Cook's \$500M Financier," *Hollywood Reporter*, April 1, 2016; Patrick Brzeski, "Russo Brothers Launch Studio to Produce Chinese-Language Films (Exclusive)," *Hollywood Reporter*, March 13, 2016; Patrick Frater, "China Media Capital Joins Front Rank of Sino-Hollywood Investors," *Variety*, March 8, 2016; Mike Fleming Jr., "Universal Getting Sweetheart Terms in the \$500M Slate Deal with China's Perfect World—Update," *Deadline*, January 22, 2016; Shu Zhang and Matthew Miller, "Wanda Goes to Hollywood: China Tycoon's Firm Buys Film Studio Legendary for \$3.5 Billion," Reuters, January 12, 2016; Patrick Brzeski, "AFM: China's Bona Invests \$235 Million in Fox Film Slate," *Hollywood Reporter*, November 5, 2015; Patrick Frater, "China Media Capital, Warner Bros. Seal Flagship Production Pact," *Variety*, September 20, 2015; Juro Osawa, "China's Tencent to Partner with U.S. Movie Studio Legendary Pictures," *Wall Street Journal*, September 17, 2015; Abid Rahman and Georg Szalai, "China's Alibaba Pictures Investing in Paramount's 'Mission: Impossible 5,'" June 24, 2015; Rebecca Ford, "James Schamus' Symbolic Exchange Pacts with China's Meridian Entertainment," *Hollywood Reporter*, May 27, 2015; Clifford Coonan, "China's Citic Guoan Invests \$150M in Dick Cook Studios," *Hollywood Reporter*, April 19, 2015; Anita Busch and Nancy Tartaglione, "STX Entertainment Pacts with China's Huayi Bros for 12–15 Pics per Year," *Deadline*, April 1, 2015; Marc Graser, "China's Huayi Brothers to Partner with STX Entertainment on 18-Movie Deal (Exclusive)," *Variety*, March 17, 2015; Patrick Frater, "Lionsgate Seals \$1.5 Billion Deal with China's Hunan TV," *Variety*, March 17, 2015; Legendary Entertainment, "Legendary Announces Cast for the Great Wall," March 11, 2015; Patrick Frater, "Disney Expands Relationship with China's Shanghai Media Group," *Variety*, November 21, 2014; Anya George Tharakan, "China's Fosun Group to Invest \$200 Million in Studio 8: WSJ," Reuters, September 24, 2014; *Deadline*, "China Film Co Dips Toe In Hollywood With Investment In Legendary Pics," April 14, 2014; Michael J. de la Merced, "New Movie Studio Is Formed, with China and Self-Distribution in Mind," *New York Times*, March 10, 2014; Patrick Brzeski, "Disney to Develop Chinese Co-Productions with Shanghai Media Group," *Hollywood Reporter*, March 6, 2014; Patrick Frater, "China's Huayi to Inject \$120 Million into Robinov's Studio 8," *Variety*, March 6, 2014; Nancy Tartaglione, "DMG, Alcon Team on 'Point Break' and 'Transcendence' as Part of Multi-Picture Deal," *Deadline*, July 11, 2013; *Deadline*, "Legendary East Makes Rare Multi-Pic Deal With China Film Co." May 30, 2013; Clarence Tsui, "Radical Studios, Le Vision Embark on Joint Venture (Exclusive)," *Hollywood Reporter*, April 20, 2013; Georg Szalai, "DreamWorks Animation to Co-Produce 'Kung Fu Panda 3,' Build Entertainment Complex in China," *Hollywood Reporter*, August 7, 2012; Rachel Abrams, "Legendary Ready for the Next Step," *Variety*, July 20, 2012; Michelle Kung and Aaron Back, "Chinese Conglomerate Buys AMC Movie Chain in U.S.," *Wall Street Journal*, May 21, 2012; Patrick Brzeski, "Disney's Marvel to Co-Produce 'Iron Man 3' in China," *Hollywood Reporter*, April 16, 2012; Staff, "It's Official: DreamWorks Animation Unveils China Joint Venture," *Deadline*, February 17, 2012; Rachel Abrams, "Legendary East Splits with Huayi Brothers," *Variety*, January 3, 2012; Jonathan Landreth, "Legendary to Co-Produce 'Global' Pics with China's Huayi, Warner to Distribute," *Hollywood Reporter*, June 9, 2011; Jonathan Landreth, "Endgame, DMG Team to Make Rian Johnson's 'Looper'," *Hollywood Reporter*, January 18, 2011.



## CHAPTER 4

### CHINA'S HIGH-TECH DEVELOPMENT

#### SECTION 1: CHINA'S PURSUIT OF DOMINANCE IN COMPUTING, ROBOTICS, AND BIOTECHNOLOGY

##### **Key Findings**

- China has laid out an ambitious whole-of-government plan to achieve dominance in advanced technology. This state-led approach utilizes government financing and regulations, high market access and investment barriers for foreign firms, overseas acquisitions and talent recruitment, and, in some cases, industrial espionage to create globally competitive firms.
- China's close integration of civilian and military technology development raises concerns that technology, expertise, and intellectual property shared by U.S. firms with Chinese commercial partners could be transferred to China's military.
- *Artificial intelligence:* China—led by Baidu—is now on par with the United States in artificial intelligence due in part to robust Chinese government support, establishment of research institutes in the United States, recruitment of U.S.-based talent, investment in U.S. artificial intelligence-related startups and firms, and commercial and academic partnerships.
- *Quantum information science:* China has closed the technological gap with the United States in quantum information science—a sector the United States has long dominated—due to a concerted strategy by the Chinese government and inconsistent and unstable levels of R&D funding and limited government coordination by the United States.
- *High performance computing:* Through multilevel government support, China now has the world's two fastest supercomputers and is on track to surpass the United States in the next generation of supercomputers—exascale computers—with an expected rollout by 2020 compared to the accelerated U.S. timeline of 2021.
- *Biotechnology:* The United States' robust biotechnology ecosystem continues to drive U.S. leadership in this sector, but China's state-directed policies have subsidized the establishment of the world's largest genomic sequencing firms and supported China's rapid rise in genomics and biotechnology-related publications.

- *Robotics*: China is developing its industrial and military robotics sector through subsidization of domestic robotics firms, acquisition of foreign knowledge and technology, and recruitment of overseas expertise. This is strengthening the quality and competitiveness of China's manufacturing and its military capabilities.
- *Nanotechnology*: While consistent federal government funding to the National Nanotechnology Initiative has kept the United States at the forefront of nanotechnology, China has become the fastest-growing country for nanotechnology publications and industrialization due to massive government funding, recruitment of overseas talent, and creation of nanotechnology science parks.
- *Cloud computing*: China has largely closed off its cloud computing market to U.S. cloud computing firms—the global leaders—with unfair market access restrictions and onerous regulations. In addition, Chinese cloud computing firms' close ties to the Chinese government raise security concerns over the protection of U.S. customers' sensitive data, including intellectual property and personal information.

### **Recommendations**

The Commission recommends:

- Congress direct the National Science and Technology Council, in coordination with the National Economic Council and relevant agencies, to identify gaps in U.S. technological development vis-à-vis China, including funding, science, technology, engineering, and mathematics workforce development, interagency coordination, and utilization of existing innovation and manufacturing institutes, and, following this assessment, to develop and update biennially a comprehensive strategic plan to enhance U.S. competitiveness in advanced science and technology.
- Congress direct the Federal Bureau of Investigation in concert with the U.S. Department of Commerce's International Trade Administration to expand outreach to and develop educational materials and tools for U.S. academics, businesses, venture capitalists, and startups in dual-use sectors on potential risks associated with Chinese investors and partners, the Chinese government's role in acquiring technology through programs such as the Thousand Talents Program and Project 111, and steps to prevent industrial and cyber espionage.

### **Introduction**

Industries like computing, robotics, and biotechnology are pillars of U.S. economic competitiveness, sustaining and creating millions of high-paying jobs and high-value-added exports.<sup>1</sup> Leadership in these industries has also yielded significant military technological advantages in areas such as weapons design and maintenance, surveillance, communication, and stealth.<sup>2</sup> The United States remains a global technological trailblazer on the strength of its world-renowned education system, innovation ecosystem, funding for basic research and development (R&D), and ability to recruit the world's brightest minds. But the Chinese government has laid out a comprehensive, whole-of-gov-

ernment plan to close the gap and achieve dominance in these areas. This approach sets targets and utilizes government financing and regulations, overseas acquisitions and talent recruitment, high market access barriers, and, in some cases, industrial espionage to create globally competitive firms.<sup>3</sup> The loss of global leadership in these future drivers of global growth, innovation, and warfare would be detrimental to U.S. long-term economic and military competitiveness.

This section builds upon the Commission's 2016 analysis of the impact of China's industrial policies on U.S. commercial aviation, automobile, and semiconductor industries\* and examines next-generation, dual-use technologies—critical for advanced manufacturing, Internet of Things,† healthcare, and defense. It lays out China's industrial policies to support its computing, industrial robotics, artificial intelligence (AI), nanotechnology, and biotechnology sectors, compares U.S. and Chinese technological leadership in these sectors, and analyzes the implications of these developments for U.S. innovation, economic prosperity, and military superiority. This section draws from the Commission's March 2017 hearing on China's pursuit of next-generation, dual-use technologies; contracted research; consultations with government officials, academics, and industry experts; and open source research and analysis.

### China's Industrial Policies

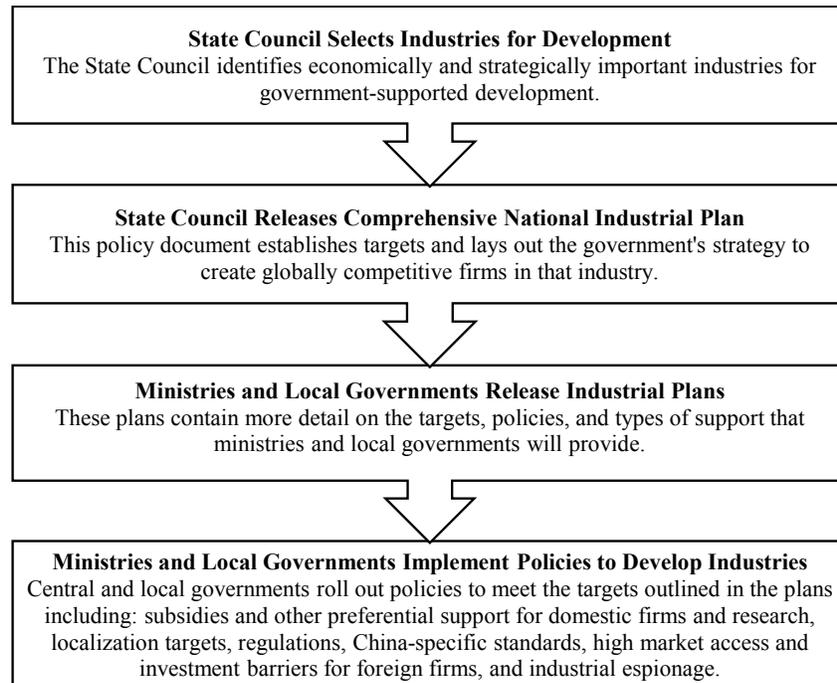
The Chinese government has laid out industrial plans where the government—not market forces—plays a central role in developing Chinese firms into the global leaders in cutting-edge, dual-use technologies (see Figure 1).‡ These industrial plans establish the government's strategy for sector development at the national and local government levels and set targets for localization, market creation, and productivity.<sup>4</sup> To meet these objectives and cultivate local and national market leaders (the so-called “national champions”§), central and local governments implement comprehensive industrial policies such as strong state funding, a protected domestic market, selective recruitment of foreign investment, imports, and talent, and, in some cases, industrial espionage (see Table 1). By comparison, the U.S. government pursues a market-based development strategy, where government support is primarily concentrated at the early stages of development. The U.S. government finances critical foundational research and connects industry, government, and academia through public-private partnerships to accelerate the transition of research findings into commercial products or services.<sup>5</sup>

\*For analysis on the impact of China's industrial policies on U.S. commercial aviation, automobile, and semiconductor industries, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “China's 13th Five-Year Plan,” in *2016 Annual Report to Congress*, November 2016, 151–161.

†The Internet of Things is the interconnectivity between physical objects such as a smartphone or electronic appliance via the Internet that allows these objects to collect and share data. Harald Bauer, Mark Patel, and Jan Veira, “The Internet of Things: Sizing up the Opportunity,” *McKinsey & Company*, December 2014.

‡For a comprehensive analysis of China's state-directed plans and their impact on 11 industries, see Tai Ming Cheung et al., “Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016.

§National champions are domestic firms leading in their industry—based on market share, volume of sales, and size—that enjoy strong political and financial support from the Chinese government.

**Figure 1: How the Chinese Government Rolls out Its Industrial Policies**

Source: Compiled by Commission staff.

China's state-led approach catapulted China to global dominance in strategic industries such as solar, wind,\* aluminum, and steel in less than a decade.<sup>6</sup> But this strategy came at the cost of distorted global and domestic market conditions, inefficient allocation of resources, rampant overproduction and overcapacity, and weak innovation incentives.<sup>7</sup> For example, in the solar sector (a strategic emerging industry), China's Ministry of Finance subsidized 50 to 60 percent of production costs of select domestic solar companies and 50 to 70 percent of installation costs for solar generation and distribution systems.<sup>8</sup> State-owned banks also allocated around \$41 billion from January 2010 to September 2011 to rapidly expand solar panel manufacturing capacity.<sup>9</sup> By 2016, China had overtaken the United States and Germany—the early global leaders—producing 71 percent of the world's solar modules and accounting for a majority of global solar manufacturing capacity at all stages of production.<sup>†</sup> But this massive increase in production and capacity quickly

\*For in-depth analysis of China's wind and solar policies, see Jacob Koch-Weser and Ethan Meik, "China's Wind and Solar Sectors: Trends in Deployment, Manufacturing, and Energy Policy," *U.S.-China Economic and Security Review Commission*, March 9, 2015.

†Solar manufacturing is composed of four major production steps: polysilicon, wafer, cell, and module. Based on 2016 data from IHS Markit, China accounted for 52 percent of polysilicon manufacturing capacity, 81 percent of silicon-solar-wafer manufacturing capacity, 59 percent of silicon-solar-cell manufacturing capacity, and 70 percent of crystalline solar-module manufacturing capacity. Donald Chung, Kelsey Horowitz, and Parthiv Kurup, "On the Path to SunShot: Emerging Opportunities and Challenges in U.S. Solar Manufacturing," *National Renewable Energy Laboratory*, May 2016, 5; Jeffrey Ball et al., "The New Solar System: China's Evolving Solar

exceeded domestic demand. As a result, Chinese firms started to dump their subsidized products on the global market, contributing to an 80 percent decline in international prices from 2008 to 2013 and leading to 86 bankruptcies and closures (largely at U.S. and EU competitors) from 2009 to 2015.<sup>10</sup>

In addition, Chinese researchers, incentivized by cash bonuses as high as \$165,000 per paper accepted by international top-tier publications, rapidly increased their number of academic publications, making China the world's second largest source of global publications.\* However, this increase in quantity has not been matched by quality. For example, in April 2017, a cancer research journal, *Tumor Biology*, retracted 107 papers by Chinese researchers between 2012 and 2016 due to fabricated peer reviews. China's Ministry of Science and Technology, Ministry of Education, and the China Association for Science and Technology jointly conducted an investigation into these allegations and, in July 2017, announced disciplinary action for more than 400 authors listed on the retracted reports.<sup>11</sup>

Robert D. Atkinson, president of the Information Technology and Innovation Foundation, warned that Chinese policymakers use industrial policies “to autarkically† supply Chinese markets for advanced technology products with their own production while still benefitting from unfettered access to global markets for their technology exports and foreign direct investment.”<sup>12</sup> In August 2017, the Office of the U.S. Trade Representative announced it would start investigations to determine “whether acts, policies, and practices of the Government of China related to technology transfer, intellectual property, and innovation are unreasonable or discriminatory and burden or restrict U.S. commerce.”<sup>13</sup>

**Table 1: China's Industrial Policy Toolbox**

Policy Tool	Description
<b>Localization Targets</b>	Within its industrial plans, the Chinese government sets targets for domestic and international market share that should be held by local technology and production. For example, the Made in China 2025 Key Area Technology Roadmap set a target to increase the state-owned aerospace manufacturer Commercial Aircraft Corporation of China's share of the domestic wide-bodied aircraft market (a strategic industry since 2006) from 5 percent in 2020 to 10 percent in 2025. <sup>14</sup>

Industry and Its Implications for Competitive Solar Power in the United States and the World,” *Stanford University, Steyer-Taylor Center for Energy Policy and Finance*, March 2017, 18.

\*For publications in the prestigious *Science* and *Nature* journals, the lead Chinese author, on average, received a cash bonus of \$43,783 in 2016. By comparison, Saudi Arabia's Prince Sultan University, home of the second highest cash bonus for publications, reached a high of \$19,999 per paper; Qatar University, the third highest, totaled \$13,733. Alison Abris and Alison McCook, “Cash Bonuses for Peer-Reviewed Papers Go Global,” *Science*, August 10, 2017; Wei Quan, Bikun Chen, and Fei Shu, “Publish or Impoverish: An Investigation of the Monetary Reward System of Science in China (1999–2016);” Yuan Yang and Archie Zhang, “China Launches Crackdown on Academic Fraud,” *Financial Times*, June 18, 2017.

†Autarky is an economic system and an ideology based on implementing policies in a manner that supports national economic self-sufficiency and independence.

**Table 1: China's Industrial Policy Toolbox—Continued**

<b>Policy Tool</b>	<b>Description</b>
<b>State Funding for Industry Development</b>	The central government lays out national investment funds, subsidies, tax breaks, preferential loans, export subsidies and guarantees, and other forms of financial support to develop national champions in strategic sectors. For example, in the solar sector (a strategic emerging industry), China's Ministry of Finance subsidized 50 to 60 percent of production costs of select solar companies and 50 to 70 percent of installation costs for solar generation and distribution systems. <sup>15</sup> Local governments, which account for the largest share of financial aid, provide additional support to local champions. <sup>16</sup> At least 21 cities and 5 provinces have pledged a combined \$6 billion (renminbi [RMB] 40 billion)* in subsidies for robotics (a Made in China 2025 strategic industry). These subsidies account for an estimated 10 percent of total operation revenue for Chinese robotics firms Siasun and Estun. Local governments are also subsidizing between 15 and 30 percent of the purchase price of robotics to encourage greater usage. <sup>17</sup> Designated national champions also receive advantageous capital terms from state-owned banks and investment funds (e.g., wind turbine manufacturer Goldwind received a \$5.5 billion loan from the China Development Bank). <sup>18</sup>
<b>Government R&amp;D Funding</b>	The Chinese government provides significant R&D funding to strategic sectors. From 2005 to 2015, total government R&D spending grew more than 350 percent to reach \$44.5 billion (RMB 301.3 billion). <sup>19</sup> China's R&D expenditures are rapidly catching up to the United States with China's total R&D spending (public and private) increasing from 26.5 percent of total U.S. R&D expenditures in 2005 to 75.1 percent in 2015. <sup>20</sup>
<b>Government Procurement</b>	The Chinese government leverages its large central and local government procurement markets to benefit domestic firms in strategic sectors. For example, in 2012, the central government mandated its agencies to purchase only Chinese auto brands, leading several municipal and provincial governments to follow suit. <sup>21</sup>
<b>Technology Standards</b>	The Chinese government has repeatedly created China-specific standards to raise the costs of market entry for foreign firms. For example, the People's Bank of China announced a new technical encryption standard for bank cards—incompatible with existing international standards and only used by the state-owned China UnionPay—effectively forcing foreign electronic payment firms such as Visa and MasterCard to spend additional money to redesign their cards to meet the standard.†
<b>Regulations</b>	The Chinese government advantages domestic firms by setting high regulatory thresholds for market entry and creating vague regulations that allow for discretionary enforcement and interpretation. In the automobile sector, for instance, the government requires foreign firms to form joint ventures with state-owned firms as the price of market entry. <sup>22</sup>

\*Unless noted otherwise, this section uses the following exchange rate throughout: \$1 = RMB 6.77.

†For more information on China's payments market and market access challenges, see Chapter 1, Section 3, "U.S. Access to China's Consumer Market."

**Table 1: China’s Industrial Policy Toolbox—Continued**

<b>Policy Tool</b>	<b>Description</b>
<b>Foreign Investment Restrictions and Import Guidance</b>	Through its Catalogue on Guiding Foreign Investment and Catalogue on Encouraged Imported Technology and Products, the Chinese government directs foreign investment and technology imports toward strategic sectors by designating industries as either “encouraged,” “permitted,” or “restricted” to foreign investment.* Foreign investment in targeted sectors is first welcomed to build domestic capacity, but after domestic firms become competitive, the government gradually restricts this investment to provide a protected market for domestic firms. For example, the automobile industry—a strategic emerging industry under the 12th Five-Year Plan—shifted from “encouraged” in 1994–2010 to “permitted” in 2011–2014 to “restricted” in 2015. <sup>23</sup>
<b>Foreign Talent</b>	The Chinese government is recruiting overseas Chinese and foreign experts and entrepreneurs in strategic sectors to teach and work in China, most notably through its Thousand Talents Program and Project 111. The Thousand Talents Program was launched in December 2008 and has brought more than 4,000 foreigners to China’s scientific laboratories, companies, and research centers. The Chinese government also uses research and startup funding to incentivize foreign experts and entrepreneurs to split time between their positions overseas and in China. <sup>24</sup> Project 111 was launched in 2006 to recruit 1,000 foreign experts in strategic sectors from the world’s top 100 universities and research institutes. <sup>25</sup>
<b>Industrial Espionage</b>	The Chinese government continues to conduct pervasive industrial espionage† against U.S. companies, universities, and the government and direct efforts to circumvent U.S. export controls to gain access to cutting-edge technologies and intellectual property in strategic sectors. <sup>26</sup>

Source: Compiled by Commission staff.

### ***Made in China 2025 and Internet Plus Initiatives***

The “Made in China 2025” and “Internet Plus” initiatives—two influential national industrial plans emphasized in China’s 13th Five-Year Plan‡—seek to capitalize on the rise of integrated digital technology and automation to help transition China’s economy to higher-value-added manufacturing and services and spur the creation of national champions in emerging industries.<sup>27</sup> Made in China 2025 targets ten key sectors for additional government support: (1) new energy vehicles, (2) next-generation information technology (IT), (3) biotechnology, (4) new materials, (5) aerospace, (6) ocean engineering and high-tech ships, (7) railway, (8) robotics, (9) power equipment, and (10) agricultural machinery.<sup>28</sup> Most of these sectors

\*Prohibited sectors are those where the Chinese government is seeking to maintain a state monopoly (such as postal companies), protect Chinese firms from competition, or restrict foreign access to national-security-related industries (such as weapons manufacturing). Wayne M. Morrison, “China-U.S. Trade Issues,” *Congressional Research Service*, December 15, 2015, 25.

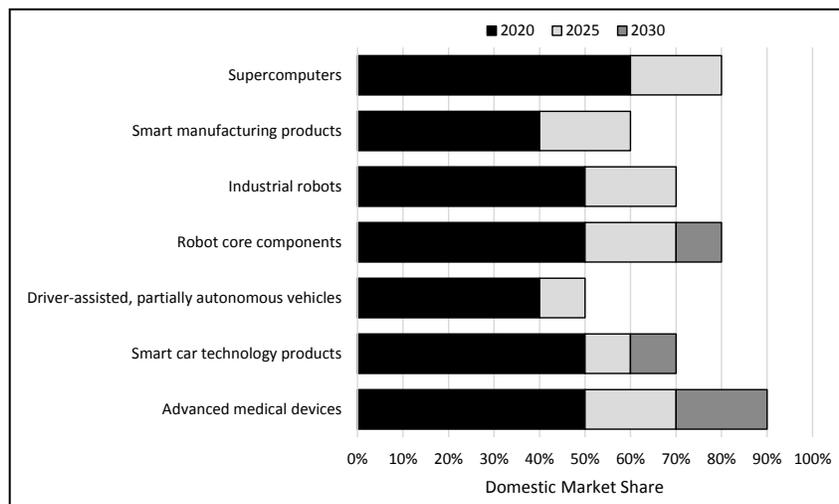
†For more information on China’s cyber espionage campaigns and their influence on Chinese acquisitions of U.S. firms, see Chapter 1, Section 2, “Chinese Investment in the United States” of this Report. For more information on cyber-enabled commercial espionage, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 4, “Commercial Espionage and Barriers to Digital Trade,” in *2015 Annual Report to Congress*, November 2015, 192–219.

‡For more information on China’s 13th Five-Year Plan and its targets, see Katherine Koleski, “The 13th Five-Year Plan,” *U.S.-China Economic and Security Review Commission*, February 14, 2017.

are long-held strategic industries. For example, next-generation IT was previously supported as a strategic emerging industry in 2010 and a heavyweight industry in 2006; biotechnology was previously supported as a strategic emerging industry in 2010.<sup>29</sup> Internet Plus aims to capitalize on China's huge online consumer market by building up the country's domestic mobile Internet, cloud computing, massive amounts of data (big data), and the Internet of Things sectors.<sup>30</sup>

These state-directed initiatives seek to build domestic firms that are globally competitive with a goal of gradually substituting foreign technology and products with local technology and production first at home, and then abroad.<sup>31</sup> The Chinese Academy of Engineering, an influential State Council think tank, released the Made in China 2025 Key Area Technology Roadmap in October 2015 outlining localization targets for strategic sectors (see Figure 2).<sup>32</sup> Reaching these localization targets would gradually close China's growing market to U.S. and other foreign firms, a major loss of market and job opportunities.<sup>33</sup>

**Figure 2: Select Made in China 2025 Key Area Technology Roadmap's 2020, 2025, and 2030 Localization Targets**



Source: Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015, 14, 22, 40, 114, 182. Translation.

According to the U.S. Chamber of Commerce, Made in China 2025 “aims to leverage the power of the state to alter competitive dynamics in global markets in industries core to economic competitiveness.”<sup>34</sup> For example, since 2014, the central government has announced at least \$250.7 billion (RMB 1.7 trillion) in state funding to support these strategic sectors’ development and acquisition of foreign technology and expertise (see Table 2). Addendum I provides an overview of China’s industrial policies in five strategic sectors.

**Table 2: Select Government Funds to Support Strategic Sectors since 2014**

<b>Fund</b>	<b>Date Announced</b>	<b>Amount (billions)</b>
National Integrated Circuit Fund	June 2014	\$107.5 (RMB 720)
Emerging Industries Investment Fund	January 2015	\$6 (RMB 40)
Advanced Manufacturing Fund	June 2016	\$3 (RMB 20)
Venture capital fund for state-owned enterprise innovative technology and industrial upgrading fund	August 2016	\$30 (RMB 200)
China Development Bank support for Made in China 2025	November 2016	\$44.8 (RMB 300)
China Internet Investment Fund	January 2017	\$14.9 (RMB 100)
Credit lines for China Internet Investment Fund participants	January 2017	\$22.4 (RMB 150)
State-owned enterprise fund for strategic sectors	May 2017	\$22.4 (RMB 150)
<b>TOTAL</b>		<b>\$250.7 (RMB 1,680)</b>

Source: Various.<sup>35</sup>

## Computing

Computing utilizes computer hardware and software technology to complete a task and is the foundation for the rise of the Internet of Things, data analytics, AI, advanced manufacturing, and autonomous systems. The Chinese government seeks to break its dependence on imports and develop domestic champions in high-performance computing (HPC), cloud computing, and quantum information science.

### *High-Performance Computing*

**Definition.** HPC utilizes large networks of computers (commonly known as supercomputers) to execute software programs that process big data to solve complex problems.<sup>36</sup> Access to the most advanced computing capabilities has become indispensable for researchers, companies, and governments to make breakthroughs in technological and scientific innovation and research.<sup>37</sup> Use of the most advanced HPC provides a competitive advantage in all commercial data analytics, modeling, and simulations as well as defense-related tasks such as communications, cryptography, signals processing, weapons design and testing (especially nuclear weapons),\* and war gaming.<sup>38</sup>

**Industrial Policy.** The Chinese government has directed at least \$1.1 billion (RMB 7.6 billion) to HPC since 2009 and established targets for domestic firms to account for 60 percent of its HPC market share by 2020.<sup>39</sup> The Chinese government budgeted \$270 million

\*The U.S. Department of Energy uses supercomputers to conduct simulations of nuclear explosions and virtually test the effectiveness and reliability of its nuclear weapons stockpile, allowing the U.S. government to move away from physical nuclear weapons tests. Stephen J. Ezell and Robert D. Atkinson, "The Vital Importance of High-Performance Computing to U.S. Competitiveness," *Information Technology and Innovation Foundation*, April 2016, 11.

(RMB 1.8 billion) to build Sunway TaihuLight, the world's fastest supercomputer; by comparison, the U.S. government allocated \$325 million to construct two new supercomputers that are expected to surpass Sunway TaihuLight with one completed in 2017 and one in 2018.<sup>40</sup> Overall, these efforts have successfully transformed China into a global HPC leader based on overall speed, processing capacity, and rollout of indigenous design.<sup>41</sup>

Chinese achievements in HPC include:

- *Building the world's two fastest supercomputers:* The Sunway TaihuLight's 93 petaflop processing speed is roughly equal to the combined processing capacity of the next five fastest supercomputers on the Top 500 list (a list of the world's most powerful computer systems),\* and is 5.3 times faster than that of the highest-ranked U.S. supercomputer, the Titan.<sup>42</sup> It is the world's first supercomputer composed entirely of Chinese-designed and Chinese-made processors.<sup>43</sup> Tianhe-2 is the world's second-fastest computer and is roughly twice as fast as the Titan.<sup>44</sup> Chinese high-performance and cloud computing firm Inspur built the Tianhe system using Intel processors.<sup>45</sup>
- *Becoming the country with the second-largest number of supercomputers:* As of June 2017, the United States had 168 supercomputers followed by China at 160, together accounting for around two-thirds of the Top 500 list. China's Sunway TaihuLight and Tianhe-2 are the two highest ranked, with the U.S. Titan at number four. Japan, with 33, has the third-highest number of supercomputers.<sup>46</sup>
- *Receiving an international award for application of HPC:* China has lagged behind the United States in software application development for these supercomputers, but the gap is closing. In November 2016, Chinese researchers, relying on the Sunway TaihuLight to run their data analytics problem, for the first time won the distinguished Gordon Bell Prize, which is a benchmark for the application of HPC to complex science, engineering, and large-scale data analytics problems.<sup>47</sup> In total, Chinese researchers relying on Chinese supercomputers accounted for three out of the six finalists in 2016.<sup>48</sup>

In 2011, foreign hardware suppliers IBM and Hewlett Packard held 35 percent and 13 percent, respectively, of the Top 100 systems in China.† By 2016, IBM had sold its HPC business to the Chinese computer manufacturing firm Lenovo, and Hewlett Packard's share had fallen to 2 percent.<sup>49</sup> During the same period, Lenovo's share

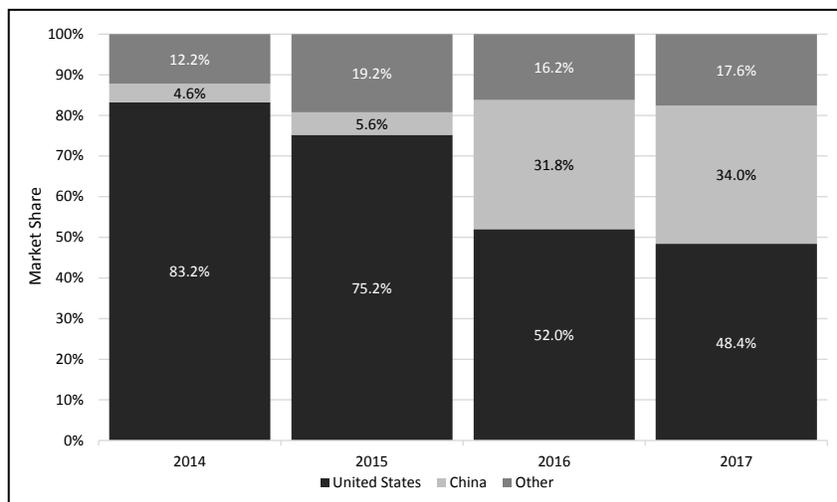
\*The Top 500 list is a biannual ranking of the 500 fastest commercially available supercomputer systems based on its maximum benchmark performance solving a dense matrix of linear equations. Participation in the list is voluntary, but most vendors and governments are incentivized to participate to demonstrate their supercomputers' global competitiveness. The quick rise in the number of Chinese supercomputers on the Top 500 list is in part related to their increased participation on the list. Top 500, "About." <https://www.top500.org/project/>; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 6.

†The Top 100 list is compiled by the Specialty Association of Mathematical and Scientific Software of the China Software Industry Association, the Evaluation Center of High Performance Computer of the National 863 Plan, and the High Performance Computing Technique Committee of the China Computer Federation. It lists China's leading 100 supercomputers based on performance. Zhang Yunquan et al., *2011 China TOP100 List of High Performance Computer*, November 2011. <https://www.top500.org/files/SAMSS-2011-China-HPC-TOP100-201103--en.pdf>.

of the domestic HPC market increased from 1 percent to 34 percent in 2016.<sup>50</sup> Inspur grew its HPC market share from 7 percent to 19 percent from 2011 to 2016; Chinese HPC firm Sugon (formerly Dawning) maintained a 34 percent market share.<sup>51</sup> In his written testimony at the Commission's March 2017 hearing, Addison Snell, chief executive officer at the high-performance industry consulting firm Intersect360 Research, noted that while there is significant growth potential in China, U.S. firms "have little access to government bids," which account for the largest share of market demand.<sup>52</sup>

As of June 2017, Chinese firms accounted for 34 percent of the Top 500 market share, while U.S. firms such as Hewlett Packard and Cray made up 48.4 percent (see Figure 3).<sup>53</sup> This is a dramatic reduction from just three years ago, when U.S. firms accounted for 83.2 percent and Lenovo, the largest Chinese firm in the top ten vendors, made up 3.8 percent.<sup>54</sup>

**Figure 3: U.S. and Chinese HPC Vendors' Market Share of the Top 500 Supercomputers, 2014–2017**



*Note:* Data reflect the market share of the U.S. and Chinese HPC vendors listed in the top ten largest vendors for June of each year. These U.S. and Chinese firms alone account for at least 80 percent of the total Top 500 supercomputer market.

*Source:* Top 500, "List Statistics," June 2014; Top 500, "List Statistics," June 2015; Top 500, "List Statistics," June 2016; Top 500, "List Statistics," June 2017.

**Comparison of U.S. and Chinese Capabilities.** The United States still maintains a lead in HPC production, usage, and software application development, but China has the world's two fastest supercomputers, maintains the world's second-largest number of supercomputers, and is on track to beat the United States in rolling out the next generation of HPC.<sup>55</sup> The U.S., Chinese, Japanese, and the EU governments are developing the next generation of supercomputers—exascale computers—capable of applying quintillion calculations per second to complex problems.<sup>56</sup> Meng Xiangfei, director of applications at the National Supercomputing Center in Tianjin, announced that if China achieves the necessary breakthroughs in

high-performance processors, he expects China to complete a prototype by 2018 and have a fully operating exascale computer by 2020.<sup>57</sup> To keep pace with China and Japan, the U.S. Department of Energy, which spearheads U.S. government HPC and exascale development efforts,<sup>\*</sup> accelerated its initial 2023 timeframe to 2021, though this is contingent on federal funding.<sup>58</sup> Mr. Snell noted in his testimony that the United States “is falling behind in the leading edge of advancement, and simultaneously losing the ability to rein in other countries via export control” due in part to the level and consistency of Chinese government funding for indigenous HPC (see textbox “U.S. Export Controls on HPC Components to China”).<sup>59</sup>

### **U.S. Export Controls on HPC Components to China**

The U.S. government has raised concerns regarding the pace of China’s development of HPC and the lack of separation between China’s civilian and defense uses of supercomputing.<sup>60</sup> On February 18, 2015, the U.S. Department of Commerce added export license requirements for HPC components headed to the National University of Defense Technology and the National Supercomputing Centers located in Changsha, Guangzhou, and Tianjin because the National University of Defense Technology used U.S.-produced components in Tianhe-1A and Tianhe-2 to simulate nuclear explosive activities, which the U.S. government deemed “contrary to the national security and foreign policy interests of the United States.”<sup>61</sup> This ban has prevented China from upgrading its Tianhe-2 system and will present challenges for at least 154 other Chinese supercomputers that rely on Intel components.<sup>62</sup>

### **Cloud Computing**

**Definition.** Cloud computing refers to the storage, management, and processing of data and software services on remote servers rather than a local or personal computer.<sup>63</sup> This capability is the foundation for big data storage and allows users to access and use technology resources on demand and at any place in the world. Providers locate infrastructure where it optimizes resource use and scale capabilities up or down to meet customer demand, unlocking innovation by firms such as Uber and Netflix that can increase their IT resource use with growing demand for their services.<sup>64</sup>

**Industrial Policy.** China’s cloud computing market is nascent but growing quickly.<sup>†</sup> In his testimony to the Commission, Mark Brinda, partner at the consulting firm Bain and Company, projected

<sup>\*</sup>In June 2017, the U.S. Department of Energy announced \$430 million in exascale R&D with \$258 million (60 percent) in federal funding over three years and \$172 million (40 percent) from private firms. U.S. Department of Energy, *Department of Energy Awards Six Research Contracts Totalling \$258 Million to Accelerate U.S. Supercomputing Technology*, June 15, 2017.

<sup>†</sup>For more information on China’s state-led development of cloud computing, see Tai Ming Cheung et al., “Planning for Innovation: Understanding China’s Plans for Technological, Energy, Industrial, and Defense Development,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 184–192; Leigh Ann Ragland et al., “Red Cloud Rising: Cloud Computing in China,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), September 5, 2013.

that China's cloud computing market would grow from \$1.5 billion in 2013 to \$13–19 billion by 2020.<sup>65</sup> By comparison, the U.S. market is expected to increase from around \$65 billion in 2013 to \$220 billion by 2020.<sup>66</sup> Chinese government initiatives for developing its own cloud computing industry include: at least \$7.7 billion (RMB 52 billion) in financial support under the 12th Five-Year Plan; a \$177.3 billion (RMB 1.2 trillion) investment to construct more than 56,250 miles (90,000 kilometers) of high-speed fiber optic cables and two million 4G base stations\* under the 13th Five-Year Plan; and expanding usage through government procurement.<sup>67</sup>

Chinese government laws and regulations require state-owned enterprises—responsible for two-thirds of China's IT spending—to purchase services from Alibaba's subsidiary, Aliyun, and other domestic cloud computing firms.<sup>68</sup> According to China's Government Procurement Law:

*The government shall procure domestic goods, construction and services, except in one of the following situations: (1) where the goods, construction or services needed are not available within the territory of the People's Republic of China or, though available, cannot be acquired on reasonable commercial terms; (2) where the items to be procured are for use abroad; and (3) where otherwise provided for by other laws and administrative regulations.*<sup>69</sup>

Through a combination of these protections and Alibaba's comprehensive business service offerings that attract Chinese startups, Aliyun built capacity and gained more than 50 percent of the Chinese market.<sup>70</sup>

**Comparison of U.S. and China Capabilities.** Globally, U.S. firms such as Amazon Web Services, Google, Microsoft, Salesforce, VMware, and IBM accounted for at least four of the top five firms in each cloud computing market in 2016.<sup>71</sup> Mr. Brinda attributes this leadership to a large, highly skilled developer ecosystem, the close nexus of developers, venture capitalists, and acquirers, and a large domestic market.<sup>72</sup> But while the rapid expansion of China's cloud computing market presents enormous opportunities, foreign cloud computing firms face significant regulatory barriers to entering and operating in China's market, including:<sup>73</sup>

- *Prohibited sectors:* Foreign firms are banned from providing cloud services to particular industries, such as banking.<sup>74</sup> In addition, foreign firms seeking to provide cloud services to the Chinese government must disclose key operating data and may be required to provide their source code to the government.<sup>75</sup> In an effort to address these concerns while preventing alteration or revealing their proprietary software, in September 2016, Microsoft announced the opening of the Microsoft Transparency

\*4G base stations can handle more network traffic at a faster pace. China is also aggressively pursuing the next generation 5G technology that would be critical to setting international standards and enabling autonomous vehicles use. Ma Si, "Big Three Locked in Race for High-Speed Market," *China Daily*, July 20, 2017. For more information on China's pursuit of 5G technology, see Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 177–184.

Center in Beijing to provide a facility—similar to ones in the United States and EU—where government IT experts can test and analyze Microsoft’s products.<sup>76</sup>

- *Data localization regulations:* The Chinese government mandates firms keep “important data” within China.<sup>77</sup> “Important data” comprise data related to national security, economic development, and social or public interest encompassing sectors ranging from e-commerce to utilities.<sup>78</sup> This vague term compels U.S. and other foreign cloud computing providers to create data storage centers in China as a joint venture and hire local workers to manage these centers, raising costs and increasing data privacy concerns.<sup>79</sup>
- *Joint venture requirements:* Foreign firms must form joint ventures with local firms to manage their data storage centers.<sup>80</sup> In 2012, Microsoft formed a partnership with the Chinese firm 21Vianet, where 21Vianet supplies the cloud computing infrastructure and Microsoft provides its Azure cloud platform and services. 21Vianet also supplies the infrastructure for Amazon and IBM in China.<sup>81</sup> In March 2017, IBM and Wanda Internet Technology Group formed a similarly structured joint venture.<sup>82</sup> In July 2017, Apple announced that it would open a data center with the provincial state-owned Chinese data management firm Guizhou-Cloud Big Data Industry.<sup>83</sup> In contrast, Chinese cloud computing firms such as Tencent and Aliyun are able to open and operate their data centers freely in the United States.<sup>84</sup>
- *Cross-border data transfer restrictions:* China’s Cybersecurity Law imposes overly broad restrictions on data flowing outside of China, effectively enabling the government to prohibit any data transfers they deem necessary.<sup>85</sup> These restrictions are contrary to the global shift toward data centralization, which is critical for data analytics, technology optimization, and integrated global service and R&D.<sup>86</sup> (For more information on China’s Cybersecurity Law, see Chapter 1, Section 1, “Year in Review: Economics and Trade.”)

China’s restrictive market access provisions remain in place despite China’s commitment under the World Trade Organization (WTO) to open its cloud computing market to foreign firms.<sup>87</sup> In addition, according to a March 2017 report by the U.S. Chamber of Commerce, “Chinese efforts to exert greater control over where commercial data is stored and how it is transferred are skewing the decision-making process for companies that must decide where products are made and innovation takes place.”<sup>88</sup> The United States has repeatedly raised concerns over China’s violations of its WTO commitments and data storage and cross-border transfer restrictions with the Chinese government, but achieved limited progress.<sup>89</sup>

### **Quantum Information Science**

**Definition.** Quantum information science uses atomic and subatomic level mechanics to acquire, process, and transmit information at a level that will surpass existing technology. Whereas existing electronic communication and computation is a binary system in

which a series of 0s and 1s encode instructions and data by turning transistors on or off, quantum bits can exist as 0, 1, or both simultaneously. This multistate allows a quantum computer to run multiple problems at the same time rather than one by one, theoretically performing a task in a fraction of the time of existing supercomputers.<sup>90</sup> In addition, quantum mechanics allow for two or more particles to be connected (or “entangled”) such that changing the quantum properties of one particle automatically changes the other no matter the distance between the particles. These unique properties enable “quantum teleportation,” whereby a sender transmits information by making a series of changes to entangled particles (usually light photons) on one end that will result in the receiver observing the same changes to particles on the other end without any physical transmission taking place. The receiver can then decrypt the message using an agreed-upon code, the quantum decryption key.<sup>91</sup>

Quantum information science is still in its infancy, but it is expected to rewrite the foundations of IT.<sup>92</sup> For instance, quantum computing will likely revolutionize financial modeling and chemical, biological, and material science R&D, creating a competitive advantage for researchers and businesses.<sup>93</sup> Militarily, quantum-based technologies would provide several strategic benefits that could negate existing U.S. advantages in intelligence collection and stealth and weaken U.S. encrypted communication security.<sup>94</sup> Quantum cryptography would ensure virtually unbreakable communication networks, and quantum computing could decrypt sensitive communications transmitted via existing satellite and fiber networks, offering asymmetrical communication security and decryption advantages over an adversary.<sup>95</sup>

**Industrial Policy.** The Chinese government is aggressively developing this industry to leapfrog U.S. preeminence in existing IT sectors and achieve global market dominance, according to testimony from John Costello, senior analyst at the business risk intelligence firm Flashpoint.<sup>96</sup> Tim Byrnes, a quantum physicist at New York University, noted in July 2017 that “it’s amazing how quickly China has gotten on with quantum research projects that would be seen as too expensive to do elsewhere.”<sup>97</sup> With the government’s help, Chinese researchers have made significant progress, most notably in operationalizing and commercializing quantum cryptography and communication. Major new developments include:

- *Launching the world’s first quantum science satellite:* In August 2016, the Chinese government launched the world’s first quantum science satellite, which the U.S. Department of Defense characterized as a “notable advance.”<sup>98</sup> Access to this satellite has allowed Chinese researchers to conduct pioneering quantum experiments.
- *Demonstrating satellite-to-ground and ground-to-satellite quantum teleportation:* In June 2017, Chinese scientists published their results on using the quantum satellite launched in August 2016 to teleport entangled light photons’ properties back to corresponding photons on Earth over a distance of up to 750 miles (1,200 kilometers), shattering the previous world record of 89 miles (143 kilometers) set in 2012 by Austrian researchers.<sup>99</sup>

In an August 2017 publication, Chinese researchers announced the world's first experiment teleporting entangled light photons' properties from Earth to satellite-based corresponding photons at a distance of up to 875 miles (1,400 kilometers). These groundbreaking studies establish the foundation for a global quantum Internet\* and a quantum communication network.<sup>100</sup>

- *Transmitting satellite-to-ground quantum decryption keys:* In August 2017, Chinese researchers published their findings on using the same satellite to transmit a quantum decryption key to two separate ground stations in China, allowing both stations to securely encrypt and decrypt data transmitted to each other via traditional communication channels. This method achieved up to 20 orders of magnitude the efficiency of data sent over similar length optical networks.<sup>101</sup> In September 2017, the Chinese Academy of Sciences used this satellite to transmit a quantum decryption key to its partners at the Austrian Academy of Sciences. The Austrian and Chinese researchers then used this key to encrypt their standard virtual private network (VPN) protocol video data and hold a secure 30-minute video conference between Vienna and Beijing. This experiment represents a key breakthrough in quantum key decryption—a building block for quantum communication.<sup>102</sup>
- *Constructing quantum optical fiber communication networks:* In September 2017, the Chinese government operationalized the world's largest quantum-linked optical fiber communications system between Beijing and Shanghai to securely transmit government, finance, and other sensitive information.<sup>103</sup> Due to the limits of existing technology, this 1,250 mile (2,000 kilometer) system is composed of quantum optical fibers linked by 32 conventional telecommunications repeaters that refresh the transmissions approximately every 62.5 miles (100 kilometers).<sup>104</sup> In mid-September 2017, China completed construction of its first citywide commercial quantum communication network in Jinan connecting 242 users at the cost of \$17.7 million (RMB 120 million); Wuhan and other major Chinese cities are rolling out similar quantum networks.<sup>105</sup>

**Comparison of U.S. and Chinese Capabilities.** According to Mr. Costello, the United States “remains at the forefront of quantum information science, but its lead has slipped considerably.”<sup>106</sup> The United States still maintains a lead in total quantum-related patent applications, quantum computing publications, and public and private quantum technology R&D spending.<sup>107</sup> But China has now surpassed the United States to become the world leader in quantum communication with Chinese researchers conducting the first public studies on satellite-to-ground and ground-to-satellite quantum teleportation and satellite-to-ground quantum decryption key transmission using the world's first quantum science satellite. China has also surpassed the United States in the number of patent applications

\*A quantum Internet would be a global network of quantum computers. Stefano Pirandola and Samuel L. Braunstein, “Physics: Unite to Build a Quantum Internet,” *Nature* 532:7598 (April 12, 2016).

in quantum cryptography and caught up to the United States in the number of patent applications in quantum-key distribution and quantum sensors (see Table 3).<sup>108</sup>

**Table 3: U.S. and China Quantum-Related Patent Applications and R&D Spending, 2015**

Criterion	United States	China
Total Number of Patent Applications	918	522
<i>Quantum Computing</i>	295	29
<i>Quantum Cryptography</i>	233	367
<i>Quantum Sensors</i>	105	104
<i>Quantum-Key Distribution</i>	151	156
Annual Unclassified Quantum Technology R&D Spending (Share of Global Spending)	\$419.1 million (24 percent)	\$256.1 million (14.7 percent)

Source: *Economist*, “Here, There, and Everywhere,” March 9, 2017.

According to Mr. Costello, U.S. leadership in quantum information science eroded as “the lack of funding, structural and institutional issues, and lack of government coordination have reduced both the levels and consistency of support that are necessary to maintain capacity” as compared with China’s sustained whole-of-government approach.<sup>109</sup> A July 2016 report by the Obama Administration’s Interagency Working Group on Quantum Information Science highlighted five key challenges to further U.S. progress in the field: institutional boundaries between and within research laboratories and government departments, insufficient education and workforce training, slow technology and knowledge transfer from universities or national laboratories to the private sector, inadequate availability of materials and fabrication capabilities, and unstable levels of research funding.<sup>110</sup>

### Industrial Robotics

**Definition.** Industrial robotics—manufacturing robots that are programmed with varying degrees of autonomy to weld, transport, assemble, and spray—are improving manufacturing productivity and quality through more precise, consistent, quick, and efficient production. The integration of robotics, computing, big data, AI, and nanotechnology is enhancing advanced commercial and military manufacturing and unmanned aerial, undersea, and land vehicles’ capabilities.<sup>111</sup> (For more information on military robotics, see Chapter 4, Section 2, “China’s Pursuit of Advanced Weapons.”)

**Industrial Policy.** The Chinese government is encouraging the adoption of industrial robots to improve its manufacturing sector and compensate for its shrinking and increasingly costly workforce.\* China became the world’s largest market for industrial robotics in 2013 and accounted for 27 percent of industrial robotics

\*For more information on China’s industrial, service, and military robotics development, see Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016.

installed globally in 2015, largely driven by demand from China's automotive and electrical industries.<sup>112</sup> But China's robot market maturity remains low, with only 49 robots per 10,000 workers in 2015 compared with the leader, South Korea, at 531 robots per 10,000 workers and the United States, ranked fifth, at 176 robots per 10,000 workers.<sup>113</sup>

Foreign companies, primarily from Japan and Germany, supplied 69 percent of China's installed robotics in 2016, but China is looking to reduce this dependence.<sup>114</sup> The Made in China 2025 initiative set a target to increase Chinese industrial robotics firms' share of the domestic market from 31 percent in 2016 to 70 percent by 2025, with core components—where most of the value is concentrated—to reach 70 percent by 2025.<sup>115</sup> To close its technological gap and reach its import substitution targets, the Chinese government:

- *Offers subsidies:* At least 21 cities and 5 provinces have pledged a combined \$6 billion (RMB 40 billion) in subsidies for robotics, prioritizing local Chinese robotics firms. The subsidies account for an estimated 10 percent of total operation revenue for Chinese robotics firms Siasun and Estun. Local governments are also subsidizing between 15 and 30 percent of the purchase price of robotics to encourage greater usage. These subsidies have encouraged a proliferation of new Chinese robotics firms—around 400 of China's 800 robotics firms were set up in 2015.<sup>116</sup> Such rapid expansion risks recreating the overproduction and overcapacity that similar subsidies under the 12th Five-Year Plan (2011–2015) created for solar and wind industries.<sup>117</sup> Vice Minister of Industry and Information Technology Xin Guobin raised these concerns in June 2016, stating that China's robotics firms are “plagued by low quality, overinvestment and too much duplication.”<sup>118</sup>
- *Facilitates acquisitions:* In the last few years, state investment funds and policies are directly and indirectly supporting the surge in Chinese acquisitions of foreign robotics firms. These acquisitions seek to gain access to foreign technology, intellectual property, and expertise.<sup>119</sup> Notable deals include Wanfeng's April 2016 purchase of the U.S. automotive manufacturing and assembly robotics firm Paslin, Midea's August 2016 acquisition of the German industrial robotics leader Kuka, and state-owned Shanghai Electric's October 2016 acquisition of the German aerospace robotics firm Broetje Automation.<sup>120</sup>
- *Promotes overseas recruitment:* The Chinese government is recruiting overseas Chinese and foreign experts and entrepreneurs to come teach and work in China on advanced robotics through its Thousand Talents Program and Project 111.<sup>121</sup> These programs successfully attracted former nanorobotics professor at Michigan State University Lianqing Liu, nanorobotics professors at Georgia Institute of Technology Chen Yongsheng and Wang Zhonglin, among others.<sup>122</sup>

**Comparison of U.S. and Chinese Capabilities.** While Japan and Germany are the global leaders in industrial robotics, the Unit-

ed States is home to several of the world's leading roboticists and maintains a technological lead in surgical robotics and collaborative robotics (i.e., robots that work in concert with humans).<sup>123</sup> In a 2016 report prepared for the Commission, the Defense Group, Inc. found that China's industrial robotics industry has rapidly increased production and research but remains plagued by a lack of talent, and high quality precise components.<sup>124</sup> The report noted that China is seeking to close these gaps through technology acquisition and investments, informal knowledge and technology transfers, and illicit technology acquisition such as cyber espionage or illegal exports.<sup>125</sup>

In sharp contrast to industrial robotics, China is the world's undisputed leader in commercial drones, with the Chinese firm Dajiang Innovation (DJI), accounting for around 70 percent of the global commercial drone industry in 2015.<sup>126</sup> DJI outcompetes its rivals based on its technological superiority, price, ability to use powerful commercial software applications, and customization.<sup>127</sup> U.S. commercial drone manufacturer 3D Robotics, formerly the world's second-largest commercial drone manufacturer, struggled to compete against DJI, and in August 2017, formed a partnership with DJI to supply their software to DJI's drones.<sup>128</sup>

### Artificial Intelligence

**Definition.** AI—machine programs that can teach themselves by harnessing HPC and big data and eventually mimic how the human brain thinks—supports and enables nearly every sector of the modern economy.<sup>129</sup> AI is creating targeted marketing, safer travel through self-driving cars, smarter weapons, and new efficiencies in manufacturing processes, supply chain management, and agricultural production.<sup>130</sup> Corporations and governments are fiercely competing because whoever is the frontrunner in AI research and applications will accrue the highest profits in this fast-growing market and gain a military technological edge.

**Industrial Policy.** Aiming to make China the global leader in advanced AI, the 13th Five-Year Plan raised central-level backing for AI and laid out the objective to “facilitate commercial application of artificial intelligence technologies in all sectors.”<sup>131</sup> In July 2017, the State Council released the Next-Generation Artificial Intelligence Development Plan that set a 2020 target for Chinese AI technology and applications to match international developments and a 2030 target for China to be at the forefront of international AI technology and application development with a domestic market valued at \$147.7 billion (RMB 1 trillion).<sup>132</sup> Kai-Fu Lee, a former Microsoft and Google executive and currently chief executive at the venture capital firm Sinovation Ventures, noted that “China is poised to be a leader in AI because of its great reserve in AI talent, excellent engineering education, and massive market for AI adoption.”<sup>133</sup>

In February 2017, the National Development and Reform Commission, China's industrial policy-making agency, approved plans to fund the development of a virtual national AI engineering lab for an undisclosed amount.<sup>134</sup> Led by Baidu, the lab will specialize in deep learning, computer vision and sensing, computer listening, biometric identification, and new forms of human-computer interaction.<sup>135</sup> Local governments have pledged more than \$7 billion in

AI funding, and cities like Shenzhen are providing \$1 million for AI start-ups.<sup>136</sup> By comparison, the U.S. federal government invested \$1.1 billion in unclassified AI research in 2015 largely through competitive grants.<sup>137</sup> Due in part to Chinese government support and expansion in the United States, Chinese firms such as Baidu, Alibaba, and Tencent have become global leaders in AI.<sup>138</sup> Chinese firms also leverage U.S. talent and ecosystems to promote their development; for example, they:

- *Establish research institutes in the United States:* To access the talented engineers and scientists based in the United States, Baidu established two AI-related research facilities in Silicon Valley; Didi Chuxing, China's Uber, opened an AI and self-driving car research lab in Silicon Valley; and Tencent announced a new AI research center in Seattle.<sup>139</sup>
- *Invest in U.S. AI-related startups and firms:* From 2010 to 2016, Chinese firms have invested in at least 51 U.S. AI startups and firms.<sup>140</sup> Examples include: the Chinese venture capital firm Haiyin Capital's June 2016 investment into the AI unmanned system software developer Neurala (which had provided technology used by the U.S. Air Force and NASA); Baidu's April 2017 acquisition of the visual perception software and hardware firm xPerception; Tencent and several other Chinese investors' July 2017 investment in personal AI firm Oben; and Baidu's July 2017 acquisition of the AI language processing and comprehension firm Kitt.ai.<sup>141</sup>
- *Form commercial and academic partnerships:* In September 2015, the U.S. computer manufacturer Dell and the Chinese Academy of Sciences jointly established the Artificial Intelligence and Advanced Computing Joint Lab in China to develop cognitive systems and deep learning technologies.<sup>142</sup> In August 2016, Baidu formed a partnership with Nvidia to jointly develop a comprehensive autonomous driving platform, and in July 2017 agreed to collaborate on optimizing Baidu's deep learning framework.<sup>143</sup> In October 2016, Huawei and the University of California, Berkeley announced a strategic partnership focused on basic research in AI, with Huawei providing \$1 million in funding.<sup>144</sup>
- *Recruit U.S.-based talent:* Chinese AI firms have hired U.S.-based talent to work at their U.S. research institutes or in China through programs like the Thousand Talents Program and Project 111, including world-renowned AI expert Andrew Ng,\* former head of Google's deep learning and former Stanford University professor, Ya-qin Zhang, former head of Microsoft Corporation's Asian R&D operations, Qi Lu, former Microsoft executive vice president, and Yu Dong, a former Microsoft speech recognition and deep learning expert.<sup>145</sup>

---

\*Mr. Ng led Baidu's artificial intelligence strategy and development until March 2017. He has since launched an online school to train AI students and professionals. Paul Mozur, "A.I. Expert at Baidu, Andrew Ng, Resigns from Chinese Search Giant," *New York Times*, March 22, 2017; Tom Simonite, "Andrew Ng Spreads the Gospel of AI with a New Online School," *Wired*, August 8, 2017.

**Comparison of U.S. and Chinese Capabilities.** U.S. and Chinese firms are seeking to gain a technological edge in AI research and application. The United States continues to lead in the number of AI patent applications, the number of AI firms, and the amount of funding provided, but China is quickly closing this gap.<sup>146</sup> Dr. Lee estimates U.S. firms have a two-year head start in driverless cars.<sup>147</sup> But in English and Mandarin speech recognition and synthetic speech, Baidu is becoming the market leader. In March 2017, Baidu's synthetic speech system, DeepVoice, converted text into an almost human-quality voice more than 400 times faster than Google's DeepMind, the world's previous leader.<sup>148</sup> While China's achievements are impressive, Dr. Lee noted that the most advanced research is still being done in the United States, with Chinese researchers dominating mid-level developments.<sup>149</sup>

### Nanotechnology

**Definition.** Nanotechnology—the ability to utilize the physical, chemical, mechanical, and optical properties of individual atoms and molecules of automated devices at the nanoscale level\*—is driving new developments in quantum information science, medicine, agriculture, energy, manufacturing, and defense, among other areas.<sup>150</sup> In health, nanoscale sensors enable molecular-level detection and treatment of disease while nanoscale molecular motors power novel drug delivery techniques and medical procedures for more precise treatment.<sup>151</sup> Analyzing big data using HPC is accelerating breakthroughs in nanotechnology R&D, commercialization of technology, and comprehensive risk assessments.<sup>152</sup>

**Industrial Policy.** Since 2000, the Chinese government has prioritized nanotechnology, rolling out massive government R&D and industry funding, recruiting overseas talent through its Thousand Talents Program, and creating nanotechnology science parks.<sup>153</sup> Nanotechnology funding from just one source—China's National Science Foundation Fund—increased nearly seven-fold from \$90 million in 2004 to around \$600 million in 2014.<sup>154</sup> By comparison, the U.S. National Nanotechnology Initiative, which coordinates federal nanotechnology R&D spending, reached an annual high of \$1.9 billion in 2010 but since 2013, funding has not exceeded \$1.5 billion per year.<sup>155</sup> Beyond R&D funding, the central and Suzhou municipal government in 2010 provided \$886.3 million (RMB 6 billion) to construct Nanopolis Suzhou—one of China's nanotechnology science parks—with qualified nanotechnology start-ups eligible for millions in tax breaks, grants, subsidies for office rent and personnel salaries, and awards for sales revenue or patents.<sup>156</sup>

**Comparison of U.S. and Chinese Capabilities.** While China has become the fastest-growing country for nanotechnology publications and industrialization, particularly in nanomaterials and nanocomposites, the United States remains the technological leader in nanotechnology based on the number of firms involved

\*Nanoscale refers to structures around 1 to 100 nanometers. A nanometer is one billionth of a meter. For comparison, a DNA molecule is 2–3 nanometers wide, and a human hair is generally 100,000 nanometers thick. U.S. National Nanotechnology Initiative, *What's So Special about the Nanoscale?*

in nanotechnology research, manufacturing, and applications; the amount of funding provided; the number of publications; and the number of citations its publications receive.<sup>157</sup> For example, the United States published 22,067 articles in the 20 leading nanotechnology journals from 2003 to 2013 compared with China at 3,421 articles.<sup>158</sup> According to Chinese researchers, low numbers of citations of research, poor communication between academic researchers and industry, lack of cross-regional R&D collaboration, and absence of clear nanotechnology standards are hindering further progress and creating potential quality control issues in research, allocation of funds, and production.<sup>159</sup> Patrick J. Sinko, professor at Rutgers University, noted an “immature venture funding market, intellectual property protection, technology transfer, and commercialization” as additional challenges for China’s nanotechnology development.<sup>160</sup>

### Biotechnology

**Definition.** The combination of big data, AI, HPC, and cloud computing storage with advances in genomics (the study of DNA structure, function, evolution, and mapping) and synthetic biology (the artificial design or modification of existing biological systems) are spurring the creation of entirely new medicines, food, energy, species, and diseases.<sup>161</sup> In healthcare, these advancements will lead to precision medicine (medical care based on an individual’s biology, environment, and lifestyle).<sup>162</sup> But the speed of these developments is outpacing existing regulatory and ethical frameworks. Genetic and longitudinal\* data—critical for future biotechnology breakthroughs—are not adequately protected nor granted reciprocal access globally.<sup>163</sup> At the same time, the gene editing tool CRISPR† is democratizing the ability to modify the genetic makeup of biologics such as plants, animals, and even humans, giving rise to ethical debates and fears of unintended consequences.<sup>164</sup>

**Industrial Policy.** Cao Xuetao, president of the Chinese Academy of Medical Sciences and Beijing Union Medical College, noted that the Chinese government is aggressively pursuing genomics and synthetic biology to improve the effectiveness of medical treatment and reduce overall medical costs through reducing the usage of unnecessary drugs.<sup>165</sup> In addition, by investing in genomics and synthetic biology, China hopes to leapfrog existing biotech firms and become a global leader.<sup>166</sup> The 13th Five-Year Plan seeks to strengthen China’s leadership in biotechnology and precision medicine through:<sup>167</sup>

- *Funding genomics research:* The Chinese government provided \$295.4 million (RMB 2 billion) for stem cell fundamental research under the 12th Five-Year Plan.<sup>168</sup> Between 2016 and 2020, it has allocated around \$398.8 million (RMB 2.7

\*Longitudinal data track environmental, lifestyle, and other factors and are used to identify genes dominant in specific behaviors and characteristics from the same source or sample over a period of time.

†CRISPR is short for Clustered Regularly Interspaced Short Palindromic Repeats. It is based on a bacterial immune system and is used to edit specific segments of the genetic code. Broad Institute, “Questions and Answers about CRISPR.”

billion) for stem cell research projects, 10 percent of which will be allocated for gene editing.<sup>169</sup> Additionally, the Chinese government announced plans in 2015 to invest around \$9 billion (RMB 60 billion) in precision medicine by 2030.<sup>170</sup> By comparison, the United States launched its own Precision Medicine Initiative in 2015 with only \$215 million in initial investment.<sup>171</sup> Eric Schadt, director of the Icahn Institute of Genomics and Multiscale Biology at Mount Sinai, has expressed frustration “at how aggressively China is investing in this space while the [United States] is not moving with the same kind of purpose.”<sup>172</sup>

- *Supporting Chinese firms:* In 2010, the China Development Bank provided a \$1.58 billion line of credit to Beijing Genomics Institute (BGI), a private genome sequencing center, to buy 128 advanced DNA sequencing machines from the U.S. firm Illumina. With this purchase, BGI became the world’s largest genetic sequencer, accounting for roughly a quarter of all DNA data sequenced in the world in 2014.<sup>173</sup> While BGI remains a global leader in genomic sequencing, it has since lost global market share due to competition—largely from other Chinese firms—and its failed attempt to market its own cutting-edge genomic sequencer in November 2015.<sup>174</sup> BGI is seeking to regain market share and unseat the global leader Illumina by developing a new genomic sequencer.<sup>175</sup>
- *Increasing the number of genome-related papers:* Chinese researchers have increased the number of genome-related papers they have published from 4.5 percent of the world’s papers in 2010 to 17.3 percent by 2014.<sup>176</sup> In April 2015, Chinese scientists genetically modified the genomes of human embryos in order to cure a potentially fatal blood disorder called  $\beta$ -thalassaemia.<sup>177</sup> Although the team found that modifying one portion of a genome resulted in several unintended mutations in the genetic material, it was an important step forward in the field and pushed synthetic biologists to increase their DNA databases to study these mutations further and develop improved genetic sequencing technologies.<sup>178</sup> In October 2016, Chinese researchers began the world’s first clinical trials to treat patients with advanced lung cancer with genetically modified immune cells.<sup>179</sup> In July 2017, U.S. researchers for the first time\* edited the DNA of embryos to correct an incurable genetic heart defect without unintended genetic side effects.<sup>180</sup>
- *Expanding domestic access to DNA data:* Researchers can more accurately identify genes associated with specific diseases and study the impacts of genome modification (synthetic biology) by comparing an individual’s genetics to large amounts of unique DNA data from a diverse population.<sup>181</sup> As a result, “whoever

\*Unlike the Chinese government, the U.S. federal government is prohibited from financing embryo research, and the U.S. Food and Drug Administration cannot consider clinical trials with inheritable genetic modifications. In February 2017, the National Academies of Sciences, Engineering, and Medicine released guidelines on how human genome editing research should be conducted. Ariana Eunjung Cha, “First Human Embryo Editing Experiment in US Corrects Gene For Heart Condition,” *Washington Post*, August 2, 2017; National Academies of Sciences, Engineering, and Medicine, *Human Genome Editing: Science, Ethics, and Governance*, February 2017.

has the largest, most diverse data sets of different populations wins the day” according to testimony from Ed You, supervisory special agent with the Federal Bureau of Investigation.<sup>182</sup> China’s Ministry of Public Security already claims to have the world’s largest DNA database—more than 40 million individuals—in part through forced DNA collection.<sup>183</sup> By comparison, the U.S. law enforcement DNA database of convicted offenders, detainees, and missing persons contained over 13 million individual profiles as of August 2017.<sup>184</sup>

- *Leveraging global partnerships:* Chinese firms are pursuing global partnerships, joint ventures, and investment opportunities to expand their access to diverse genetic data and longitudinal healthcare records, necessary for leading-edge biotechnology research. For example, BGI gained access to U.S. genetic health information after receiving accreditation from the College of American Pathologists in July 2015 and partnering on genome research projects run by Autism Speaks, Children’s Hospital of Philadelphia, South Texas Accelerated Research Therapeutics, and the Allen Institute.<sup>185</sup> The Chinese state-owned life sciences investment firm WuXi Healthcare also has been accredited in the United States and contracted to carry out genetic sequencing and other diagnostic testing for U.S. citizens.\* BGI’s Chinese competitor, Novogene, established a genetic sequencing center at the University of California, Davis in April 2016 to provide U.S. customers and university faculty and scientists on-site sequencing services.<sup>186</sup> In September 2016, BGI launched the China National Genbank—initiated by the National Development and Reform Commission—a biorepository, bioinformatics center, and living biobank that seeks to store, read, understand, write, and apply genetic data.<sup>187</sup>
- *Attracting overseas talent:* The Chinese government has successfully attracted leading overseas academics and experts to move back to China, including Ge Li, founding scientist of Pharmacoepia Inc. and subsequently Wuxi AppTec, Inc., Samantha Du from Pfizer, Xiaodong Wang from University of Texas, and Steve Yang from AstraZeneca, among many others.<sup>188</sup> Kenneth Oye, professor at the Massachusetts Institute of Technology, highlighted the importance of Chinese and other foreign nationals studying in and immigrating to the United States in driving U.S. innovation, but noted that this advantage is declining “as educational programs, standards of living and research opportunities in China improve and more students choose to return to China.”<sup>189</sup> For example, CRISPR was invented by Feng Zhang, a Chinese immigrant.<sup>190</sup>
- *Acquiring biotechnology firms:* Panelists Dr. Oye and Ben Shobert, founder of the healthcare consulting firm Rubicon Strategy Group, noted Chinese firms are acquiring biotechnology firms to gain ownership of key technology and intel-

\*The College of American Pathologists, the State of California, and the U.S. Centers for Medicare and Medicaid have accredited Wuxi AppTec. Wuxi AppTec, “WuXi NextCODE Becomes the First and Only CAP, CLIA, and California Accredited Sequencing Laboratory in China,” February 23, 2016.

lectual property and expand their global market access.<sup>191</sup> Based on data from Rhodium Group, in the last five years, China has invested more than \$3.2 billion in the U.S. biotechnology and pharmaceutical sector.<sup>192</sup> Notable examples include BGI's 2012 acquisition of the U.S. genetic sequencing firm Complete Genomics, Humanwell Healthcare Group and PuraCap Pharmaceutical LLC's 2016 acquisition of the U.S. generic pharmaceutical manufacturer Epic Pharma, and iCarbonX's 2017 \$100 million investment for a minority share in U.S. personalized medicine firm—the world's largest—PatientsLikeMe.<sup>193</sup>

**Comparison of U.S. and Chinese Capabilities.** Overall, U.S. biotechnology research and innovation remain ahead of China.<sup>194</sup> The United States continues to have the largest number of foundational science and clinical research articles published in high-ranking journals, accounting for nearly 37 percent of total articles in 2015 compared with China (ranked fourth) with 1.4 percent.\* A review of the average number of citations per paper—a metric used to gauge a publication's impact—shows the United States has the highest, with an average of 35 citations per CRISPR-based paper followed by China at 21 and Japan at 7.5.<sup>195</sup> Mr. Shobert noted that this lead is due to the successful ecosystem the United States has built based on: strong foundational R&D funding; regulatory frameworks that incentivize biotechnology development and commercialization; a highly skilled workforce; close ties between government, universities, and the private sector; and robust venture capital funding.<sup>196</sup> Although China has sought to replicate this model, its regulatory system does not incentivize risk-taking innovation, and the government continues to spend a disproportionate amount more on biotechnology infrastructure over R&D.<sup>197</sup>

### Implications for the United States

Although China's growing consumer market should present enormous opportunities for U.S. businesses, China's pursuit of dominance in emerging technologies is eroding U.S. technological and military advantages (see Table 4). Losing this advantage will weaken U.S. firms' competitive edge in high-value-added sectors of the economy and undermine the capabilities, capacity, and resilience of the U.S. defense industrial base. In his testimony before the Commission, Henrik Christensen, professor at the University of California, San Diego, noted that for the United States, "it's our opportunity to lose, but we need to react relatively quickly, both in terms of making sure that we control our innovation system, we maintain it here, we commercialize it here, and in terms of making sure that we have the right investments."<sup>198</sup>

---

\*This ranking is based on the number of publications in top-tier journals by single country authors. Marisa L. Conte et al., "Globalization and Changing Trends of Biomedical Research Output," *JCI Insight* 2017 2:12, 2.

**Table 4: Current State of U.S. Technological Competition with China in Nine Sectors**

U.S. Leads	Close Competition	China Leads
<ul style="list-style-type: none"> <li>• Biotechnology</li> <li>• Nanotechnology</li> <li>• Cloud computing</li> <li>• Collaborative robots</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial intelligence</li> <li>• Quantum information science</li> <li>• High performance computing</li> </ul>	<ul style="list-style-type: none"> <li>• Exascale computing</li> <li>• Commercial drones</li> </ul>

*Note:* Factors that determine the state of technological leadership include: the number of firms, global market share, amount of R&D funding provided, the number of patent applications, the number of articles published in high-ranking journals, and the number of citations per publication. The status of technological leadership may shift due to changes in government policies or breakthroughs in R&D.

*Source:* This assessment is based on testimony received at the Commission's March 2017 hearing on China's pursuit of next-generation, dual-use technologies; contracted research; consultations with government officials, academics, and industry experts; and open source research and analysis.

China's state-directed industrial policies are slowly closing market opportunities for U.S. and other foreign firms in China and nurturing Chinese competitors that will be able to challenge U.S. companies in the United States and in third country markets. In contrast, Chinese firms have been able to leverage the openness of the United States to gain access to its advanced research and data, recruit its talented workforce, acquire and invest in leading edge U.S. firms, and freely sell their products and services here.

Close integration between Chinese civilian and military entities raises concerns that technology, expertise, and intellectual property shared between U.S. firms and Chinese commercial partners could be transferred to China's military.<sup>199</sup> The 13th Five-Year Plan reaffirmed the state's long-held commitment to integrating civilian and military technology development, stating that the Chinese government seeks to "encourage flow of factors such as technology, personnel, capital, and information between the economic and defense sectors" and strengthen the "coordination between the military and civilian sectors in the sharing of advanced technologies, industries, products, and infrastructure."<sup>200</sup> For cutting-edge sectors such as AI, robotics, and biotechnology, commercial entities rather than the military are increasingly driving global R&D breakthroughs, making access to the most advanced technology harder to control.<sup>201</sup> In January 2017, the Chinese Communist Party created the Central Commission for Integrated Military and Civilian Development to deepen this coordination. The Commission is led by Chinese President and General Secretary of the Chinese Communist Party Xi Jinping and met for the first time in June 2017.<sup>202</sup>

### ***High-Performance Computing***

"Continued U.S. leadership in high performance computing is essential to our security, prosperity, and economic competitiveness as a nation," noted Secretary of Energy Rick Perry.<sup>203</sup> U.S. national laboratories fund the development of the most advanced supercomputers and their applications that are later incorporated into the commercial sector, providing a competitive advantage in R&D.<sup>204</sup> China's policies aim to reduce the country's dependence on imports of HPC and develop domestic champions through preferential procurement policies and substantial R&D investment.<sup>205</sup> These pol-

icies have not only cut U.S. firms out of the Chinese market, but also are limiting the effectiveness of U.S. export controls and eroding the United States' technological edge in advanced computing.<sup>206</sup> A December 2016 report by the National Security Agency and the Department of Energy reiterated this concern, stating that "absent aggressive action by the U.S.—the U.S. will not control its own future in HPC," and that this "loss of leadership in HPC will severely compromise our national security."<sup>207</sup> For example, the Department of Defense, National Security Agency, and National Nuclear Security Administration rely on access to the most advanced computing for cryptography, weapons testing, and certification of the country's nuclear deterrent. Since these agencies cannot buy these capabilities from overseas, the loss of U.S. leadership in advanced HPC would have direct implications on future strategic deterrent and warfare capabilities.<sup>208</sup>

### ***Cloud Computing***

Beijing's restrictive policies in cloud computing are cutting U.S. firms out of China's growing market in violation of its WTO commitments. Opportunities for U.S. firms are expected to shrink over the next decade as China develops its own indigenous cloud computing hardware and software and expands abroad.<sup>209</sup> In addition, Chinese cloud computing firms' close ties to the Chinese government raise security concerns over the protection of sensitive data such as intellectual property within China and the potential for the government to request access to sensitive data from global customers.<sup>210</sup> The American Chamber of Commerce in China stated in November 2016 that China's restrictions on cross-border data transfers "provide no security benefits," and components of the Cybersecurity Law "will unnecessarily weaken security and potentially expose personal information."<sup>211</sup>

### ***Quantum Information Science***

Remaining at the forefront of quantum information science is critical for U.S. economic competitiveness, leadership in scientific discovery, and national security.<sup>212</sup> If fully operationalized, this next generation of IT will transform existing computing, communication, encryption, and defense technologies and capabilities. Economically, the frontrunner in quantum information science will gain global market dominance, creating numerous jobs and spurring economic growth.<sup>213</sup> Leadership in quantum information science also would have enormous national security benefits stemming from near unbreakable communication security and potential satellite and radar technology developments.<sup>214</sup>

### ***Robotics***

China's development of its industrial and military robotics sector is strengthening the quality and competitiveness of China's manufacturing, military capabilities, intelligence collection, and power projection. As high-value-added products incorporate more embedded computers and advanced sensors and tailor to individual customer demands, automated production is becoming a necessity.<sup>215</sup> U.S. high-tech firms have utilized automated production to make

higher-quality and higher-value-added products. As China enhances its own automated manufacturing, competition for U.S. firms will increase. In addition, the inherent functions of industrial robotics improve the manufacturing quality and productivity of military equipment such as tanks or fighter jets.<sup>216</sup>

Unmanned systems such as drones and self-driving cars are redefining transportation, delivery, construction, agriculture, research, entertainment, and warfare. Leaders in this field will establish market dominance and drive future commercial and military technological innovation. For the military, unmanned systems are an important component in the U.S. Third Offset strategy,\* which seeks to counter Russian and Chinese advancements in antiaccess/area denial (A2/AD) capabilities and cyber and electronic warfare with new technological advances in deep learning, collaborative robotics, nanotechnology, and autonomous systems.<sup>217</sup>

### ***Artificial Intelligence***

While Chinese firms' robust engagement with the U.S. AI community is creating jobs, funding startups, and contributing to new research discoveries, China's industrial policies raise U.S. concerns about fair competition, market access in China, and the role of investments and the potential spillovers from innovative AI research in advancing China's military capacity. The global market for AI-based systems is expected to grow to around \$153 billion by 2020, with \$83 billion in robotics and \$70 billion for AI-based analytics, according to projections from Bank of America Merrill Lynch.<sup>218</sup> The Made in China 2025 Key Area Technology Roadmap aims to increase the domestic market share of Chinese-branded smart manufacturing products to over 60 percent by 2025 and Chinese-branded driver-assisted, partially autonomous vehicles to exceed 50 percent by 2025.<sup>219</sup> Reaching these localization targets would close China's growing market to U.S. and other foreign firms, a major loss of future market and job opportunities.

In May 2017, Daniel R. Coats, Director of National Intelligence, warned that AI advancements in countries such as China could increase the United States' vulnerability to cyber attacks, weaken its ability to attribute such attacks, improve the effectiveness and capabilities of foreign weapon and intelligence systems, create new accident and related liability issues, and reduce employment.<sup>220</sup> In addition, maintaining the U.S. military's edge is becoming increasingly difficult. Elsa Kania, former analyst at the Long Term Strategy Group, found that AI's dual commercial and military application and the private sector's role in driving pioneering research make controlling the transfer and spread of dual-use breakthroughs from the United States to its competitors difficult.<sup>221</sup>

### ***Nanotechnology***

The dual-use applicability of nanotechnology has important implications for the global competitiveness of U.S. IT, healthcare, agricul-

\*The U.S. Third Offset strategy seeks to maintain U.S. technological leadership by developing cutting-edge technologies that will meet future U.S. military requirements and counter advancements by adversaries.

ture, energy, and defense industries.<sup>222</sup> The United States achieved its global leadership in nanotechnology in part due to coordinated federal R&D funding appropriations through the National Nanotechnology Initiative.<sup>223</sup> In his testimony, Dr. Sinko cautioned that “reductions in nano funding would not only lead to reduced global competitiveness in areas such as healthcare, science and technology, and other industries, but also could have serious implications on national defense as more than 60 countries have national nanotechnology development programs with their eye on dual-use technologies.”<sup>224</sup>

### ***Biotechnology***

Despite pressuring China at the U.S.-China Joint Commission on Commerce and Trade and WTO, U.S. and other foreign biotechnology firms continue to face a slow drug approval process, exclusion from China’s drug reimbursement system, intellectual property theft, and preferential treatment for Chinese firms.<sup>225</sup> For example, China’s state-directed policies subsidized the establishment of the world’s largest genomic sequencing firms.<sup>226</sup> This support allows Chinese firms to provide genomics sequencing services at a fraction of the price and speed of U.S. and other foreign genomic sequencing firms, leading U.S. researchers and healthcare facilities to contract with Chinese firms for genetic sequencing and diagnostic processing.<sup>227</sup> While this cheaper processing has accelerated disease research, health diagnostics, and genealogy studies, Mr. You cautioned that this shift has raised new security concerns, including:

- *Regulatory gaps in data privacy:* The Health Insurance Portability and Accountability Act of 1996 (HIPAA) strictly regulates the storage and transfer of personal healthcare data to ensure its security and privacy.<sup>228</sup> However, HIPAA only applies to data collected, stored, or sent by or to healthcare providers and their business associates, healthcare insurance firms, or medical billing clearing houses (see Table 5 for a summary of what data HIPAA protects).<sup>229</sup> Individuals who send their data to new health-related services (such as genetic testing firms) or through their wearable devices are generally not covered under HIPAA.<sup>230</sup> In addition, greater computing power and access to massive amounts of publicly available data on individuals makes it possible to re-identify individuals from de-identified healthcare data—even if the data have been anonymized per HIPAA regulations.<sup>231</sup> In particular, the ability to re-identify individuals combined with the lack of protections for genetic data held by entities not covered by HIPAA have raised concerns among U.S. data privacy advocates over data privacy protections and legal recourse for misuse.<sup>232</sup> If these data are transferred overseas, U.S. agencies such as the Department of Justice, the Federal Bureau of Investigation, and the Department of Health and Human Services may have difficulty conducting investigations and imposing penalties on entities located abroad for HIPAA violations.<sup>233</sup>

**Table 5: Data Covered under HIPAA Protections**

Covered by HIPAA	Covered only if conducted by HIPAA-covered entity	Not Covered by HIPAA
Data collected, stored, or sent by or to HIPAA-covered entities (healthcare providers and their business associates, healthcare insurance firms, or medical billing clearing houses)	Personal healthcare records	All de-identified health-related data
	Clinical data	Healthcare or other data, such as DNA or longitudinal data, sent by individuals to entities not covered by HIPAA, including some genetic testing service firms or precision medicine firms
	Diagnostic processing	Data collected, stored, or sent by or from health-related wearable devices not prescribed by your doctor or from entities not covered by HIPAA

Source: U.S. Department of Health and Human Services, Office of Civil Rights, interview with Commission staff, September 12, 2017.

- Theft of healthcare data for their future value:* Healthcare records and clinical data are not adequately valued or protected for their future role in driving new biotechnology developments.<sup>234</sup> When large amounts of DNA data are combined with longitudinal data from healthcare records, researchers can more accurately account for the genetic, lifestyle, or environmental causes of a disease and guide treatment decisions.<sup>235</sup> The number of cyber attacks against these weakly protected institutions is growing due to the value of these data for fraudulent activity and R&D.<sup>236</sup> In the past few years, systems of U.S. health providers have been penetrated multiple times by perpetrators traced to China. For example, Anthem, which had nearly 80 million patient records hacked in February 2015, and Premera Blue Cross, which had 11 million patient records hacked in March 2015, both attributed their attacks to China-based groups.<sup>237</sup> Beyond health and genetic data, hackers also can gain insight into expensive and time-intensive clinical tests, potentially allowing them to produce new medicines and technologies at a fraction of the cost.
- Lack of data access reciprocity:* Big data, HPC, and AI are critical for discovering new breakthroughs in medical diagnostics, medicines, and synthetic biology, but Chinese regulations severely limit U.S. access to China's data, disadvantaging U.S. researchers, academics, and firms.<sup>238</sup> For example, China's data localization and cross-border data transfer restrictions compel foreign firms to establish joint venture data storage centers in China to store their data and limit the ability of firms and researchers to combine their China-based data with their global databases.<sup>239</sup> By comparison, Chinese firms are expanding their access to diverse genetic information through U.S. acquisitions, accreditation, and contracts to carry out genetic sequencing and other diagnostic testing for U.S. citizens.<sup>240</sup>

- *Speed, scale, and complexity of biotechnology developments outpace regulations:* According to a March 2017 study by the National Academies of Sciences, Engineering, and Medicine, the rapid increase in number, complexity, and range of biotechnology products and breakthroughs will likely outpace existing U.S. government capacity, regulatory risk-assessment processes, and governance systems.<sup>241</sup>
- *Creation of new harmful or hazardous biological agents:* The quick pace of new developments, low cost of genetic sequencing, and the rapid diffusion of technologies and techniques have driven major advancements in the production of microbial genomes and new pharmaceutical production methods, leading to new risks from malevolent or unintentional misuse and outdated regulatory and ethical frameworks.<sup>242</sup> In addition, China—the world’s largest pharmaceutical ingredient manufacturer and exporter and home to the world’s largest genomic sequencing firms—may be a major source of risk.<sup>243</sup> Its chemical and pharmaceutical industries are weakly regulated and monitored and ill equipped to prevent illegal activity in emerging biotechnology areas.<sup>244</sup>

Addendum I: China's Industrial Policies in Five Strategic Sectors

Major Policy Documents	High-Performance Computing	Cloud Computing	Industrial Robotics	Autonomous Systems	Biotechnology
	Made in China 2025 13th Five-Year Strategic Emerging Industries Development Plan	Made in China 2025 Internet Plus National Informationization Development Strategy (2006–2020) 13th Five-Year Strategic Emerging Industries Development Plan Cloud Computing Development Three-Year Action Plan (2017–2019)	Made in China 2025 Internet Plus 13th Five-Year Strategic Emerging Industries Development Plan Robotics Industry Development Plan (2016–2020)	Made in China 2025 Internet Plus 13th Five-Year Strategic Emerging Industries Development Plan Robotics Industry Development Plan (2016–2020) “Internet Plus” Artificial Intelligence Three-Year Action Plan Next-Generation Artificial Intelligence Development Plan	Made in China 2025 Internet Plus 13th Five-Year Strategic Emerging Industries Development Plan 13th Five-Year Bioindustry Development Plan 13th Five-Year Medical Industry Development Plan Healthy China 2030
<b>Regulations</b>	National Security Law Counterterrorism Law Cybersecurity Law	National Security Law Counterterrorism Law Cybersecurity Law	Minimal impact from regulations	Cybersecurity Law	Anti-Monopoly Law Cybersecurity Law National Reimbursed Drug List Administrative Provisions for Drug Registration

Addendum I: China's Industrial Policies in Five Strategic Sectors—Continued

	<b>High-Performance Computing</b>	<b>Cloud Computing</b>	<b>Industrial Robotics</b>	<b>Autonomous Systems</b>	<b>Biotechnology</b>
<b>Select Localization Targets</b>	Supercomputers: 60 percent by 2020; 80 percent by 2025	Financial services and telecommunications computer servers: 75 percent by 2020; 90 percent by 2025 Financial services and telecommunications basic software: 50 percent by 2020; 75 percent by 2025	Industrial robotics: 50 percent by 2020; 70 percent by 2025 Robotic core components: 50 percent by 2020; 70 percent by 2025	Driver-assisted, partially autonomous automobiles: 40 percent by 2020; driver-assisted, partially autonomous, and highly autonomous automobiles: 50 percent by 2025	Advanced medical devices: 50 percent by 2020; 70 percent by 2025
<b>China-specific standards</b>	Technical standards “secure and controllable” requirements	Technical standards Data localization Cross-border data restrictions “secure and controllable” requirements	Technical standards	Technical standards Extensive censorship requirements Cross-border data restrictions	Technical standards Data localization Cross-border data restrictions
<b>Foreign investment restrictions and import guidance</b>	Catalogue on Guiding Foreign Investment				
<b>National champions</b>	Catalogue on Encouraged Imported Technology and Products				
	Lenovo Sugon Inspur Huawei	Alibaba China Telecom Tencent Huawei	Siasun Harbin Boshi Automation	Baidu Dajiang Innovation	BGI Wuxi Healthcare Ventures

Source: Compiled by Commission staff from Chinese government sources, industry reports, and testimony.<sup>245</sup>

## ENDNOTES FOR SECTION 1

1. Stephen J. Ezell and Robert D. Atkinson, "The Vital Importance of High-Performance Computing to U.S. Competitiveness," *Information Technology and Innovation Foundation*, April 2016, 13; National Nanotechnology Infrastructure Network, "Nanotechnology Careers"; Biotechnology Innovation Organization and Teconomy Partners LLC, *The Value of Bioscience Innovation in Growing Jobs and Improving Quality of Life*, June 7, 2016, 9–15.
2. Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 48.
3. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016; Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016; Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016.
4. People's Republic of China, *13th Five-Year Plan on National Economic and Social Development*, March 17, 2016. Translation; Central Compilation and Translation Press, Central Committee of the Communist Party of China, *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China*; Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016.
5. Robert H. Wade, "Chapter 14 - The Paradox of US Industrial Policy: The Developmental State in Disguise," *Transforming Economies*.
6. Jeffrey Ball et al., "The New Solar System: China's Evolving Solar Industry and Its Implications for Competitive Solar Power in the United States and the World," *Stanford University, Steyer-Taylor Center for Energy Policy and Finance*, March 2017, 18, 29; World Bank, "Quarterly Report: Commodity Markets Outlook," April 2017, 27, 39.
7. U.S.-China Economic and Security Review Commission, *Hearing on China Ahead of the 13th Five-Year Plan: Competitiveness and Market Reform*, written testimony of Oliver K. Melton, April 22, 2015, 10.
8. Becky Beetz and Wenjing Feng, "China: 2.83 GW of Solar to be Installed under Golden Sun Program," *PV Magazine*, December 11, 2012.
9. Mercom Capital Group, "Loans and Credit Agreements Involving Chinese Banks to Chinese Solar Companies since January 2010," *EU ProSun*.
10. John Fialka, "Why China Is Dominating the Solar Industry," *Scientific American*, December 19, 2016; Eric Wesoff, "The Mercifully Short List of Fallen Solar Companies: 2015 Edition," *Greentech Media*, December 1, 2015.
11. Dennis Normile, "China Cracks Down after Investigation Finds Massive Peer-Review Fraud," *Science*, July 31, 2017.
12. House Committee on Foreign Affairs, Subcommittee on Asia and the Pacific, *Hearing on China's Technological Rise: Challenges to U.S. Innovation and Security*, written testimony of Robert D. Atkinson, April 26, 2017, 5.
13. Donald J. Trump, *Presidential Memorandum for the United States Trade Representative*, August 14, 2017; Office of the U.S. Trade Representative, *USTR Announces Initiation of Section 301 Investigation of China*, August 18, 2017.
14. Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation; U.S.-China Business Council, "Unofficial USCBC Chart of Localization Targets by Sector Set in the MIIT Made in China 2025 Key Technology Roadmap," February 2, 2016; U.S.-China Economic and Security Review Commission, *Hearing on the Extent of the Government's Control of China's Economy, and Implications for the United States*, written testimony of George T. Haley, May 24–25, 2007; U.S.-China Economic and Security Review Commission, Chapter 1, Section 1, "The Relationship's Current Status and Significant Changes during 2007," in *2007 Annual Report to Congress*, November 2007, 38–39.
15. Becky Beetz and Wenjing Feng, "China: 2.83 GW of Solar to be Installed under Golden Sun Program," *PV Magazine*, December 11, 2012.

16. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 24.
17. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 44.
18. Sally Bakewell, "Goldwind Signs \$5.5 Billion China Development Bank Wind Pact," *Bloomberg*, January 31, 2012.
19. Organization for Economic Cooperation and Development, "Research and Development Data," June 2017.
20. Marisa L. Conte et al., "Globalization and Changing Trends of Biomedical Research Output," *JCI Insight* 2:12 (2017): 2.
21. U.S.-China Business Council, "China's Strategic Emerging Industries: Policy, Implementation, Challenges, & Recommendations," March 2013, 11–12.
22. U.S.-China Economic and Security Review Commission, *Hearing on China's 13th Five-Year Plan*, written testimony of Crystal Chang, April 27, 2016, 2–3.
23. U.S.-China Economic and Security Review Commission, Chapter 1, Section 2, "Foreign Investment Climate in China," in *2015 Annual Report to Congress*, November 2015, 84–86.
24. Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 101–102.
25. Li Xiaohua, "China to Undergo Brain Gain through Plan 111," *China Internet Information Center*, September 14, 2006.
26. U.S. Department of Justice, *Summary of Major U.S. Export Enforcement, Economic Espionage, Trade Secret and Embargo-related Criminal Cases*, February 2017; Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 95.
27. State Council of the People's Republic of China, *Made in China 2025*, May 8, 2015. Translation; State Council of the People's Republic of China, *Internet Plus Action Plan*, July 1, 2015. Translation; State Council of the People's Republic of China, *Opinions on Further Implementation of the Internet Plus Action Plan*, April 15, 2015. Translation; People's Republic of China, *13th Five-Year Plan on National Economic and Social Development*, March 17, 2016. Translation.
28. State Council of the People's Republic of China, *Made in China 2025*, May 8, 2015. Translation.
29. State Council of the People's Republic of China, *Made in China 2025*, May 8, 2015. Translation; U.S.-China Economic and Security Review Commission, *Hearing on China's Five-Year Plan, Indigenous Innovation and Technology Transfers, and Outsourcing*, written testimony of Willy C. Shih, June 15, 2011; U.S.-China Economic and Security Review Commission, *Hearing on the Extent of the Government's Control of China's Economy, and Implications for the United States*, written testimony of George T. Haley, May 24–25, 2007; U.S.-China Economic and Security Review Commission, Chapter 1, Section 1, "The Relationship's Current Status and Significant Changes during 2007," in *2007 Annual Report to Congress*, November 2007, 38–39.
30. State Council of the People's Republic of China, *Internet Plus Action Plan*, July 1, 2015. Translation; State Council of the People's Republic of China, *Opinions on Further Implementation of the Internet Plus Action Plan*, April 15, 2015. Translation.
31. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 20–21, 61–63.
32. Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation; U.S.-China Business Council, "Unofficial USCBC Chart of Localization Targets by Sector Set in the MIIT Made in China 2025 Key Technology Roadmap," February 2, 2016; U.S. Chamber of Commerce, *Made in China 2025: Global Ambitions Built on Local Protectionism*, March 16, 2017, 65–80.
33. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 20–21.
34. U.S. Chamber of Commerce, *Made in China 2025: Global Ambitions Built on Local Protectionism*, March 16, 2017, 7.
35. PricewaterhouseCoopers, "A Decade of Unprecedented Growth: China's Impact on the Semiconductor Industry 2014 Update," January 2015, 74; Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016,

23; Xinhua, "China Establishes Fund to Invest in Advanced Manufacturing," *China Daily*, June 8, 2016; Engen Tham and David Stanway, "China Launches \$30 Bln State-Controlled Venture Capital Fund," Reuters, August 18, 2016; Xinhua, "China Launches \$14.6B Internet Investment Fund," *State Council of the People's Republic of China*, January 23, 2017; Ministry of Industry and Information Technology of the People's Republic of China, *Ministry of Industry and Information Technology and the China Development Bank Jointly Agree to Sign an Agreement to Advance the 'Made in China 2025' Initiative*, November 9, 2016. Translation; Elias Glenn, "China State Firms Set up 150 Billion Yuan Fund to Invest in New Technologies: Xinhua," Reuters, May 16, 2017.

36. Stephen J. Ezell and Robert D. Atkinson, "The Vital Importance of High-Performance Computing to U.S. Competitiveness," *Information Technology and Innovation Foundation*, April 2016.

37. Executive Office of the President, *Fact Sheet: National Strategic Computing Initiative*, July 29, 2015; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 2-4.

38. White House, *National Strategic Computing Initiative Strategic Plan*, July 2016, 13; Stephen J. Ezell and Robert D. Atkinson, "The Vital Importance of High-Performance Computing to U.S. Competitiveness," *Information Technology and Innovation Foundation*, April 2016, 5.

39. Asian Technology Information Program, "High-Performance Computing (HPC) Environment in China," February 29, 2016; Tai Ming Cheung, Director of the University of California Institute of Global Conflict and Cooperation, University of California - San Diego, interview with Commission staff, September 18, 2017; Jack Dongarra, *Report on the Sunway TaihuLight System*, June 24, 2016, 11; Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015, 14. Translation.

40. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 8; Jack Dongarra, *Report on the Sunway TaihuLight System*, June 24, 2016, 11; Patrick Rhibodeau, "U.S. Sets Sights on 300 Petaflop Supercomputers," *ComputerWorld*, November 14, 2014; Oak Ridge National Laboratory, "Summit." <https://www.olcf.ornl.gov/summit/>; Lawrence Livermore National Laboratory, "CORAL/Sierra." <https://asc.llnl.gov/coral-info>.

41. Jeffrey Burt, "Rise of China, Real-World Benchmarks Top Supercomputing Agenda," *Next Platform*, February 7, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 23.

42. Top 500, "List Statistics," June 2017. <https://www.top500.org/statistics/list/>.

43. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 8; Jack Dongarra, *Report on the Sunway TaihuLight System*, June 24, 2016, 4.

44. Top 500, "List Statistics," June 2017.

45. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 19.

46. Top 500, "List Statistics," June 2017.

47. ACM, "Chinese Research Team That Employs High Performance Computing to Understand Weather Patterns Wins 2016 ACM Gordon Bell Prize," November 17, 2016.

48. Jeffrey Burt, "Rise of China, Real-World Benchmarks Top Supercomputing Agenda," *Next Platform*, February 7, 2017.

49. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 10; Doit, "2016 China HPC Top 100 List Released," October 28, 2016. Translation. <http://www.doit.com.cn/p/258824.html>.

50. Zhang Yunquan et al., *2011 China TOP100 List of High Performance Computer*, November 2011; Doit, "2016 China HPC Top 100 List Released," October 28, 2016. Translation.

51. Zhang Yunquan et al., *2011 China TOP100 List of High Performance Computer*, November 2011; Doit, "2016 China HPC Top 100 List Released," October 28, 2016. Translation.

52. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 20–21.
53. Top 500, "List Statistics," June 2017.
54. Top 500, "List Statistics," June 2014.
55. Top 500, "List Statistics," June 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 15.
56. Stephen J. Ezell and Robert D. Atkinson, "The Vital Importance of High-Performance Computing to U.S. Competitiveness," *Information Technology and Innovation Foundation*, April 2016, 4; *China Daily*, "China to Jump Supercomputer Barrier," February 20, 2017.
57. *China Daily*, "China to Jump Supercomputer Barrier," February 20, 2017.
58. Michael Feldman, "First US Exascale Supercomputer Now on Track for 2021," *Top 500*, December 10, 2016.
59. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 23.
60. Networking and Information Technology Research and Development (NITRD) Program, *U.S. Leadership in High Performance Computing: A Report from the NSA-DOE Technical Meeting on High Performance Computing*, December 1, 2016.
61. Federal Register, *Addition of Certain Persons to the Entity List; and Removal of Person from the Entity List Based on a Removal Request*, 80:32, February 18, 2015.
62. Tiffany Trader, "China Sets Ambitious Goal to Reach Exascale by 2020," *HPC Wire*, May 2, 2016; Top 500, "List Statistics," June 2017.
63. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 1–2.
64. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 3–4.
65. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 7; Mark Brinda, Partner, Bain and Company, interview with Commission staff, June 13, 2017.
66. Mark Brinda, Partner, Bain and Company, interview with Commission staff, June 13, 2017.
67. Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 188; Leigh Ann Ragland et al., "Red Cloud Rising: Cloud Computing in China" (prepared for the U.S.-China Economic and Security Review Commission), *Defense Group, Inc.*, September 5, 2013, 48; Xinhua, "China to Invest 1.2 Trillion Yuan in Information Infrastructure," *China Daily*, January 13, 2017.
68. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 5, 9.
69. People's Republic of China, *The Government Procurement Law of the People's Republic of China, Order of the President of the People's Republic of China*, No. 68, June 29, 2002.
70. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 8.
71. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 11.
72. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 12.
73. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017.
74. Renee Barry and Matthew Reisman, "Policy Challenges of Cross-Border Cloud Computing (May 2012)," *Journal of International Commerce and Economics* 4:2 (November 2012).

75. Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 184–192.
76. Scott Charney, "New Beijing Transparency Center Announced," *Microsoft*, September 19, 2016.
77. Nick Marro, "Decoding China's Approach to Data Security," *Diplomat*, December 10, 2016.
78. Scott Thiel, Carolyn Bigg, and Paula Cao, "PRC Cybersecurity Law: Take Action and Monitor Developments to Avoid Losing Your China Business," *DLA Piper*, June 21, 2017.
79. U.S.-China Business Council, "Technology Security and IT in China: Benchmarking and Best Practices," July 2016, 12; Nick Marro, "Decoding China's Approach to Data Security," *Diplomat*, December 10, 2016.
80. Gidon Gautel, "Establishing a Data Center in China," *China Briefing*, July 26, 2017.
81. *Business Cloud News*, "21Vianet, Microsoft Renew Vows on Chinese Public Cloud Services," April 7, 2015.
82. IBM, "Wanda and IBM Sign Agreement to Bring IBM Cloud to China through New Wanda Cloud Company," March 19, 2017.
83. Paul Mozur, Daisuke Wakabayashi, and Nick Wingfield, "Apple Opening Data Center in China to Comply with Cybersecurity Law," *New York Times*, July 12, 2017.
84. Liza Lin, "Tencent Expands Its Cloud-Computing Services in U.S.," *Dow Jones Newswire*, April 26, 2017.
85. *China Law Translate*, "2016 Cybersecurity Law."
86. Nick Marro, "Decoding China's Approach to Data Security," *Diplomat*, December 10, 2016; Daniel Castro and Alan McQuinn, "Cross-Border Data Flows Enable Growth in All Industries," *Information Technology and Innovation Foundation*, February 2015.
87. Office of the United States Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*, April 2017, 89.
88. U.S. Chamber of Commerce, "Made in China 2025: Global Ambitions Built on Local Protectionism," March 16, 2017, 7.
89. Office of the United States Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*, April 2017, 89.
90. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 2; Charles Bennett, "Introduction to Quantum Information Theory," *IBM*.
91. Seth Lloyd, "How Does Teleportation Work?" *World Science Festival*, October 22, 2015; *Economist*, "The First Quantum-Cryptographic Satellite Network Will Be Chinese," August 31, 2017.
92. Seth Lloyd, "How Does Teleportation Work?" *World Science Festival*, October 22, 2015; *Economist*, "The First Quantum-Cryptographic Satellite Network Will Be Chinese," August 31, 2017.
93. Interagency Working Group on Quantum Information Science of the Subcommittee on Physical Sciences, "Advancing Quantum Information Science: National Challenges and Opportunities," July 2016.
94. Interagency Working Group on Quantum Information Science of the Subcommittee on Physical Sciences, "Advancing Quantum Information Science: National Challenges and Opportunities," July 2016, 1, 6; IBM, "Applications of Quantum Computing."
95. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 6, 21–25.
96. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 4–5; Cindy Hurst, "The Quantum Leap into Computing and Communication: A Chinese Perspective," *Joint Force Quarterly* 77 (April 1, 2015).
97. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 1. Yuan Yang, "China Trial Paves Way for 'Unhackable' Communications Network," *Financial Times*, July 10, 2017.
98. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2017, 34.

99. Juan Yin et al., "Satellite-based Entanglement Distribution over 1200 Kilometers," *Science* 356:6343 (June 16, 2017): 1140–1144; Phys.org, "143 km: Physicists Break Quantum Teleportation Distance," September 5, 2012.
100. Ji-Gang Ren et al., "Ground-to-Satellite Quantum Teleportation," *Nature* (August 9, 2017).
101. Sheng-Kai Liao et al., "Satellite-to-Ground Quantum Key Distribution," *Nature* (August 9, 2017).
102. Amy Nordrum, "China Demonstrates Quantum Encryptions by Hosting a Video Call," *IEEE Spectrum*, October 3, 2017.
103. *China Daily*, "World's First Secure Quantum Communication Line in China Gets Green Light," September 6, 2017.
104. Rachel Courtland, "China's 2,000-km Quantum Link Is Almost Complete," *IEEE Spectrum*, October 26, 2016; *China Daily*, "World's First Secure Quantum Communication Line in China Gets Green Light," September 6, 2017.
105. Xinhua, "China's First Commercial Quantum Private Communication Network Completed," *China Daily*, September 13, 2017; Stephen Chen, "Chinese City to Launch 'Unhackable' Quantum Network," *South China Morning Post*, July 10, 2017; Zhang Zhihao, "Quantum Tech to Link Jinan Governments," *China Daily*, July 11, 2017.
106. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 1.
107. *Economist*, "Here, There, and Everywhere," March 9, 2017.
108. Davide Castelvecchi, "China's Quantum Satellite Clears Major Hurdle on Way to Ultrasecure Communications," *Nature*, June 15, 2017; *Economist*, "Here, There, and Everywhere," March 9, 2017; Elsa Kania and Stephen Armitage, "Disruption under the Radar: Chinese Advances in Quantum Sensing," *China Brief* 17:11 August 17, 2017; Elizabeth Gibney, "Europe Set to Invest in Quantum Tech," *Scientific American*, May 3, 2017.
109. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of John Costello, March 16, 2017, 15.
110. Interagency Working Group on Quantum Information Science of the Subcommittee on Physical Sciences, *Advancing Quantum Information Science: National Challenges and Opportunities*, July 2016, 8–9.
111. Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016.
112. International Federation of Robotics, "Executive Summary," *World Robotics 2016 Industrial Robotics*, 11; Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 15, 27–28.
113. International Federation of Robotics, *World Robotics 2016 Industrial Robotics: Executive Summary*, 15.
114. Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 17, 29; Bloomberg News, "Resistance Is Futile: China's Conquest Plan for Robot Industry," April 24, 2017.
115. Bloomberg News, "Resistance Is Futile: China's Conquest Plan for Robot Industry," April 24, 2017; Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation; U.S. Chamber of Commerce, *Made in China 2025: Global Ambitions Built on Local Protectionism*, March 16, 2017, 69–70.
116. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 44.
117. Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 44; U.S.-China Economic and Security Review Commission, *Hearing on China Ahead of the 13th Five-Year Plan: Competitiveness and Market Reform*, written testimony of Oliver K. Melton, April 22, 2015, 12; Iacob Koch-Weser and Ethan Meick, "China's Wind and Solar Sectors: Trends in Deployment, Manufacturing, and Energy Policy," *U.S.-China Economic and Security Review Commission*, March 9, 2015.
118. Mandy Zuo, "China's Robot Industry 'Plagued by Low Quality, Overinvestment and Too Much Duplication,'" *South China Morning Post*, June 17, 2016; "MIIT

Vice Minister Xin Guobin: Worries That Robotics Already Has Surplus Investment,” *Sina*, June 16, 2016, Translation.

119. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Henrik I. Christensen, March 16, 2017, 6.

120. Jost Wubbeke et al., “Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries,” *Mercator Institute for China Studies*, December 2016, 52.

121. Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 84.

122. Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 101–102.

123. Farhad Manjoo, “How to Make America’s Robots Great Again,” *New York Times*, January 25, 2017.

124. Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 9–10.

125. Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 95.

126. Daniel Schaefer, “Mapping the Rise of China’s Commercial Drone Industry,” *China Briefing*, December 29, 2016.

127. David Hambling, “7 Reasons DJI Won the Drone Wars,” *Popular Mechanics*, December 10, 2015.

128. David Hambling, “7 Reasons DJI Won the Drone Wars,” *Popular Mechanics*, December 10, 2015; Mike Murphy, “America’s Top Drone Company Couldn’t Beat China’s DJI, So Now They’re Partners,” *Quartz*, August 1, 2017.

129. Manju Bansal, “AI Is the New Black,” *MIT Technology Review*, February 27, 2017.

130. National Science and Technology Council, Networking and Information Technology Research and Development Subcommittee, *The National Artificial Intelligence Research and Development Strategic Plan*, October 2016, 8–9.

131. Central Compilation and Translation Press, Central Committee of the Communist Party of China, *The 13th Five-Year Plan for Economic and Social Development of the People’s Republic of China (2016–2020)*, 64; People’s Republic of China, *13th Five-Year Plan on National Economic and Social Development*, March 17, 2016. Translation.

132. State Council, *Next-Generation Artificial Intelligence Development Plan*, July 20, 2017, Translation; Graham Webster et al., “A Next Generation Artificial Intelligence Development Plan,” *China Copyright and Media*, July 20, 2017.

133. Li Yuan, “China Gears Up in Artificial-Intelligence Race,” *Wall Street Journal*, August 24, 2016.

134. Nicky Capella, “China Launches Deep Learning Lab for AI Dominance,” *Stack*, February 21, 2017; Dave Gershgorn, “China Is Funding Baidu to Take on the US in Deep-Learning Research,” *Quartz*, February 22, 2017.

135. Nicky Capella, “China Launches Deep Learning Lab for AI Dominance,” *Stack*, February 21, 2017.

136. Paul Mozur, “Beijing Wants A.I. to Be Made in China by 2030,” *New York Times*, July 20, 2017; Paul Mozur and John Markoff, “Is China Outsmarting America in A.I.?” *New York Times*, May 27, 2017.

137. Executive Office of the President, National Science and Technology Council, Committee on Technology, *Preparing for the Future of Artificial Intelligence*, October 2016, 25.

138. Paul Daugherty, “How China Became an AI Leader,” *World Economic Forum*, June 26, 2017.

139. Daniela Hernandez, “‘Chinese Google’ Opens Artificial-Intelligence Lab in Silicon Valley,” *Wired*, April 12, 2013; April Ma, “Baidu Set to Open Second AI Lab in Silicon Valley,” *Caixin*, March 27, 2017; Jon Russell, “China’s Didi Chuxing Opens U.S. Lab to Develop AI and Self-Driving Car Tech,” *TechCrunch*, March 8, 2017; John Mannes, “Tencent to Open AI Research Center in Seattle,” *TechCrunch*, April 28, 2017.

140. Paul Mozur and John Markoff, “Is China Outsmarting America in A.I.?” *New York Times*, May 27, 2017.

141. Neurala, “Tim Draper and Haiyin Capital Lead \$1.2-Million of New Investment in Neurala,” June 2, 2016; *Marketwired*, “Baidu Further Strengthens Visual

Perception Capabilities with Acquisition of xPerception,” *Yahoo Finance*, April 13, 2017; John Cook, “Chinese Search Giant Baidu Buys Seattle Startup Kitt.ai to Connect Natural Language Tech to Developers,” *GeekWire*, July 5, 2017; Carolyn Giardina, “AI Start-Up Ōben Raises \$5 Million Led by Tencent,” *Hollywood Reporter*, July 18, 2017.

142. Mark Hanrahan, “Dell Inc Announces \$125B Investment in China, Including Artificial Intelligence Lab” *International Business Times*, September 10, 2015; Jack Clark, “Dell Expands in China with Venture Group, Creates AI Lab” *Bloomberg Technology*, September 9, 2015.

143. Darrell Etherington, “Nvidia and Baidu Partner on a ‘Top-to-Bottom’ Platform for Self-Driving Cars,” *TechCrunch*, August 31, 2016; Trefis Team, “Here’s How Baidu Can Benefit from Its Partnership with nVidia in Self-Driving Cars,” *Fortune*, September 12, 2016; Michael Feldman, “Baidu Deepens Partnership with NVIDIA, Will Bring Volta GPUs into Their Cloud,” *Top 500*, July 6, 2017.

144. Huawei, “Huawei and UC Berkeley Announce Strategic Partnership into Basic AI Research,” October 11, 2016.

145. Todd Bishop, “Baidu Hires Ex-Microsoft Exec Qi Lu as President, to Lead New AI Push for Chinese Search Engine,” *GeekWire*, January 17, 2017; Cate Cadell, “Baidu Has Hired an AI Guru from Microsoft,” Reuters, January 17, 2017; Reuters, “A Chinese Tech Giant Is Setting up an A.I. Research Lab on Amazon’s Home Turf,” CNBC, May 2, 2017.

146. *Economist*, “China May Match or Beat America in AI,” July 15, 2017; Jessi Hempel, “How Baidu Will Win China’s AI Race—And, Maybe, The World’s,” *Wired*, August 9, 2017.

147. Alex Konrad, “China’s AI Advantage: Why Google China’s Founder Sees the U.S. Losing Its Edge,” *Forbes Asia*, June 2017.

148. Graham Templeton, “How Baidu Created ‘DeepVoice,’ Its Incredible Text-to-Speech Algorithm,” *Inverse*, March 9, 2017.

149. John Markoff and Matthew Rosenberg, “China’s Intelligence Weaponry Gets Smarter,” *New York Times*, February 3, 2017.

150. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 1; Jonathan Ray et al., “China’s Industry and Military Robotics Development,” *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016, 89.

151. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 3, 5.

152. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 6.

153. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 10–13.

154. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 10.

155. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 3.

156. Suzhou Nanotech Co. Ltd. and NanoGlobe Ptd. Ltd., “Nanotechnology Capabilities Report of Suzhou, China,” 2011, 4, 8–11.

157. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 9; Yu Gao, “China and the United States—Global Partners, Competitors, and Collaborators in Nanotechnology Development,” *Nanomedicine: Nanotechnology, Biology, and Medicine* 12 (2016): 13–19; Haiyan Dong et al., “The Nanotechnology Race between China and the United States,” *Nanotoday* 11 (2016): 7–12.

158. Haiyan Dong et al., “The Nanotechnology Race between China and the United States,” *Nanotoday* 11 (2016).

159. Yu Gao, “China and the United States—Global Partners, Competitors, and Collaborators in Nanotechnology Development,” *Nanomedicine: Nanotechnology, Biology, and Medicine*, 12 (2016): 13–19.

160. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 15.

161. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 2–5.
162. Eleonore Pauwels and Apratim Vidyarthi, “Who Will Own the Secrets in Our Genes? A U.S.-China Race in Artificial Intelligence and Genomics,” *Wilson Center*, February 2017.
163. Eleonore Pauwels and Apratim Vidyarthi, “Who Will Own the Secrets in Our Genes? A U.S.-China Race in Artificial Intelligence and Genomics,” *Wilson Center*, February 2017; Federal Bureau of Investigation, *Safeguarding the Bioeconomy III: Securing Life Sciences Data: Meeting Recap*, October 20–21, 2016.
164. Antonio Regalado, “U.S. Panel Endorses Designer Babies to Avoid Serious Disease,” *MIT Technology Review*, February 14, 2017; Kenneth A. Oye, Maureen O’Leary, and Margaret F. Riley, “Revisit NIH Biosafety Guidelines,” *Science* 357:6352 (August 18, 2017), 627.
165. Shan Juan, “Big Gene Bank to Anchor Precision Medicine,” *China Daily*, December 8, 2015.
166. Qimin Zhan and Haili Qian, “Opportunities and Advantages for the Development of Precision Medicine in China,” *Precision Medicine in China*, December 23, 2016, 7.
167. Joseph Wong and Xiaoru Fei, “Life Science Innovation in China,” *National Bureau of Asian Research* 56 (April 2016): 3–22; U.S.-China Business Council, *The Pulse of China's Healthcare*, April 2017.
168. Asian Technology Information Program, “Genome Editing Technology in China,” August 17, 2016, 6.
169. Asian Technology Information Program, “Genome Editing Technology in China,” August 17, 2016, 39.
170. Shan Juan, “Genetic Predictions Fail to Pass the Test,” *China Daily*, April 6, 2016.
171. Office of The White House, *Fact Sheet: President Obama's Precision Medicine Initiative*, January 30, 2015.
172. Ylan Q. Mui, “China's \$9 Billion Effort to Beat the U.S. in Genetic Testing,” *Washington Post*, December 30, 2016.
173. Megan Molteni, “A Chinese Genome Giant Sets Its Sights on the Ultimate Sequencer,” *Wired*, May 18, 2017.
174. David Cyranoski, “China's Bid To Be a DNA Superpower,” *Nature*, June 22, 2016: 462–463.
175. Megan Molteni, “A Chinese Genome Giant Sets Its Sights on the Ultimate Sequencer,” *Wired*, May 18, 2017.
176. Asian Technology Information Program, “Genome Editing Technology in China,” August 17, 2016, 24–25.
177. Tim De Chant and R.A. Becker, “Scientists Genetically Modify Human Embryos,” *Public Broadcasting Station*, April 23, 2015.
178. Tim De Chant and R.A. Becker, “Scientists Genetically Modify Human Embryos,” *Public Broadcasting Station*, April 23, 2015.
179. David Cyranoski, “CRISPR Gene-Editing Tested in a Person for the First Time,” *Nature*, November 15, 2016.
180. Steve Connor, “First Human Embryos Editing in U.S.,” *MIT Technology Review*, July 26, 2017; *Nature*, “Commit to Talks on Patient Data and Public Health,” 548:137 (August 10, 2017).
181. Robert Pear, “U.S. to Collect Genetic Data to Hone Care,” *New York Times*, January 30, 2015.
182. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, oral testimony of Edward H. You, March 16, 2017, 220.
183. Zhengxin Yanhong, “Ministry of Public Security Convened a Seminar on Building and Utilizing the DNA Database,” *China Police Network*, October 15, 2015; Human Rights Watch, “China: Police DNA Database Threatens Privacy,” May 15, 2017.
184. Federal Bureau of Investigation, *CODIS—NDIS Statistics*.
185. PR Newswire, “BGI Receives Accreditation from the College of American Pathologists (CAP),” July 2, 2015; Autism Speaks, “Whole Genome Sequencing To Be Completed on 10,000 Individuals,” October 13, 2011; Children's Hospital of Philadelphia, “CHOP and BGI to Offer Next-Generation Sequencing,” October 25, 2012; BGI, “BGI Tech and South Texas Accelerated Research Therapeutics Initiate Collaboration to Advance Unique San Antonio 1000 Cancer Genome Project,” *PR Newswire*, September 12, 2013; BGI, “BGI and Allen Institute Sign Scientific Memorandum of Understanding,” April 20, 2017.

186. Novogene Corporation, “Novogene Establishes First U.S. Genomic Sequencing Center Located at UC Davis; Acquires Second Illumina Hi-Seq X Ten System,” April 14, 2016.
187. BGI, “China National Genebank Officially Opens,” September 22, 2016.
188. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Benjamin A. Shobert, March 16, 2017, 5; Andrew Ward, “China’s Biotech Revolution Ushered in by Entrepreneurs,” *Financial Times*, March 7, 2016.
189. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 8–10, 12.
190. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 9.
191. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 6–7; U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Benjamin A. Shobert, March 16, 2017, 10.
192. David J. Lynch, “Biotechnology: The US-China Dispute over Genetic Data,” *Financial Times*, July 31, 2017.
193. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 6–7; PuraCap Pharmaceutical, “Humanwell Healthcare Group and PuraCap Pharmaceutical LLC to Acquire Epic Pharma, LLC,” *PR Newswire*, March 31, 2016; PatientsLikeMe, “PatientsLikeMe Partners with iCarbonX and Secures \$100+ Million Investment.”
194. Marisa L. Conte et al., “Globalization and Changing Trends of Biomedical Research Output,” *JCI Insight* 2:12 (2017): 2.
195. Asian Technology Information Program, “Genome Editing Technology in China,” August 17, 2016, 26.
196. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Benjamin A. Shobert, March 16, 2017, 2–3, 13.
197. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Benjamin A. Shobert, March 16, 2017, 2–4.
198. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, oral testimony of Henrik I. Christensen, March 16, 2017, 112.
199. Elsa Kania, “The Dual-Use Dilemma in China’s New AI Plan: Leveraging Foreign Innovation Resources and Military-Civil Fusion,” *Lawfare*, July 28, 2017.
200. Central Compilation and Translation Press, Central Committee of the Communist Party of China, *The 13th Five-Year Plan for Economic and Social Development of the People’s Republic of China*; Xiang Bo, “China’s Xi Calls for Closer Civil-Military Integration to Boost Army Combativeness,” *Xinhua*, March 12, 2015; Joel Wuthnow and Phillip C. Saunders, “Chinese Military Reforms in the Age of Xi Jinping: Drivers, Challenges, and Implications,” *China Strategic Perspectives*, 10 (March 2017): 35–37.
201. Elsa Kania, “The Dual-Use Dilemma in China’s New AI Plan: Leveraging Foreign Innovation Resources and Military-Civil Fusion,” *Lawfare*, July 28, 2017; Senate Select Committee on Intelligence, *Hearing on the Worldwide Threat Assessment of the US Intelligence Community*, written testimony of Daniel R. Coats, May 11, 2017, 3–4.
202. Zhao Lei, “Xi: Integrate Military and Civil Sectors,” *China Daily*, June 21, 2017.
203. U.S. Department of Energy, *Department of Energy Awards Six Research Contracts Totaling \$258 Million to Accelerate U.S. Supercomputing Technology*, June 15, 2017.
204. Stephen J. Ezell and Robert D. Atkinson, “The Vital Importance of High-Performance Computing to U.S. Competitiveness,” *Information Technology and Innovation Foundation*, April 2016, 42.
205. Tai Ming Cheung, Director of the University of California Institute of Global Conflict and Cooperation, University of California, San Diego, interview with Commission staff, September 18, 2017; Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation; U.S.-China Business

Council, “Unofficial USCBC Chart of Localization Targets by Sector Set in the MIIT Made in China 2025 Key Technology Roadmap,” February 2, 2016.

206. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Addison Snell, March 16, 2017, 20, 23.

207. Networking and Information Technology Research and Development (NITRD) Program, *U.S. Leadership in High Performance Computing (HPC), A Report from the NSA-DOE Technical Meeting on High Performance Computing*, December 1, 2016, 5–6.

208. Networking and Information Technology Research and Development (NITRD) Program, *U.S. Leadership in High Performance Computing (HPC), A Report from the NSA-DOE Technical Meeting on High Performance Computing*, December 1, 2016, 3.

209. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 13.

210. Dezan Shira and Associates, “China’s Cloud Computing Services—Security Concerns and Solutions for Foreign Businesses,” *China Briefing*, November 19, 2015.

211. James Zimmerman, “AmCham China Statement on Cybersecurity Law,” *American Chamber of Commerce in China*, November 7, 2016.

212. Interagency Working Group on Quantum Information Science of the Subcommittee on Physical Sciences, *Advancing Quantum Information Science: National Challenges and Opportunities*, July 2016, 3.

213. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, oral testimony of John Costello, March 16, 2017, 106–107.

214. John Costello and Elsa Kania, “Quantum Leap (Part 1): China’s Advanced in Quantum Information Science,” *China Brief* 16:18 (December 5, 2016); Elsa Kania and Stephen Armitage, “Disruption under the Radar: Chinese Advances in Quantum Sensing,” *China Brief* 17:11 (August 17, 2017).

215. University of California San Diego et al., “A Roadmap for US Robotics from Internet to Robotics—2016 Edition,” November 7, 2016, 9.

216. Jonathan Ray et al., “China’s Industry and Military Robotics Development” (prepared for the U.S.-China Economic and Security Review Commission), *Defense Group, Inc.*, October 25, 2016, 10.

217. Jonathan Ray et al., “China’s Industry and Military Robotics Development” (prepared for the U.S.-China Economic and Security Review Commission), *Defense Group, Inc.*, October 25, 2016, 48.

218. Grayson Brulte, “The AI Market Will Soon Top \$150 Billion. Get a Piece of It,” *GE Reports*, June 29, 2016.

219. Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation, 21, 114; U.S. Chamber of Commerce, *Made in China 2025: Global Ambitions Built on Local Protections*, March 16, 2017, 68, 76.

220. Senate Select Committee on Intelligence, *Hearing on the Worldwide Threat Assessment of the US Intelligence Community*, written testimony of Daniel R. Coats, May 11, 2017, 3–4.

221. Elsa Kania, “China May Soon Surpass America on the Artificial Intelligence Battlefield,” *National Interest*, February 21, 2017.

222. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Patrick J. Sinko, March 16, 2017, 16.

223. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, oral testimony of Patrick J. Sinko, March 16, 2017, 150.

224. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, oral testimony of Patrick J. Sinko, March 16, 2017, 150.

225. Office of the U.S. Trade Representative, *2016 Report to Congress on China’s WTO Compliance*, January 2017, 116–119.

226. David Cyranoski, “China’s Bid to Be a DNA Superpower,” *Nature* (June 22, 2016).

227. U.S.-China Economic and Security Review Commission, *Hearing on China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 2–3.

228. U.S. Department of Health and Human Services, *Summary of the HIPAA Security Rule*, July 23, 2013.

229. U.S. Department of Health and Human Services, Office of Civil Rights, interview with Commission staff, September 12, 2017; U.S. Department of Health and Human Services, Office of Civil Rights, *Covered Entities and Business Associates*, June 16, 2017.

230. U.S. Department of Health and Human Services, Office of Civil Rights, interview with Commission staff, September 12, 2017.

231. Erika Check Hayden, "Privacy Protections: The Genome Hacker," *Nature*, May 8, 2013; Peter Pitts, "The Privacy Delusions of Genetic Testing," *Forbes*, February 15, 2017.

232. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 2–3; Peter Pitts, "The Privacy Delusions of Genetic Testing," *Forbes*, February 15, 2017.

233. U.S. Department of Health and Human Services, Office of Civil Rights, interview with Commission staff, September 12, 2017; Kevin McDonald, "Unclear HIPAA Rules Permit Healthcare Data Offshoring ... For Now," *Tech Target*, July 11, 2014; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 2–3.

234. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 3–5; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 3.

235. William D. Kirsh, "Why Longitudinal Data Is Crucial to Making Better Care Decisions," *HealthData*, July 7, 2017.

236. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 3; National Academies of Sciences, Engineering, and Medicine, *Safeguarding the Bioeconomy: Applications and Implications of Emerging Science: Meeting Recap*, July 27–28, 2015; David J. Lynch, "Biotechnology: The US-China Dispute over Genetic Data," *Financial Times*, July 31, 2017; Grady Summers, "The State of Security in the Healthcare Sector," *FireEye*, March 16, 2017.

237. Threat Connect Research Team, "The Anthem Hack: All Roads Lead to China," *Threat Connect*, February 27, 2015; Michael Riley and John Walcott, "China's Hack of U.S. Data Tied to Health-Care Record Thefts," *Bloomberg Technology*, June 5, 2015.

238. Federal Bureau of Investigation, *Safeguarding the Bioeconomy III: Securing Life Sciences Data: Meeting Recap*, October 20–21, 2016; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 3.

239. Scott Thiel, Carolyn Bigg, and Paula Cao, "PRC Cybersecurity Law: Take Action and Monitor Developments to Avoid Losing Your China Business," *DLA Piper*, June 21, 2017.

240. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Edward H. You, March 16, 2017, 3.

241. National Academies of Sciences, Engineering, and Medicine, *Preparing for the Future Products of Biotechnology*, March 9, 2017, 174.

242. U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Kenneth A. Oye, March 16, 2017, 10; Senate Select Committee on Intelligence, *Hearing on the Worldwide Threat Assessment of the US Intelligence Community*, written testimony of Daniel R. Coats, May 11, 2017, 3–4.

243. Anna Edney, "Drug Quality in China Still Poses Risks for U.S. Market," *Bloomberg*, April 3, 2014; U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, "China's Health Care Industry, Drug Safety, and Market Access for U.S. Medical Goods and Services," in *2014 Annual Report to Congress*, November 2014, 129; Yanzhong Huang, "Chinese Pharma: A Global Health Game Changer?" *Council on Foreign Relations Blog*, March 31, 2015; David Cyranoski, "China's Bid To Be a DNA Superpower," *Nature*, June 22, 2016; U.S. Drug Enforcement Administration, *Counterfeit Prescription Pills Containing Fentanyl: A Global Threat*, July 2016; Donald G. McNeil Jr., "A Way to Brew Morphine Raises Concerns over Regulation," *New York Times*, May 18, 2015.

244. Sean O'Connor, "Meth Precursor Chemicals from China: Implications for the United States," *U.S.-China Economic and Security Review Commission*, July 18, 2016;

Sean O'Connor, "Fentanyl: China's Deadly Export to the United States," *U.S.-China Economic and Security Review Commission*, February 1, 2017.

245. People's Republic of China, *13th Five-Year Plan on National Economic and Social Development*, March 17, 2016. Translation; Central Compilation and Translation Press, Central Committee of the Communist Party of China, *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China*; State Council of the People's Republic of China, *Made in China 2025*, May 8, 2015. Translation; Chinese Academy of Engineering, Expert Commission for the Construction of a Manufacturing Superpower, *Made in China 2025 Key Area Technology Roadmap*, October 29, 2015. Translation, 12, 14, 40, 114, 182; U.S.-China Business Council, "Unofficial USCBC Chart of Localization Targets by Sector Set in the MIIT Made in China 2025 Key Technology Roadmap," February 2, 2016; Jost Wubbeke et al., "Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries," *Mercator Institute for China Studies*, December 2016, 23; U.S. Chamber of Commerce, *Made in China 2025: Global Ambitions Built on Local Protectionism*, March 16, 2017; State Council of the People's Republic of China, *Internet Plus Action Plan*, July 1, 2015. Translation; State Council of the People's Republic of China, *Opinions on Further Implementation of the Internet Plus Action Plan*, April 15, 2015. Translation; State Council of the People's Republic of China, *13th Five-Year Development of Strategic Emerging Industries Plan*, December 19, 2016. Translation; Top 500, "List Statistics," June 2017; China Law Translate, "2016 Cybersecurity Law"; James Zimmerman, "AmCham China Statement on Cybersecurity Law," American Chamber of Commerce in China, November 7, 2016; U.S.-China Economic and Security Review Commission, Chapter 1, Section 4, "Commercial Cyber Espionage and Barriers to Digital Trade in China," in *2015 Annual Report to Congress*, November 2015, 210–217; Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016; Central Committee of the Chinese Communist Party and the State Council of the People's Republic of China, *National Informationization Development Strategy (2006–2020)*, March 19, 2006. Translation; Ministry of Industry and Information Technology, *Cloud Computing Development Three-Year Action Plan (2017–2019)*, April 10, 2017. Translation; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Mark Brinda, March 16, 2017, 3–4; Ministry of Industry and Information Technology, Ministry of Finance, and National Development and Reform Commission, *Robotics Industry Development Plan (2016–2020)*, Translation; National Development and Reform Commission, "Internet Plus" *Artificial Intelligence Three-Year Action Plan*, May 2016, Translation; State Council, *Next-Generation Artificial Intelligence Development Plan*, July 20, 2017, Translation; Graham Webster et al., "A Next Generation Artificial Intelligence Development Plan," *China Copyright and Media*, July 20, 2017; Jonathan Ray et al., "China's Industry and Military Robotics Development," *Defense Group, Inc.* (prepared for the U.S.-China Economic and Security Review Commission), October 25, 2016; Nicky Capella, "China Launches Deep Learning Lab for AI Dominance," *Stack*, February 21, 2017; Dave Gershgorn, "China Is Funding Baidu to Take on the US in Deep-Learning Research," *Quartz*, February 22, 2017; National Development and Reform Commission, *13th Five-Year Bioindustry Development Plan*, December 2017. Translation; Ministry of Industry and Information Technology, National Development and Reform Commission, Ministry of Science and Technology, Ministry of Commerce, China Food and Drug Administration, and National Health and Family Planning Commission, *13th Five-Year Medical Industry Development Plan*, November 7, 2016. Translation; Central Committee of the Chinese Communist Party and the State Council of the People's Republic of China, *Healthy China 2030*, October 25, 2016. Translation; U.S.-China Economic and Security Review Commission, *Hearing on China's Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology*, written testimony of Benjamin A. Shobert, March 16, 2017; U.S.-China Business Council, *The Pulse of China's Healthcare*, April 2017; Office of the United States Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*, April 2017; Office of the U.S. Trade Representative, *2016 Report to Congress on China's WTO Compliance*, January 2017.

## SECTION 2: CHINA'S PURSUIT OF ADVANCED WEAPONS

### Key Findings

- China is pursuing a range of advanced weapons with disruptive military potential. Six types that China's leaders have prioritized are maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned and artificial intelligence-equipped weapons.
- China's advanced weapons programs align with the People's Liberation Army's overall modernization drive over the past several decades, but appear to reflect a more careful degree of planning as to the U.S. weaknesses they are designed to exploit.
- Current technological trends increase the difficulty of preserving an advantage in developing advanced weapons. The United States for the first time faces a peer technological competitor—a country that is also one of its largest trading partners and that trades extensively with other high-tech powers—in an era in which private sector research and development with dual-use implications increasingly outpaces and contributes to military developments.
- The requirements for developing advanced weapons are fundamental scientific knowledge, unique materials, and abstract skill-based enablers (i.e., abilities, tools, and techniques). China has clear policies to exploit government funding, commercial technological exchange, foreign investment and acquisitions, and talent recruitment to bolster its dual-use technological advances. For China, the only ultimate barrier to such advances is likely to be effort—time, will, and money—and it will be difficult for the United States and its allies and partners to deter this.
- While China has only achieved incremental innovation in military technologies in the past, its research efforts at the technological frontier indicate it may be moving from a phase of “catching-up” to pursuing “leap-ahead” technologies. China's limited returns on science and technology investments indicate shortcomings that may render its development of innovative advanced weapons more costly or protracted, but do not rule out successful innovation.
- China's achievement of a surprise breakthrough in one of these technologies is possible, due to the secrecy surrounding these programs and the uncertain nature of advanced weapons development in general. Such a breakthrough could have significant strategic implications for the United States, particularly in its

potential to further existing access challenges and hold forward deployed U.S. forces at risk.

- Given Beijing’s commitment to its current trajectory, and the lack of fundamental barriers to advanced weapons development apart from time and funding, the United States cannot assume it will have an enduring advantage in developing weapons at the technological frontier.\*

### **Introduction**

China is pursuing a wide range of military technologies at the global technological frontier—weapons just now being developed or not yet developed by any country. These advanced weapons programs could yield potentially disruptive military effects, presenting important implications for the United States and its allies and partners in the Asia Pacific.

China’s advanced weapons programs draw heavily on its wider effort to develop next frontier technologies, discussed in the preceding section. Over the coming decades, China is poised to challenge U.S. technological leadership in both commercial and military terms, in an environment in which dual-use commercial technology increasingly contributes to military technological strength. China’s government has taken a comprehensive and state-directed approach to the development of key dual-use technologies, one that carefully considers how to leverage state funding, licit and illicit technological exchange, foreign investment, and talent recruitment opportunities to build national champions and advance its military capabilities. It is thus imperative for the United States to meet this challenge, and consider the security implications of China’s high-technology weapons in particular, over the coming decades.

This section examines China’s advanced weapons programs in six categories, selected based on their prioritization by China’s leaders and their clear status as currently emerging and consequential technologies: maneuverable reentry vehicles, hypersonic weapons, directed energy weapons, electromagnetic railguns, counterspace weapons, and unmanned and artificial intelligence (AI)-equipped weapons. It specifically discusses the drivers behind China’s advanced weapons programs, China’s activities in each of the six areas, inputs to China’s ability to develop advanced weapons, and implications for the United States. In doing so, it draws upon the Commission’s February 2017 hearing on China’s Advanced Weapons, unclassified statements by U.S. and Chinese officials, and open source research and analysis.

### **Drivers of China’s Advanced Weapons Programs**

China’s pursuit of advanced weapons bolsters the interests of the ruling Chinese Communist Party (CCP), which seeks to strengthen the nation<sup>1</sup> and defend what it defines as the country’s “core interests,”<sup>2</sup> including Taiwan and other territorial claims, in order to maintain its hold on power.<sup>3</sup> China’s advanced weapons programs specifically contribute to Beijing’s longstanding goal of military

\*For the Commission’s recommendations regarding China’s investment in advanced technologies in the United States, see Chapter 1, Section 2, “Chinese Investment in the United States.”

modernization and its efforts to compete militarily with the United States. These programs also go hand-in-hand with the desire of China's leaders for the country to become a leading high technology power across commercial and dual-use areas.

### ***Military Modernization***

China's advanced weapons programs align with the People's Liberation Army's (PLA) overall modernization drive over the past several decades. China's military modernization began under then President Deng Xiaoping's reforms in 1978, and its programs to develop the advanced weapons discussed in this section appear to have originated in the 1980s and early 1990s<sup>4</sup> (with the exception of a 1960s military laser research program geared toward missile defense,<sup>5</sup> and unmanned and AI technologies, which emerged more recently). China's modernization efforts have specifically sought to narrow gaps in the PLA's ability to defend national interests and "win informationized local wars"<sup>6</sup> (wars incorporating information technology and networked information operations<sup>7</sup>), an objective reinforced by several crises that have highlighted the limited options available to Beijing in contingencies.<sup>8</sup> These events included the Taiwan Strait Crisis in 1996, the accidental U.S. bombing of the Chinese embassy in Belgrade in 1999, and the collision of a PLA fighter with a U.S. EP-3 reconnaissance aircraft in 2001. The 1991 Gulf War and 1999 North Atlantic Treaty Organization intervention in Serbia, while they did not directly involve China, also underscored the capability gaps China would face in a potential conflict and lent urgency to PLA modernization. All of these encounters contributed to Beijing's recognition of the need to address the limited options and capability gaps it might face in regional contingencies involving its core interests. This solidified the requirement for an antiaccess/area denial (A2/AD) or "counterintervention" component within PLA missions\* in anticipation of potential outside interference.<sup>9</sup> In continuation of these efforts, the PLA is developing weapons at the global technological frontier.

### ***Military Competition with the United States***

In relation to its past modernization activities, China's advanced weapons programs appear to reflect a more careful degree of planning as to the U.S. weaknesses they are designed to exploit. In 1999, China's then President Jiang Zemin used the accidental bombing of China's embassy in Belgrade to underscore military gaps in relation to the United States. He initiated and reinforced major programs for the construction of asymmetric weapons designed to exploit U.S. weaknesses, stating, "That which the enemy fears most, that is what we must develop."<sup>10</sup> This objective is reflected in the Chinese term *shashoujian*, translated as "assassin's mace weapon," which general-

\*According to the U.S. Department of Defense, "antiaccess" actions are intended to slow the deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

ly refers to the idea of a weaker power utilizing a certain capability to defeat a stronger one.<sup>11</sup> The term has been applied in Chinese strategic writings and top leadership statements to antiship ballistic missiles in particular.<sup>12</sup> In addition, Chinese military writings on elements of the U.S. Third Offset strategy—which sets forth U.S. requirements for developing many of these advanced military technologies—often assess that the pursuit of these new systems is aimed at China,<sup>13</sup> and the PLA's focus on advanced weapons has only intensified in response to the Third Offset Strategy.<sup>14</sup>

Breakthroughs in any of the advanced weapons categories discussed in this section would contribute strongly to China's A2/AD capabilities and directly challenge U.S. advantages. Dr. Timothy Grayson, president of Fortitude Mission Research LLC, former senior manager at Raytheon, and former program manager at the U.S. Defense Advanced Research Projects Agency (DARPA), termed China's pursuit of advanced weapons “the next phase” of China's modernization strategy, testifying to the Commission:

*Instead of simply relying upon overwhelming the U.S. with “catch-up” capabilities in large numbers, China is now developing weapons in key areas that may leapfrog the U.S., attempting to negate specific U.S. strengths. ... Hypersonics [are] an extension of existing ballistic missile and cruise missile capabilities, but instead of saturating missile defenses with numbers, the speed and maneuverability of hypersonic weapons may make kinetic missile defenses obsolete. Directed energy and space control target the current overwhelming U.S. intelligence, surveillance, and reconnaissance (ISR) advantage. ... New capability in directed energy threatens U.S. sensor capabilities with blinding or damage, and space control systems threaten U.S. satellites themselves.*<sup>15</sup>

To these observations can be added the potential effects of maneuverable reentry vehicles and large numbers of unmanned/AI-equipped weapons on large U.S. platforms and fixed bases key to the U.S. security posture in the Asia Pacific.

### **Broader Technology Plans**

Chinese President and General Secretary of the CCP Xi Jinping's efforts to move China toward high-end innovation and establish the country as a global technology center, building upon and accelerating previous initiatives, are inseparable from China's push to develop advanced weapons. Many of the government plans that have funded China's defense modernization, including the advanced weapons programs discussed in this section, have spanned both military and commercial areas. For example, the High Technology Research and Development Plan (863 Plan), National Basic Research Plan (973 Plan), Medium and Long-Term Plan for the Development of Science and Technology (2006–2020) (MLP), “Made in China 2025” initiative, and various five-year plans have been instrumental for funding advances in China's computing, robotics, and biotechnology sectors.\*

\*“863” refers to March 1986, when then President Deng Xiaoping approved a proposal by leading scientists to fund research and development in strategic areas. “973” refers to a Plan established in March 1997 that sought to support “early-stage basic research on major scientific issues

In addition to the military benefits provided by advances in computing and robotics (discussed under “Inputs to China’s Advanced Weapons,” later in this section), portions of these plans have directly funded advanced weapons programs or their contributing technologies—the 863 Plan included funding for lasers, space technologies, unmanned systems, and AI;<sup>16</sup> the 973 Plan included funding for unmanned systems;<sup>17</sup> the MLP includes three secret military megaprojects that experts have suggested may be hypersonic vehicle technology, the second generation of the Beidou satellite navigation system, and a laser project for inertial confinement fusion;\* Made in China 2025 guides investment in space and aviation equipment and new materials; and five-year plans have guided investment in Beidou, unmanned vehicles, space technologies, and AI, for example.<sup>18</sup> China’s recent consolidation of its science and technology funding into five major plans continues this approach. The largest and most important of these, the 2016 National Key Research and Development Plan, supports research and development in both national security and commercial areas.<sup>19</sup>

### China’s Advanced Weapons Programs

Although information regarding China’s advanced weapons programs is not always readily available in the public domain, numerous open source writings, government statements, and testing and deployment activities indicate Beijing has undertaken vigorous efforts in these areas. The following pages define each weapons type, summarize China’s activities and objectives in each area, and evaluate their current status in relation to comparable U.S. programs.

#### *Maneuverable Reentry Vehicles*

**Definition.** A maneuverable reentry vehicle (MaRV) is a ballistic missile reentry vehicle that is capable of maneuvering after reentering Earth’s atmosphere, in contrast to a standard reentry vehicle, which continues on its trajectory without any course correction capability.<sup>20</sup> MaRVs can be more difficult to intercept and therefore better able to penetrate adversary missile defenses.<sup>21</sup> They also offer greater potential than standard reentry vehicles for striking moving targets, if configured to do so.

**China’s Activities.** China likely began preliminary research into MaRV technology in 1991 and engineering research and development (R&D) on its first ballistic missile system incorporating this technology in 2002.<sup>22</sup> Beijing publicly revealed two ballistic missile

related to economic and social development.” The MLP seeks to promote science and technology development in areas deemed vital to competitiveness over a longer timeframe than five-year plans or the 863 and 973 plans. It includes funding for 16 “megaprojects,” three of which are classified defense projects. For more information on all of these plans, see Tai Ming Cheung et al., “Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 27–37.

\*This refers to attempts to use lasers to heat a target in order to achieve a nuclear fusion reaction that generates greater amounts of energy than was used to start the reaction, or “fusion ignition.” U.S. efforts in this area have been ongoing since 2009 at the Department of Energy’s National Ignition Facility, but these have yet to achieve ignition. The project may aid China’s efforts to develop next-generation nuclear weapons and directed energy weapons. Lawrence Livermore National Laboratory, “What Is NIF?”; Lawrence Livermore National Laboratory, “Fusion and Ignition”; Michael Raska, “Scientific Innovation and China’s Military Modernization,” *Diplomat*, September 3, 2013.

systems that reportedly have MaRV capabilities in 2010 and 2015, respectively:

- China fielded the world’s first antiship ballistic missile (ASBM) in 2010, a variant of the DF–21 family of medium-range ballistic missiles (MRBM) known as the DF–21D. It reportedly features a range of at least 1,500 kilometers (km) (932 miles [mi]) and is road mobile, meaning it can be driven by vehicle and launched from multiple locations.<sup>23</sup> At its maximum extent, this range would cover an area beyond the first island chain,\* including large portions of the East, Philippine, and South China seas.<sup>24</sup>
- China unveiled the DF–26 intermediate range ballistic missile (IRBM) in 2015, reportedly also with an ASBM variant. The DF–26 has a credited range of 3,000–4,000 km (1,800–2,500 mi), and is also road mobile. At its maximum extent, this would cover U.S. military installations on Guam and most of the area within the second island chain.<sup>25</sup> This has prompted some analysts and netizens to refer to the missile as the “Guam Express” or “Guam Killer” (similar to the term “carrier killer” sometimes used to refer to the DF–21D).<sup>26</sup>

China’s activities have also centered on developing the reconnaissance-strike complex necessary for these missiles to successfully strike a moving target at sea. As ASBMs require accurate “over-the-horizon” targeting support, this complex likely involves a combination of satellites and ground-based radar, possibly including micro-satellites and even unmanned aerial vehicles (UAVs) for temporary augmentation.<sup>27</sup>

Questions regarding these ASBMs’ true capabilities persist, and their combat effectiveness may never be fully certain to observers in the public domain outside of their actual employment in a conflict.<sup>28</sup> Seven years after the DF–21D’s unveiling, neither ASBM has yet been reported to have been tested against a moving target at sea.<sup>29</sup> Dr. Andrew Erickson, professor of strategy at the U.S. Naval War College, testified to the Commission in 2017 that “the missiles themselves work,” but “the ability of China’s reconnaissance-strike complex to provide accurate targeting for its ASBMs remains unclear.”<sup>30</sup> To successfully strike a moving target at sea, China would need to master an extremely complex process.<sup>31</sup> Put simply, the ship must be located, current location data must be uploaded to the reentry vehicle’s sensors before firing, the vehicle must conduct a mid-course maneuver upon reentry to identify the target’s signature, and then the vehicle must conduct a terminal maneuver to strike the ship before the ship has moved beyond the pre-programmed “box” within which it was originally detected to be operating. This presents several obstacles (notwithstanding any potential U.S. countermeasures):

- China probably does not yet have sufficient intelligence, surveillance, and reconnaissance (ISR) coverage, particularly at the far end of its ASBM ranges, to obtain this data in the first place.

---

\*The first island chain refers to a line of islands running through the Kurile Islands, Japan and the Ryukyu Islands, Taiwan, the Philippines, Borneo, and Natuna Besar. The second island chain is farther east, running through the Kurile Islands, Japan, the Bonin Islands, the Mariana Islands, and the Caroline Islands. Bernard D. Cole, *The Great Wall at Sea: China’s Navy in the Twenty-First Century*, Naval Institute Press, 2010, 174–176.

For this reason, it continues to launch Yaogan and Gaofen ISR satellites—as well as Beidou navigation satellites to improve missile guidance—to enable coverage of a greater area of the Pacific.<sup>32</sup>

- Coordination among the different service elements of the PLA involved in data fusion and command and control presents an organizational challenge. Dr. Erickson assesses that China's military reforms, aimed at making the PLA more joint and better structured to wage modern wars, will be helpful in this regard.<sup>33</sup> The creation of the Strategic Support Force in particular may enable better coordination of space-based functions.<sup>34</sup> The Force's mission is to integrate China's space, cyber, electronic warfare,<sup>35</sup> and signals intelligence capabilities.<sup>36</sup> Therefore, responsibility for the intelligence and reconnaissance functions involved in locating and tracking targets will be centralized rather than dispersed among different units.<sup>37</sup> Furthermore, some expert observers of the PLA have debated whether strategic level human intelligence collection capabilities have also been absorbed by the Force. The addition of these capabilities could likewise aid in focusing national-level collection assets for targeting purposes.\*<sup>38</sup>
- The warheads and terminal guidance sensors themselves must be able to withstand the rigors of atmospheric reentry without adverse effects to their required performance.<sup>39</sup> Although the DF-21D reportedly includes a terminal guidance system,<sup>40</sup> its utility against an uncooperative target is again untested.

The performance of China's ASBMs is difficult to assess, given a decline in the availability of public Chinese technical writings, likely to conceal sensitive details.<sup>41</sup> However, Dr. Erickson notes that "China is constantly extending and improving its reconnaissance-strike complex. It is launching satellites at a pace that only the United States and Russia can hope to match."<sup>42</sup> In coming years, he assesses China is likely to achieve a robust architecture for finding carriers and large surface vessels.<sup>43</sup> In the nearer-term, Dr. Erickson states that placing ground-based radar on all of the Spratly and Paracel islands features China occupies in the South China Sea (one such installation is already in place on Cuarteron Reef in the Spratlys) would likely enable China to detect and target carrier strike groups across the vast majority of the South China Sea.<sup>44</sup>

**China's Objectives.** The PLA seeks the ability to hold adversaries' vessels at risk via multi-axis strikes launched from a wide range of platforms as part of its suite of A2/AD capabilities, of which ASBMs are a key component. The DF-21D in particular has been referenced as

\*China's human intelligence operations were formerly managed by the Second Department (2PLA) of the PLA's General Staff Department. Following China's military reforms, some experts have assessed the Second Department is now included in the PLA's new Joint Staff Department, while others suggest it may be included in the Strategic Support Force. Peter Mattis, "China Reorients Strategic Military Intelligence," *IHS Jane's*, 2017, 3–4; John Costello, "The Strategic Support Force: Update and Overview," *China Brief*, December 21, 2016; U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 290; Zhao Lei, "New Combat Support Branch to Play Vital Role," *China Daily*, January 23, 2016; Lincoln Davidson, "China's Strategic Support Force: The New Home of the PLA's Cyber Operations," *Council on Foreign Relations*, January 20, 2016.

an “assassin’s mace” weapon by China’s leaders,<sup>45</sup> while the DF-26 is likely designed to reach Guam, viewed in PLA strategic and academic writings as an “anchor” of the United States’ regional presence and its ability to surge forces into the region in a contingency.<sup>46</sup>

### ***Hypersonic Weapons***

**Definition.** Hypersonic speeds are usually defined as exceeding five times the speed of sound, or Mach 5 (3,836 mi per hour).<sup>\*47</sup> Although ballistic missiles have long operated at these speeds, three emerging systems could be used to deliver a precision strike over long ranges at hypersonic speeds: terminally-guided ballistic missiles (including the MaRV-equipped ASBMs discussed previously), and two other systems that would utilize more advanced technologies<sup>48</sup> and are generally the focal point of discussions on “hypersonic weapons.” These are (1) hypersonic glide vehicles (HGVs), which are launched from a large rocket on a relatively flat trajectory that either never leaves the atmosphere or reenters it quickly before being released and gliding unpowered to its target (the whole system, including the booster, is referred to as a “boost-glide weapon”); and (2) hypersonic cruise missiles, which are powered by a supersonic combustion ramjet or “scramjet” engine that activates after the missile’s release from a ground, sea, or air launcher (see Figure 1).<sup>49</sup> The very high speeds of these two types,<sup>†</sup> combined with their potential maneuverability and ability to travel at lower, radar-evading altitudes compared to ballistic missiles, could make them far less vulnerable than existing missiles to some current missile defenses.<sup>50</sup>

Importantly, HGVs are a subset of MaRV technology at the high end of the maneuverability spectrum, while the MaRVs on China’s ASBMs are on the low end.<sup>51</sup> Although both types are launched by rockets, an HGV glides to its target at shallow angles after separating from the rocket booster and covers a much greater distance, while the MaRV on an ASBM continues on a ballistic trajectory until reentry.<sup>52</sup> China’s HGV program may be an outgrowth of its program to develop lower-end MaRVs.<sup>53</sup>

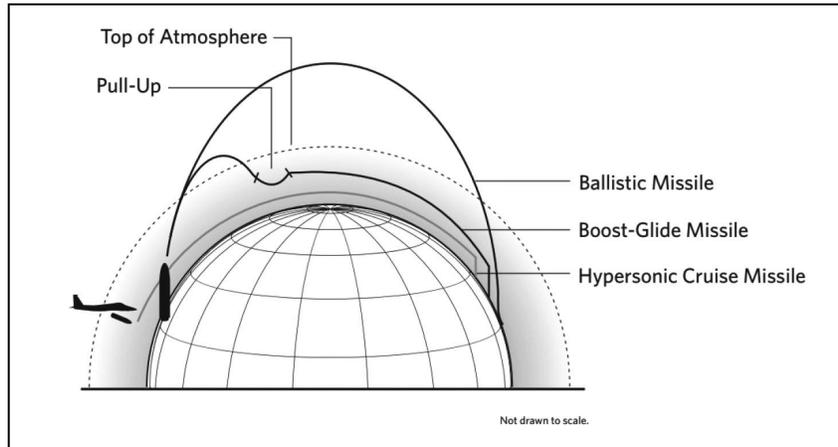
**China’s Activities.** China has been working to develop both types of hypersonic weapons:

- *Glider.* Since 2014, China has likely conducted seven tests of its HGV, now referred to as the DF-ZF by China’s news media and called the Wu-14 by U.S. officials (see Figure 2).<sup>54</sup> Beijing has not officially acknowledged testing an HGV, but experts have assessed that six of the seven tests may have been successful.<sup>55</sup>
- *Scramjet.* At a March 2017 conference on hypersonic technology hosted by the Chinese Academy of Engineering (subordinate to China’s State Council), China acknowledged a 2015 scramjet engine flight test for the first time.<sup>56</sup> China’s government previously had presented an award to a military engineer for developing and

\*The speed of sound is Mach 1, and “supersonic” refers to speeds of Mach 1 to 5.

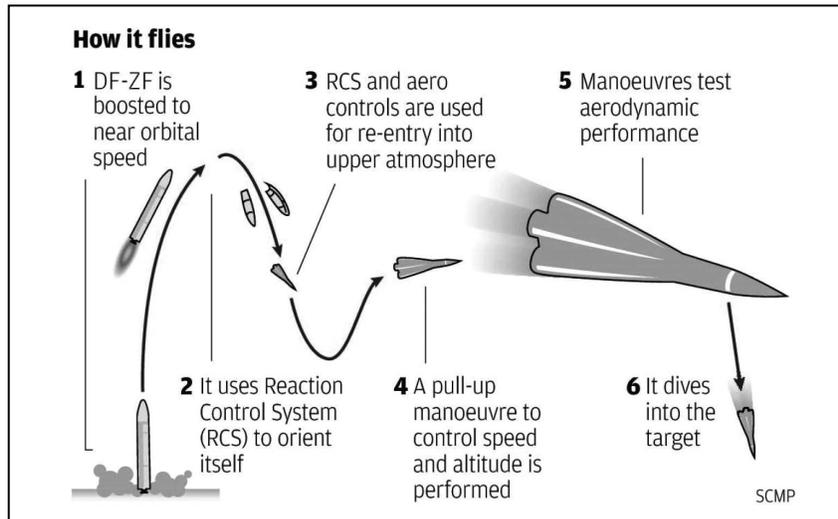
†Hypersonic glider speeds could potentially reach Mach 10 or higher, while hypersonic cruise missile speeds would almost certainly be closer to Mach 5. James Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017.

**Figure 1: Schematic Diagram of Generic Trajectories for Boost-Glide Missiles, Terminally Guided Ballistic Missiles, and Hypersonic Cruise Missiles**



Source: James M. Acton, "Silver Bullet?: Asking the Right Questions About Conventional Prompt Global Strike," *Carnegie Endowment for International Peace*, 2013, 7.

**Figure 2: China's DF-ZF Hypersonic Glide Vehicle**



Source: Minnie Chan, "China, Russia Ramping Up Tests of Hypersonic Gliders to Counter New U.S. Strategy: Analysts," *South China Morning Post*, April 28, 2016.

testing a scramjet engine at the China Aeronautical Science and Technology Conference in 2015,<sup>57</sup> likely for work on the same program.<sup>58</sup> If true, this would make China one of five countries, along with the United States, Russia,<sup>59</sup> India,<sup>60</sup> and Australia (in conjunction with the United States)<sup>61</sup> to have reportedly test flown a scramjet engine. These efforts indicate China highly values the development of scramjet technology.<sup>62</sup> Scramjet technology would

also be relevant to potential efforts by China to develop a spaceplane (discussed in “Counterspace Weapons” later in this section).

While China has moved rapidly on both fronts, its hypersonic program is still in development stages. James M. Acton, co-director of the Nuclear Policy Program at the Carnegie Endowment for International Peace, notes that “many tens” of tests of different systems with progressively longer ranges would likely be needed to develop an intercontinental range glider,<sup>63</sup> and numerous technical challenges would need to be overcome.\* China would likely not be able to place its existing glider model, apparently tested at MRBM range,<sup>†</sup> on an intercontinental ballistic missile to achieve intercontinental range.<sup>64</sup> Dr. Acton also notes that “given the relatively short range of China’s glider tests ... it is possible, though by no means certain, that its glider is essentially a ‘souped-up’ version of an existing type of terminally guided reentry vehicle.”<sup>65</sup>

**Intended Capabilities.** Mark Stokes, president of the Project 2049 Institute, testified to the Commission that “the primary driver for PLA investment into hypersonic weapons is to offset shortcomings in the face of a more technologically-advanced adversary equipped with missile defenses.”<sup>66</sup> However, it remains unclear whether China ultimately intends to use hypersonic weapons for nuclear missions, conventional missions, or both. Dr. Acton testified to the Commission that there is significant uncertainty about why China is pursuing this technology, but he has no reason to doubt the assessment of the U.S. National Air and Space Intelligence Center that China’s HGV is associated with its nuclear program.<sup>67</sup> He notes, “It is also possible that China does not currently have firm ideas about the purpose of a boost-glide system. China has a well-documented history of initiating advanced strategic military programs mainly because it worries about other states’ opening up a technology gap, without necessarily being convinced [of] their ultimate military utility for China.”<sup>68</sup>

### ***Directed Energy Weapons***

**Definition.** A directed energy weapon uses focused energy to damage or destroy a target.<sup>‡</sup> Three types are most relevant:

\*For a detailed description of many of these challenges, see U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.

†Chinese media sources have suggested the DF-ZF can be launched using a variety of short- and medium-range ballistic missiles as boosters. However, the type of booster China is using, and whether it is a new or existing model, is unclear. China’s failed HGV test used a liquid-fueled booster—typically associated with its nuclear program—rather than one of its solid-fueled, conventionally-armed short-range ballistic missiles and MRBMs. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017; Erika Solem and Karen Montague, “Updated: Chinese Hypersonic Weapons Development,” *China Brief* 16:7, April 21, 2016.

‡“Undirected” energy weapons, such as those that deliver an undirected electromagnetic pulse (EMP)—an intense energy field which can overload or disrupt electrical systems or microcircuits at a distance—are not discussed in this section. An EMP device could be nuclear or nonnuclear, and potentially deployed at high altitudes for wider effect. Nuclear warheads carried on ballistic missiles have an inherent EMP capability, but there have been no publicly confirmed Chinese programs for low-yield nuclear warheads or conventional high powered microwave systems tailored for this purpose. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; Clay Wilson, “High Altitude Electromagnetic Pulse (HEMP) and High Power Microwave (HPM) De-

- **High energy lasers (HELs)** generate beams of electromagnetic energy to damage a target's physical structure. The amount of energy that hits the target is a function of the laser's power and ability to focus its beam, as well as atmospheric conditions and target characteristics. More power requires the HEL to be larger and heavier.\*<sup>69</sup>
- **High-power microwave (HPM) weapons** generate short pulses of electromagnetic energy at discrete frequencies designed to disrupt, or even destroy, sensitive electronic components. The higher the energy, the greater the disruption.<sup>70</sup>
- **Particle beam weapons** use high-energy beams of atomic or subatomic particles to damage a target, generating additional highly-energetic particles and electro-magnetic fields inside the target; this technology is the least mature but perhaps the most destructive.<sup>71</sup>

A directed energy beam arrives at its target almost instantaneously, surpassing even the fastest-moving weapons currently fielded.<sup>72</sup> In addition, benefits envisioned include low costs per "shot," unlimited "ammunition" given power availability,<sup>73</sup> enhanced standoff ranges, tailorable and scalable effects, strikes with low collateral damage, and "counterswarm" abilities.<sup>†</sup><sup>74</sup>

**China's Activities.** China's research into directed energy weapons likely dates back to at least the 1980s, when the 863 Plan included laser technology as a key investment area.<sup>75</sup> Chinese writings and public reports have long indicated a high level of activity in this area; the most tangible publicly observed developments have been a potential HPM antimissile system and a series of increasingly-powerful HELs.

*HPM weapons.* China's HPM weapons program received new public coverage in 2017, building on a deep history of research in this area. In January, the deputy director of China's Northwest Institute of Nuclear Technology received a first prize National Science and Technology Progress Award from China's State Council for his directed energy research; based on accounts of his remarks, this was related to achievements in developing an HPM antimissile system initially tested successfully in 2010.<sup>76</sup> The scientist, a leading figure in China's research on directed energy technologies since the 1990s, termed this a "disruptive technology" and "pioneering" achievement, as similar developments had yet to be publicly demonstrated elsewhere.<sup>77</sup> Based on analysis of the scientist's publication record, the system could be used as a ship-borne antimissile weapon, although

vices: Threat Assessments," *Congressional Research Service*, March 26, 2008, Summary; National Ground Intelligence Center, *China: Medical Research on Bio-Effect of Electromagnetic Pulse and High-Power Microwave Radiation*, August 17, 2005, 4-5; National Ground Intelligence Center, *Assessment of Chinese Radiofrequency Weapon Capabilities*, April 2001, 6.

\*The medium used in a laser is liquid or gas in a "chemical laser" or solid crystal in a "solid state laser." Richard D. Fisher, Jr., senior fellow for Asian military affairs at the International Assessment and Strategy Center, noted to the Commission that electric-powered solid state lasers are eclipsing chemical lasers due to their greater potential for size reduction and ability to draw upon a "magazine" as long as power is available. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

†"Counterswarm" refers to these weapons' potential utility against convergent attacks by a group of units from multiple directions. Sean J. A. Edwards, "Swarming and the Future of Warfare," *RAND*, 2005, 2.

authoritative information on the program is not available.<sup>78</sup> Richard D. Fisher, Jr., senior fellow for Asian military affairs at the International Assessment and Strategy Center, notes that developing a system small and light enough to deploy on a ship would be a significant technological accomplishment.<sup>79</sup>

Examples of China's past publicly-known research on HPM weapons, dating back to the 1990s, include a 2005 article by authors from the then Weapons Equipment Academy of the PLA Second Artillery Force and the National University of Defense Technology that discussed the feasibility of using an HPM weapon to counter the seekers of antiradar missiles.<sup>80</sup> A declassified 2005 U.S. Army National Ground Intelligence Center report noted Chinese research into the bio-effects of HPM radiation, assessing this was to evaluate how to protect future human operators of these systems.<sup>81</sup> A declassified 2001 National Ground Intelligence Center report stated that China was "conducting research on high-power [radiofrequency (RF)] generation, susceptibility, and generation relevant to the development of RF weapons" and noted that China's first significant publications on HPM generation appeared in the early 1990s.<sup>82</sup> It identified six leading military and defense-affiliated facilities involved in directed energy research more broadly at that time.<sup>83</sup>

*HELs.* China is marketing low-power solid state laser weapons and has shown interest in using lasers on a range of platforms. China's first 10 kilowatt (kW) fiber optic laser reportedly emerged in 2013, developed by state-owned defense conglomerate China Aerospace Science and Industry Corporation.<sup>84</sup> State-owned Chinese defense contractor Poly Technologies has marketed a laser turret for shooting down small UAVs as a law enforcement tool since 2014, and displayed a 30 kW HEL called the Low-Altitude Laser Defending System at a 2016 military exhibit, reportedly with a 2.5 mi range and utility against swarms of small plastic UAVs.<sup>85</sup> Mr. Fisher told the Commission that an improved version of this system was displayed at a 2017 exhibit, and reported learning from a company official that the new laser's power was over 30 kW, but less than 100 kW.<sup>86</sup> He reported that officials indicated they were developing a naval version of this system, but it would be too large for an airborne version.<sup>87</sup> China's defense industry and private sector will certainly continue efforts to increase the power and reduce the size and weight of these early systems. China previously conducted research on antimissile-capable lasers in the 1980s and 1990s, yielding work on chemical lasers with counterspace implications (see "Counterspace Weapons," later in this section).<sup>88</sup>

*Other efforts.* Michael Carter, program manager for U.S. Department of Defense Programs at the National Ignition Facility and Photon Science Directorate, Lawrence Livermore National Laboratory (LLNL), stated in April 2017 that China is on a path to build a laser similar to the one used in LLNL's National Ignition Facility, currently the world's most "energetic,"\* with 192

\*"Energetic" refers to the amount of energy the laser delivers, measured in "joules" (watts multiplied by seconds).

beams and the size of three football fields.<sup>89</sup> LLNL's laser was constructed for the study of inertial confinement fusion;<sup>90</sup> China's laser could be linked to its potential megaproject for this purpose described previously. Researchers from the Chinese Academy of Sciences, working at the State Key Laboratory of High Field Laser Physics in Shanghai, reportedly demonstrated a beam that reached a peak power of 5.13 petawatts in 2015, a world record.<sup>91</sup> Researchers are now working on a 10-petawatt beam; although these "ultra-fast" lasers can only sustain their power for a fraction of a second and thus generate little energy,<sup>92</sup> this research demonstrates China's commitment to and capacity for pursuing breakthroughs in the field of directed energy.

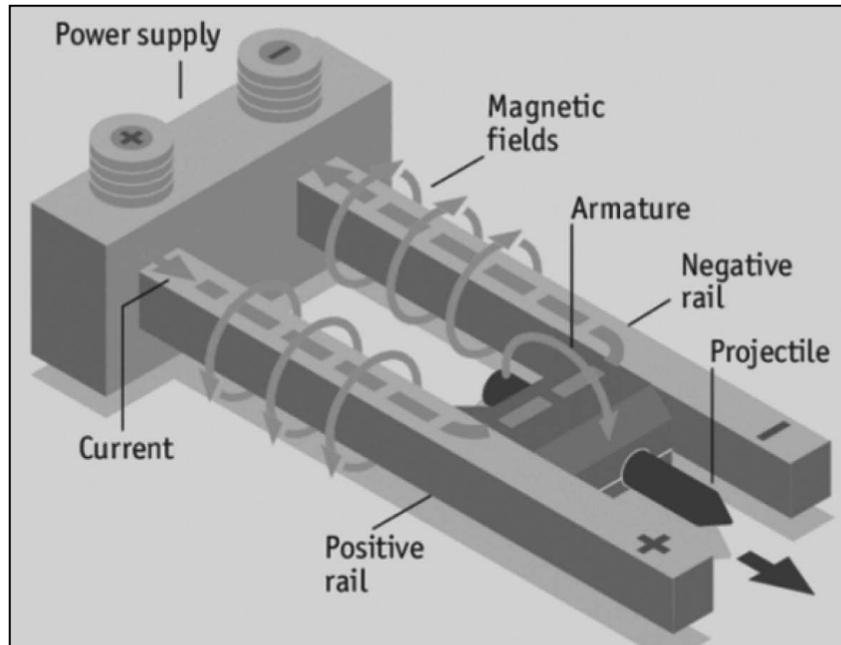
**Intended Capabilities.** China's directed energy program is likely intended to negate specific U.S. strengths,<sup>93</sup> potentially by affecting sensors on U.S. precision strike weapons and satellites.<sup>94</sup> Chinese academic writings appear to show interest in using more advanced lasers on land, naval, air, and space platforms,<sup>95</sup> and microwave weapons on space platforms,<sup>96</sup> but specific information on their intended operational employment is highly limited. Potential capabilities against space platforms are discussed in "Counterspace Weapons," later in this section.

### ***Electromagnetic Railguns***

**Definition.** An electromagnetic railgun (EMRG) launches rounds using electromagnetic force rather than an explosive propellant.<sup>97</sup> The rails are a pair of parallel conductors through which an electromagnetic current, generated from an external source, is passed, firing the projectile along the rails (see Figure 3).<sup>98</sup> Mr. Fisher notes that railguns "offer potential advantages in numbers of 'rounds' and cost per round over missiles and other kinetic weapons, potentially transforming future battlefields."\*

**China's Activities.** A research institute within China Aerospace Science and Industry Corporation, one of China's leading state-owned defense industry conglomerates, announced in 2015 that a project on high-powered electromagnetic launch technology had led to "major breakthroughs" in technologies for short-range air defense and projectile velocity.<sup>99</sup> This research institute also hosted the seventh Chinese Electromagnetic Technology Conference in 2015, where advances in material sciences to reduce railgun barrel wear were reported.<sup>100</sup> At least 22 research institutes in China were studying aspects of electromagnetic launch as of 2007, according to a report published that year by the Institute of Electrical and Electronics Engineers.<sup>101</sup> China has also reportedly built experimental railguns.<sup>102</sup> Research into railguns began in France in 1918 and has been ongoing in China since the 1980s; the challenge is not in building a railgun but in scaling up the technology and overcoming technical challenges.<sup>103</sup>

\*For example, Mr. Fisher points out that "A U.S. Raytheon Standard SM-3 Block 1B missile interceptor may cost about \$14 million, versus a \$7 million Chinese anti-ship ballistic missile (ASBM), while a railgun hypersonic velocity projectile may only cost \$50K." U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

**Figure 3: Electromagnetic Railgun Diagram**

Source: Economist, "Rail Strike: America's Navy Wants to Arm Its Ships with Electrically Powered Superguns," May 19, 2015.

**Intended Capabilities.** Public writings on intended capabilities for China's railgun are scarce and do not appear to diverge from those envisioned for the United States' program.<sup>104</sup> China's system could be used for ship-based antisurface, shore bombardment, and antimissile operations as planned by the United States, and could also contribute to China's land-based A2/AD arsenal, for which power generation would be less of a challenge than for naval platforms.<sup>105</sup> Proposed applications for electromagnetic aircraft launch system technology appear to align with U.S. efforts related to its next generation of aircraft carriers.<sup>106</sup>

### **Counterspace Weapons**

**Definition.** Counterspace threats can be divided into kinetic, non-kinetic physical, electromagnetic, and cyber categories, as Todd Harrison, director of the Aerospace Security Project at the Center for Strategic and International Studies, explained in testimony to the Commission:

- *Kinetic attacks attempt to strike a satellite directly, detonate a warhead in its vicinity, or disable critical support infrastructure on the ground. ... Satellites are also vulnerable to co-orbital threats where a satellite already in orbit can be deliberately maneuvered to collide with another satellite, dock with an uncooperative satellite, or detonate a small warhead in the vicinity of a satellite.*

- *Non-kinetic physical attacks can be used to ... degrade a satellite with less risk of debris and without directly touching it. Directed energy weapons, such as lasers and high-powered microwave systems, can target space systems within seconds and create effects that may not be immediately evident beyond the satellite operator.*
- *Electromagnetic attacks target the means by which data is transmitted rather than the physical satellite or ground support system. Satellites are dependent on radiofrequency communications for command and control and to transmit data to the ground. Jamming is the use of electromagnetic energy to interfere with these radio communications.*
- *Cyber attacks target the data itself and the systems that use this data.*<sup>107</sup>

**China's Activities.** China's advanced weapons discussed in this section that correspond with these threats are direct-ascent antisatellite missiles (kinetic), co-orbital systems (kinetic, non-kinetic physical, or electromagnetic), and ground-based directed energy weapons (non-kinetic physical or electromagnetic).\*

*Direct-ascent antisatellite missiles.* China has tested two direct-ascent antisatellite missiles: rocket and missile tests of the SC-19, one of which successfully destroyed a target in low Earth orbit; and a rocket test of the larger DN-2, which reached higher orbits, where Global Positioning System (GPS) and most U.S. intelligence satellites reside. The SC-19 was responsible for China's highly publicized debris-generating antisatellite missile (ASAT) test in 2007, and was also tested in 2005, 2006, 2010, 2013, and 2014.<sup>108</sup> These missiles would only be able to launch on predetermined flight paths against targets passing over China.<sup>109</sup>

*Co-orbital systems.* China appears to have the technology required to build and launch small satellites for "rendezvous and proximity operations" that could be applied to counterspace missions.<sup>110</sup> David D. Chen, an independent analyst and expert on China's space programs, testified to the Commission that China has launched six space missions involving such operations over the past decade, as Table 1 describes in detail.<sup>111</sup> A space-based platform could be used to launch kinetic, non-kinetic physical, or electromagnetic attacks.

Mr. Chen specifically assesses China has the requisite expertise, doctrinal underpinnings, and research and development experience for a counterspace directed-energy weapons program, which could be used for electromagnetic attacks launched from co-orbital platforms. He cites numerous writings by Chinese military, defense industry, and university scientists on potential counterspace electronic warfare effects against U.S. satellites.<sup>112</sup> For example:

\*For a detailed discussion of China's efforts in the area of computer network operations that could produce cyber threats to U.S. satellites, see U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 296-297.

A 2012 paper by authors from the 36th Research Institute of the China Electronic Technology Group Corporation (CETC) proposed overcoming the high power requirements for jamming U.S. millimeter wave (MMW) satellite communications by using space-based jammers hosted on small satellites, in a “David versus Goliath” attack. The authors noted that reducing that distance with a small satellite platform would decrease the power requirements exponentially, and identified potentially susceptible USG assets as the AEHF (Advanced Extremely High Frequency), WGS (Worldwide Global Satcom), and GBS (Global Broadcast Service) satellite constellations.<sup>113</sup>

Other writings specifically reference *Iridium* (commercial communications) and *Defense Satellite Communications System* (U.S. government communications) satellites.<sup>114</sup> Some Chinese academic writings also envision space-based laser weapons.<sup>115</sup>

**Table 1: China’s Space Missions Involving Rendezvous and Proximity Operations**

Program	Launched	Description
<i>Banfei Xiaoweixing-1 (BX-1)</i>	2008	<i>BX-1</i> was deployed from the orbital module of <i>Shenzhou-7</i> and relayed images of the main vessel while flying in co-orbital formation. <sup>116</sup>
<i>Shijian-12 (SJ-12)</i>	2010	<i>Shijian-12</i> maneuvered within 27 km (18 mi) of <i>Shijian-6F</i> two months after launch, then made a series of maneuvers to within a 300-meter distance, causing a likely low-speed contact resulting in orbital perturbations observed from the ground. <sup>117</sup>
<i>Shiyan-7</i>	2013	Rendezvoused with <i>Chuangxin-3</i> and <i>Shijian-7</i> ; probable deployment of robotic arm. <sup>118</sup>
<i>Tianyuan-1</i>	2016	Satellite servicing/refueling experiment that transferred 60 kilograms (132 pounds) of fuel while in orbit. <sup>119</sup>
<i>Aolong-1</i>	2016	Experimental robotic manipulator payload for orbital debris mitigation. <sup>120</sup>
<i>Banfei Xiaoweixing-2 (BX-2)</i>	2016	A second <i>BX</i> was launched from the <i>Tiangong-2</i> space station as part of the <i>Shenzhou-11</i> manned mission in October 2016. <sup>121</sup>
<i>Shijian-17</i>	2016	Suspected geosynchronous orbit belt inspection or signals intelligence satellite. <sup>122</sup>

Source: U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.

*Ground-based directed-energy weapons.* The U.S. Department of Defense reported in 2006 that China was pursuing “at least one ... ground-based laser designed to damage or blind imaging satellites.”<sup>123</sup> China also tested a laser against a U.S. ISR satellite in 2006, temporarily degrading its functionality; it is unclear whether this was intended to determine the satellite’s location or to test China’s ability to “dazzle” it, or temporarily blind its sensors.<sup>124</sup> These capabilities are likely a product of China’s chemical laser development efforts dating back to the 1980s; China almost certainly has been working to develop more powerful lasers since this time.<sup>125</sup> Lasers can blind or damage a satellite’s optical sensors at low energies, and can cause physical damage to satellites at high energies.<sup>126</sup>

In addition, since the mid-2000s China has acquired a number of foreign and indigenous ground-based satellite jammers,\* designed to disrupt an adversary’s communications with a satellite by overpowering the signals being sent to or from it. These could be employed to degrade or deny U.S. military systems’ access to GPS and most satellite communications bands if they are operating within a few hundred kilometers of China.<sup>127</sup>

*Spaceplane.* Chinese media reports in 2016 indicated that state-owned defense conglomerate China Aerospace Science and Technology Corporation had begun advanced research on a spaceplane that could fly from the ground directly into orbit utilizing hypersonic technology.<sup>128</sup> Chinese military scientists have stated that China aims to master the relevant technologies over the next three to five years, test a propulsion system in 2025, and use the system to power a spaceplane that would enter service by 2030.† China reportedly plans to test a prototype propulsion system in late 2017.<sup>129</sup> In theory, such a craft could fly in near space (roughly 12 to 60 mi in altitude), circumnavigate the globe in a matter of hours out of the reach of traditional air defenses,<sup>130</sup> and potentially threaten U.S. space assets. These efforts have not been confirmed by official U.S. government sources, and achieving these technologies within this timeframe would likely be a significant challenge.<sup>131</sup>

*Other plans.* As the Commission reported in 2015, China plans to launch a permanent manned space station in several phases comprising an experimental “core module” in 2018 and two additional modules in 2020 and 2022.<sup>132</sup> This station could have dual use applications; China’s Tiangong-2 spacelab was used to launch a satellite for a rendezvous and proximity operation in 2016, and China reportedly plans to orbit a space telescope alongside its space station in the 2020s,<sup>133</sup> the first time a space station will have been used as a support base for a satellite.<sup>134</sup> Chinese researchers, including the head of the China Manned Space Agency (a military organization responsible for managing China’s

\*China purchased ultra high frequency-band satellite communications jammers from Ukraine in the late 1990s. U.S. Department of Defense, *Annual Report to Congress: Military Power of the People’s Republic of China 2007*, 2007, 21.

†Chinese engineers have suggested the scramjet engine would be the second of three used to power the envisioned spaceplane: a booster to leave the ground, the scramjet for hypersonic flight in near space, and a rocket to enter orbit. Jeffrey Lin and P.W. Singer, “China’s Hybrid Spaceplane Could Reset the 21st Century Space Race,” *Popular Science*, August 9, 2016.

manned space program<sup>135</sup>), have also written on the military use of space stations.<sup>136</sup> Some non-authoritative Chinese writings have discussed building a moon base with military capabilities, but Kevin Pollpeter, research scientist at CNA and an expert on China's space program, testified to the Commission that these should not yet be taken seriously.<sup>137</sup>

**Intended Capabilities.** As the Commission assessed in its *2015 Annual Report to Congress*, PLA doctrinal publications and military writings on space warfare and China's demonstrated and developmental counterspace capabilities indicate these are primarily designed to deter U.S. strikes against China's space assets, deny space superiority to the United States, and attack U.S. satellites.<sup>138</sup> The U.S. Director of National Intelligence stated in the May 2017 *Statement for the Record on the Worldwide Threat Assessment of the U.S. Intelligence Community*:

*We assess that Russia and China perceive a need to offset any U.S. military advantage derived from military, civil, or commercial space systems and are increasingly considering attacks against satellite systems as part of their future warfare doctrine. Both will continue to pursue a full range of antisatellite weapons as a means to reduce U.S. military effectiveness.*<sup>139</sup>

Authoritative Chinese documents specifically indicate Beijing believes space superiority would be critical to almost every component of its military operations (particularly long-range precision strikes) during a potential Taiwan Strait conflict and against the United States and other potential adversaries in the region.<sup>140</sup> Experts also testified to the Commission in 2017 that Chinese military strategy emphasizes battlefield control in a multi-dimensional space (land, sea, air, space, and cyber),<sup>141</sup> and that counterspace operations are envisioned to "open up a window of opportunity" for potentially debilitating follow-on strikes in other dimensions.<sup>142</sup> Mr. Pollpeter noted to the Commission that counterspace capabilities are one component of the PLA's goal to achieve space superiority; another being an "operationally responsive space force" featuring road-mobile launch systems and a robust system of space-based remote sensing satellites.<sup>143</sup>

Within this context, Chinese writings discuss concentrating forces to attack certain types of space assets, rather than attacking all types.<sup>144</sup> Mr. Chen assesses that counterspace cyber and electronic warfare operations "should be considered as one tool in the quiver of a 'combined arms' counterspace campaign," and that "degradation, denial, and deception" effects are viewed as being as valuable as damage and destruction.<sup>145</sup> Ultimately, assessments by Chinese military writers view speed, within the multi-dimensional battlespace, as the key contribution of advanced weapons. For example, one recent PLA journal article suggests China can defeat the United States' "network-centric warfare" with "energy-centric warfare"—applying effects quickly to "get inside" the adversary's "OODA (Observe, Orient, Decide, Act) loop"—utilizing the near-instantaneous speed of systems such as directed energy weapons.<sup>146</sup>

### *Unmanned and AI-Equipped Weapons*

**Definition.** Unmanned aerial, underwater, surface, or ground vehicles operate without an internal pilot. They can be remotely piloted or automated, which refers to systems governed by prescriptive rules that do not allow for deviations, or autonomous, meaning they are delegated the ability to independently compose and choose between different courses of action.<sup>147</sup> AI refers to the ability of computer systems to perform tasks normally requiring human intelligence, including learning and self-correction,<sup>148</sup> and is foundational to autonomous systems.<sup>149</sup>

**China's Activities.** China has made significant progress in developing and deploying automated unmanned systems, and has displayed strong interest and capabilities in developing autonomous programs.

*Automated systems.* China has developed unmanned aerial and underwater vehicles, and conducted research on unmanned ground and surface vehicles:

- China's **UAVs**, including attack variants, have met military requirements and entered the global market in great numbers. Chinese experts assess Chinese UAVs still lag behind their U.S. counterparts in areas such as engines, data links, and sensors.<sup>150</sup> However, as Elsa Kania, analyst at the Long Term Strategy Group, noted to the Commission, China's defense industry is developing a range of "cutting-edge" systems, including "high-altitude long-endurance UAVs that variously have stealth or anti-stealth, supersonic, and precision strike capabilities."<sup>151</sup> A high proportion consists of smaller, tactical models, but the PLA Air Force and PLA Navy have begun to introduce more advanced, multi-mission UAVs.<sup>152</sup> Recently-developed tactical models include a group of electronic warfare-equipped UAVs displayed at a military parade in June 2017 that could "paralyze and suppress" opposing early warning and command communication systems, according to state media.<sup>153</sup> U.S. observers also noted 2017 reports that China is developing a "sea-skimming" antiship UAV that could cruise below radar coverage at an altitude of 1 to 6 meters, potentially shortening a target vessel's detection and response times.<sup>154</sup>
- China has worked to develop **unmanned underwater vehicles (UUVs)** since the 1980s, and one series of UUVs is reportedly in service with the PLA Navy.<sup>155</sup> Researchers at U.S. company Defense Group, Inc. (DGI), which published a contracted report for the Commission on China's Industrial and Military Robotics Development in 2016, described China's progress on UUVs as "drastic" and enabling its systems to "travel farther and deeper, and perform more complex tasks and missions."<sup>156</sup> Chinese UUVs carried out mineral exploration missions in the southwest Indian Ocean in 2016.<sup>157</sup> In July 2017, Chinese media reported the maiden voyage of a

UUV able to stay underwater for 20 hours, as well as scientific observations by 12 UUVs in the South China Sea, terming this “the largest group of gliders to perform simultaneous observations in the region.”<sup>158</sup>

- The PLA Navy is exploring options for **unmanned surface vehicles (USVs)**,<sup>159</sup> and some Chinese research institutes have made progress on these systems. However, DGI’s 2016 report assessed that Chinese military strategists appear to be minimally interested in USVs, potentially because China’s maritime militia can already be mobilized for a variety of missions to support the PLA Navy.<sup>160</sup>
- The PLA Army has begun experimentation to a limited extent on **unmanned ground vehicles (UGVs)**,<sup>161</sup> and they are a priority in China’s defense plans. Numerous civilian and military research institutes, universities, and companies are involved, with high levels of government funding support. Nevertheless, their deployment appears to be limited at this time.<sup>162</sup>

*Autonomous systems.* AI research receives top-level leadership support and funding in China, as discussed in Chapter 4, Section 1, “China’s Pursuit of Dominance in Computing, Robotics, and Biotechnology.” While China’s broad-based progress across military and civilian sectors is more readily identifiable than tangible individual military efforts at this time, the following activities can be observed:

- **Cruise missiles:** A Chinese media report noted in 2016 that China is developing a family of cruise missiles with “a very high level of artificial intelligence and automation” that “will allow commanders to control them in real time manner, or to use a fire-and-forget mode, or even to add more tasks to in-flight missiles,” quoting a defense industry official.<sup>163</sup> The terminology used was ambiguous and shed little light on intended capabilities.<sup>164</sup>
- **Swarming UAVs:** China demonstrated a record-breaking formation of 1,000 rotary-wing UAVs at the Guangzhou Airshow in February 2017, using pre-programmed routes.\* Chinese military experts noted this technique could be used to create a distributed armed system.<sup>165</sup> Leading state-owned defense industry conglomerate China Electronics Technology Group Corporation reportedly operated a formation of 119 fixed-wing UAVs (using small, inexpensive commercial drones) in June 2017, also a record.<sup>166</sup> A previous formation of 67 UAVs in 2016 reportedly demonstrated autonomous swarm control.<sup>167</sup>

---

\*The previous record for a demonstration of this type was 500 UAVs launched by Intel in November 2016. Echo Huang, “Watch a Record-Setting 1,000 Drones Take to the Sky in China to Celebrate the Lantern Festival,” *Quartz*, February 13, 2017; Keely Lockhart, “China Launches 1,000 Illuminated Drones into Night Sky in Record-Breaking Display,” *Telegraph*, February 13, 2017.

- **Autonomous UUVs:** Autonomous UUVs appear to be a priority for the PLA Navy, with multiple research institutes and designated key laboratories conducting research in this area. Universities have developed a “robotfish” prototype (a UUV with bio-inspired movements) and tested an autonomous unmanned underwater glider.<sup>168</sup>
- **Autonomous USVs:** The Underwater Engineering Research Institute at Shanghai University has tested multiple versions of the “intelligent” *Jinghai* USV, a project begun in 2010.<sup>169</sup> The vehicle can reportedly navigate and avoid obstacles autonomously, and has been evaluated by the PLA’s former General Armaments Department and the PLA Navy Equipment Department, potentially indicating intentions to acquire the system.<sup>170</sup>

**Intended Capabilities.** China’s automated UAVs have been incorporated into all four PLA services—the PLA Army, Navy, Air Force, and Rocket Force (former Second Artillery Force)—and likely the Strategic Support Force in limited numbers. These systems are expected to contribute to China’s A2/AD capabilities. The PLA views these vehicles—as well as eventual “intelligentized systems”—as force multipliers for its military power in the long term. In the near term, Ms. Kania assesses that probable missions will include “[ISR]; integrated reconnaissance and strike; information operations, especially electronic warfare; data relay, including communications relay and guidance for missiles engaged in over-the-horizon targeting; and military operations other than war, such as counterterrorism and border defense.”<sup>171</sup>

Much of China’s academic literature on military AI has been abstract and speculative, and most of it deals with U.S. activities.<sup>172</sup> However, it is clear that PLA strategists expect autonomy to have a dramatic impact on traditional operational models. Ms. Kania assesses the PLA’s focus on swarm warfare involving “intelligentized” systems indicates a recognition that these tactics will likely be useful for saturating and overwhelming the defenses of high-value weapons platforms such as aircraft carriers.<sup>173</sup> According to a July 2017 state-run media report, China’s developmental autonomous UUV could eventually lead to a new generation of PLA Navy patrol vessels equipped to guard ships or drilling platforms in the South China Sea.<sup>174</sup> Looking to the far future, Chinese writings have recently discussed the concept of a “battlefield singularity,” in which command and control would itself become intelligentized should machines surpass humans in battlefield decision making and planning.<sup>175</sup>

**Table 2: Comparison with Publicly-Reported U.S. Advanced Weapons Programs**

Category	U.S. Activities
<b>MaRVs</b>	The United States destroyed all of its ground-based missiles ranging between 500 and 5,500 km (310 and 3,418 mi), including the MaRV-equipped Pershing-II, when it became a signatory to the Intermediate Range Nuclear Forces (INF) Treaty in 1983.* U.S. programs to develop MaRVs in the 1960s and 1970s contributed to its later efforts to develop hypersonic weapons, <sup>176</sup> but it has not developed more advanced MaRV-equipped antiship ballistic missiles since this time, as China has.
<b>Hypersonic Weapons</b>	U.S. hypersonic weapons development efforts appear to be significantly more advanced than China's. Dr. Acton notes that the United States has been investigating these technologies since the 1950s and has a sizeable lead in testing. <sup>177</sup> For example, U.S. HGV tests have been conducted at significantly greater ranges and generally involved much greater cross-range maneuvering. <sup>178</sup> The U.S. Army's Advanced Hypersonic Weapon was tested across 3,800 km (2,361 mi) in 2011 and was due for testing across 6,000 km (3,728 mi) before controllers aborted the test due to booster issues, <sup>179</sup> while China appears to have tested at no farther than 2,100 km (1,305 mi). <sup>180</sup> The United States also conducted its first successful scramjet flight test in 2004. <sup>†</sup> <sup>181</sup> The swift progress made by China and other countries, however, has prompted recent warnings from observers including the National Academies of Sciences, Engineering, and Medicine that the United States could lose its lead. <sup>182</sup>
<b>Directed Energy Weapons</b>	The United States has a longstanding lead in pursuing directed energy weapons. However, as U.S. Chief of Naval Operations Admiral John Richardson argued at the 2017 Directed Energy Summit in Washington, DC, the United States is in a "true competition" with China, and its past non-competitive mindset has resulted in a "closer score" than expected in pursuing directed energy technologies. <sup>183</sup> U.S. officials have recently opted not to discuss U.S. directed energy programs publicly, citing the newly-recognized reality of U.S.-China competition and revelations about what competitors such as China were learning from these discussions. <sup>184</sup>

\*Signed by the United States and Soviet Union in 1987, the INF Treaty required "destruction of both parties' ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 km (310 and 3,418 mi), along with their launchers and associated support structures and support equipment," altogether eliminating 846 U.S. and 1,846 Soviet missiles. Although titled a "Nuclear Forces" Treaty, INF's prohibition of conventional systems, including MaRV-equipped systems, is more relevant to the current discussion. China, not a signatory to the agreement, has exploited the restrictions placed on the United States and Russia by the INF to develop an asymmetric advantage, building a vast arsenal of ground-launched conventional intermediate-range ballistic and cruise missiles in recent years. Amy F. Woolf, "Russian Compliance with the Intermediate Range Forces (INF) Treaty," *Congressional Research Service*, June 2, 2015, 8; U.S. Department of State, *Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles (INF Treaty)*, December 8, 1987.

†The U.S. defense-wide Conventional Prompt Global Strike program currently funds three programs for HGVs and related technologies: the U.S. Army's Advanced Hypersonic Weapon, the DARPA/U.S. Air Force Hypersonic Test Vehicle (HTV-2), and the U.S. Air Force's Conventional Strike Missile. The U.S. Air Force is also developing scramjet technologies in collaboration with DARPA, the National Air and Space Administration (NASA), and the U.S. Navy, and tested a scramjet vehicle four times from 2010 to 2013 (this was the X-51A "Waverider" program, which has ended but will inform further programs). NASA previously conducted three scramjet tests from 2001 to 2004 as part of the X-43A "Hyper-X" program. These technologies are still in early development stages. U.S.-China Economic and Security Review Commission, *Hearing on Chi-*

**Table 2: Comparison with Publicly-Reported U.S. Advanced Weapons Programs—Continued**

Category	U.S. Activities
<b>Directed Energy Weapons—Continued</b>	<p>Several notable examples of U.S. programs have been publicly discussed. In 2016 the U.S. Navy announced plans to test a 150 kW ship-based laser “in the near future.”* The U.S. Air Force is reportedly moving toward a proof of concept HEL based on a helicopter gunship;<sup>185</sup> it also plans to test a 50 kW laser on a transonic and supersonic platform in the next four years, and a 150 kW laser on these platforms in the 2021 to 2025 range.<sup>186</sup> The U.S. Army and U.S. Special Operations Command, in conjunction with Raytheon, conducted a feasibility test in June 2017 in which a helicopter-based HEL “acquired and hit an unmanned target.”<sup>187</sup> The U.S. Missile Defense Agency plans to test demonstrators of unmanned aerial vehicles equipped with low-powered lasers by 2021, which could eventually lead to higher-powered lasers for boost-phase ballistic missile defense.<sup>188</sup> After 50 years of U.S. military research on HPM weapons that had apparently reached a dead end, according to Ms. Kania, the United States successfully tested an HPM system on a missile under the U.S. Air Force Research Laboratory-led Counter-electronics High-Powered Microwave Advanced Missile Project (CHAMP).<sup>189</sup> Experts have assessed that the United States could likely field short-range air defense laser systems by the end of 2017 if desired,<sup>190</sup> and is prepared to produce counter-unmanned aerial systems for warfighters (i.e., to shoot down quadcopters, not drones).<sup>191</sup></p> <p>The United States nonetheless faces inherent technical challenges to making directed energy a reliable weapon capability. Dr. Grayson notes that “power scaling, size reduction and packaging, system reliability, and overall cost still remain large questions for the U.S. as well as China.”<sup>192</sup></p>
<b>Electromagnetic Railguns</b>	<p>Railgun research has been primarily dominated by the United States in the past, although the level of power required and the rapid destruction of the rails with repeated use have been persistent obstacles.<sup>193</sup> A March 2017 Congressional Research Service report notes, “In January 2015, it was reported that the [U.S.] Navy is projecting that EMRG could become operational on a Navy ship between 2020 and 2025. In April 2015, it was reported that the Navy is considering installing an EMRG on a Zumwalt (DDG-1000) class destroyer by the mid-2020s.”<sup>194</sup></p>

*na’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; Amy F. Woolf, “Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues,” *Congressional Research Service*, February 3, 2017, 16, 38–39; Erika Solem and Karen Montague, “Updated: Chinese Hypersonic Weapons Development,” *China Brief* 16:7, April 21, 2016; James M. Acton, “Silver Bullet?: Asking the Right Questions About Conventional Prompt Global Strike,” *Carnegie Endowment for International Peace*, 2013, 56.

\*The U.S. Navy already has an operational 30 kW laser weapon mounted on a ship, the *USS Ponce*, called the “Laser Weapon System” or “LaWS.” According to a 2016 Center for Strategic and Budgetary Assessments report, the 150–300 kW range is a “breakpoint for laser weapons,” allowing multiple new uses. Mark Gunzinger and Bryan Clark, “Winning the Salvo Competition: Rebalancing America’s Air and Missile Defenses,” *Center for Strategic and Budgetary Assessments*, 2016, 42.

**Table 2: Comparison with Publicly-Reported U.S. Advanced Weapons Programs—Continued**

Category	U.S. Activities
<b>Counterspace Weapons</b>	<p>The United States most recently demonstrated a direct-ascent antisatellite missile capability when it shot down a crippled and toxic-fueled satellite in low Earth orbit in 2008,<sup>195</sup> and the new SM-3 Block IIA interceptors of the Aegis ballistic missile defense system, first tested in February 2017, could potentially reach nearly all satellites in low Earth orbit.<sup>196</sup> China, however, has conducted a rocket test that indicates it is developing an ASAT capability to target satellites in medium Earth orbit, highly elliptical Earth orbit, and geosynchronous Earth orbit; in addition to successfully destroying a target in low Earth orbit in 2007.<sup>197</sup> The United States has not deployed weapons in space, and is a signatory to the Outer Space Treaty, which bans nuclear weapons in space.* (China, also a signatory, is not known to have yet deployed weapons on space-based platforms either.)</p> <p>In the area of rapid launch, DARPA announced in May that it had selected Boeing to design its Experimental Spaceplane, or XS-1, and stated it plans to test a technology demonstration vehicle in 2019 and conduct 12–15 flight tests in 2020.<sup>198</sup> If achieved, this would dramatically assist U.S. rapid launch capabilities, potentially lower U.S. launch costs by a factor of ten,<sup>199</sup> and likely outpace China’s spaceplane efforts. Since 2010, the U.S. Air Force also has been testing the X-37B Orbital Test Vehicle, an experimental test program intended to “demonstrate technologies for a reliable, reusable, unmanned space test platform.”<sup>200</sup></p>
<b>Unmanned and AI-Equipped Weapons</b>	<p>Despite significant progress, China lags behind the United States in unmanned vehicles in key areas such as engines, data links, and sensors. China’s intensifying focus on “intelligentized” systems indicate it may be less inclined to invest in satellite links for its automated unmanned systems, and instead focus on moving more rapidly toward autonomy.<sup>201</sup> The U.S. long-range antiship missile under development already incorporates semiautonomous capabilities,<sup>202</sup> outpacing China’s efforts to introduce autonomy into cruise missiles. The U.S. Department of Defense demonstrated a swarm of 103 fixed-wing micro-drones in 2016.<sup>203</sup> Chinese military authors have also published few opinions on the ethical dimensions of unmanned and lethal autonomous weapons systems (systems able to independently decide to use lethal force),<sup>204</sup> whereas the United States has seen robust debate on this issue<sup>205</sup> and the U.S. Department of Defense issued a directive banning fully autonomous lethal systems for a ten-year period (absent a high-level waiver) in 2012.<sup>206</sup></p>

\*Among other provisions, parties to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, signed in 1967, agreed not to deploy weapons of mass destruction in space and to limit the use of the moon and other celestial bodies to peaceful purposes, forgoing the installation of bases and weapons. U.S. Department of State, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*.

### Inputs to China's Advanced Weapons Programs

The factors that enable a given high-technology weapons program can be divided into three categories, as Dr. Grayson suggested in testimony to the Commission. These are (1) fundamental scientific knowledge; (2) critical components or materials the weapons might require, including information technology capabilities; and (3) abstract skill-based “enablers” such as advanced manufacturing techniques, modeling and simulation abilities, and testing techniques and facilities.<sup>207</sup> The following pages assess China's capacity in each category.

#### *Scientific Knowledge*

China is able to access scientific knowledge that contributes to its development of advanced weapons through publicly available information and its strong efforts to cultivate human talent. For example, unclassified Chinese writings on hypersonic gliders draw heavily on unclassified U.S. literature on the subject,<sup>208</sup> and China has built upon data and lessons learned from the U.S. hypersonic program.<sup>209</sup> The fundamental physics behind directed energy weapons is well-known and available in public academic publications.<sup>210</sup> China's early research into electromagnetic launch was reportedly inspired by exchanges with U.S. academic counterparts, and China has participated heavily in international symposia in this field.<sup>211</sup> Mr. Chen notes that Chinese writings indicate China's space system researchers already possess foundational knowledge that could be used for a cyber-electronic warfare counterspace R&D program;<sup>212</sup> jamming technology in particular is commercially available and relatively inexpensive.<sup>213</sup> Most notably, China is actively acquiring and investing in foreign AI companies, particularly in Europe, guided by national plans.<sup>214</sup> China is also often able to bypass U.S. International Trafficking in Arms Regulations (ITAR) by relying on domestic expertise or importing needed technologies from other foreign sources.<sup>215</sup>

China's efforts to develop and recruit technical talent have also positioned it to take advantage of the wealth of public knowledge on these systems. China has taken a well-publicized worldwide lead in recent STEM (science, technology, engineering and mathematics) graduates,<sup>216</sup> and also benefits from opportunities to develop and recruit talent from overseas. One survey estimated that over 15 percent of the graduate degrees granted in the United States in physics since 1990 have gone to Chinese citizens, for example,<sup>217</sup> and Beijing has policies such as the Thousand Talents Program\* in place to incentivize these students to return to China. Martin Seifert, former chief executive officer of U.S. laser company Nufern, noted in public statements at the 2017 Directed Energy Summit that this program, which receives significant funding from China's defense industry, had succeeded in luring Nufern employees to China.<sup>218</sup> Mr. Seifert

\* China's “Thousand Talents” or “Recruitment of Global Experts” Plan, initiated in 2008, is a government effort to recruit “strategic scientists or leading talents who can make breakthroughs in key technologies or can enhance China's high-tech industries and emerging disciplines” to work at key academic institutions, scientific institutions, and state-owned enterprises in China. It includes incentives targeted at both non-Chinese citizens working outside China and Chinese citizens who have traveled abroad to study. Recruitment Program of Global Experts, *The Thousand Talents Plan*. <http://www.1000plan.org/en/plan.html>.

noted in particular the draw of China's nonmilitary demand for industrial lasers as a global manufacturing power; possibly as many as one million industrial lasers are in use in China every day, operating at low power levels around 10 kW,<sup>219</sup> and China accounted for 17.7 percent of the global industrial laser market in 2016.<sup>220</sup> This commercial demand contributes to a wider base of knowledge and talent in China, which can then be applied to military programs. As of mid-2014, the Thousand Talents Program had reportedly recruited over 4,000 returnees since the program's inception in 2008.<sup>221</sup>

### **Materials and Components**

China does not lack the critical materials and components necessary to construct the six types of advanced weapons examined in this section, relative to the United States. In fact, China dominates in access to some key materials: 90 percent of the global mining and refining of neodymium, a rare earth element that enables solid state lasers, is conducted in China, for example.<sup>222</sup> In addition, China's advances in computing and robotics serve as critical components for next frontier weapons.\* U.S. Defense Secretary James Mattis emphasized these developments and the increasing role of the commercial sector in testimony to the Senate Armed Services Committee in June 2017:

*Rapid technological change includes developments in advanced computing, big data analytics, artificial intelligence, autonomy, robotics, miniaturization, additive manufacturing, meta-materials, directed energy, and hypersonics—the very technologies that ensure we will be able to fight and win the wars of the future. ... The fact that many of these technological developments will come from the commercial sector means that state competitors and non-state actors will also have access to them, a fact that will continue to erode the conventional overmatch our nation has grown so accustomed to.*<sup>223</sup>

Specifically, semiconductors are key to intelligent weapons systems; supercomputing is crucial for weapons design and testing (Dr. Acton specifically notes its importance for HGV design<sup>224</sup>); industrial robotics enhances the quality and efficiency of manufacturing; and national champions† in the commercial robotics and AI sectors are well positioned to provide next frontier military applications.

### **Skills and Techniques**

Dr. Grayson assesses skill-based enablers to be the most important factor in developing advanced weapons. He notes that while these can only be obtained through trial and error, they can be achieved with sufficient time and funding.<sup>225</sup> In this area, China lags behind the United States for each advanced weapons type (except antiship ballistic missiles) because it has spent less time on

\*See Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology," of this Report.

†National champions are domestic firms leading in their industry—based on market share, volume of sales, and size—that enjoy strong political and financial support from the Chinese government. For more discussion of China's national champions in the high-tech industry, see Chapter 4, Section 1, "China's Pursuit of Dominance in Computing, Robotics, and Biotechnology," of this Report.

their development, as presented in Table 2. However, China appears to have the long-term plans, consistent funding, and human talent in place to eventually develop capable advanced weapons.<sup>226</sup> Dr. Grayson states, “There are no serious fundamental barriers to China eventually obtaining an effective directed energy weapon system. ... the only fundamental barrier to learning these abstract elements and achieving a practical weapon capability is effort—time, will, and money.”<sup>227</sup> Dr. Acton similarly notes that sufficient time and resources should enable China to overcome challenges to developing a long-range hypersonic glider, although the process is “unlikely to be quick or painless.”<sup>228</sup> Should the United States falter in its own efforts, this indicates China is well prepared to close the gap further than it already has.

Nevertheless, China has shown limitations to its innovation capacity. In a 2016 report prepared for the Commission, the University of California Institute on Global Conflict and Cooperation found that China’s massive state expenditures on science and technology through state-run plans have yielded results, but a small overall return on investment.<sup>229</sup> Recent research by the Center for Strategic and International Studies describes China as a “fat tech dragon”—a country that invests a great deal of resources but does not translate these efficiently into commercially successful outputs, based on innovation indices.\*<sup>230</sup> Dissatisfied with duplication, waste, and insufficient original innovation in its science and technology system, China’s leadership has recently sought to consolidate its plans and prioritize advancement to higher-end innovation.<sup>231</sup> While China’s defense science and technology plans have been more successful in generating innovative outputs than those in the civilian sector,<sup>232</sup> China has often relied on foreign technology to boost its advanced weapons programs. China may have incorporated technologies from the U.S. Pershing II MRBM into its ASBMs,<sup>233</sup> and its HGV may be an enhanced version of a MaRV developed for an existing ballistic missile, for example.<sup>234</sup> According to Ms. Kania, China’s UAVs appear similar to U.S. models, which could indicate mimicry or commercial cyber espionage in some cases.<sup>235</sup> Mr. Harrison explained that there is a large “second mover advantage in defense,”<sup>236</sup> meaning China can gain ground by absorbing key foreign technologies and skipping various phases of development.<sup>237</sup> In some cases, it may be more readily able to make transitions: from manned to unmanned systems<sup>238</sup> or from long-range automated UAVs to autonomous technologies,<sup>239</sup> for example.

These shortcomings may render China’s development of innovative advanced weapons more costly or protracted, but do not rule out successful innovation. Indeed, the possibility of China achieving breakthroughs at the global frontier appears to be increasing. Dr. Grayson suggests China may be moving from a phase of “catching up” to one of pursuing “leap-ahead advanced technologies.”<sup>240</sup> Ms. Kania states that “China’s capability to pursue independent inno-

\*The report specifically points to skyrocketing R&D expenditures and intensity (inputs), but continued low intellectual property values and small shares of manufacturing value added (and high-tech value added in particular) relative to GDP (outputs). For the full report, the first in a series examining innovation policies in China, see Scott Kennedy, *The Fat Tech Dragon: Baseline Trends in China’s Innovation Drive*, Center for Strategic and International Studies, Washington, DC, May 25, 2017.

vation has increased considerably,” citing “cutting-edge advances in emerging technologies, including artificial intelligence, high-performance computing, and quantum information science.”<sup>241</sup> Mr. Pollpeter assesses that “there are fewer and fewer barriers for China to innovate or to develop advanced technologies. . . . They are maybe reaching a threshold where they may be relying less on foreign technology and doing their own innovative research.”<sup>242</sup> He cites other space technologies such as quantum communications, pulsar navigation satellites, and an electromagnetic drive, not previously developed, which China has reportedly been testing.<sup>243</sup>

## **Implications for the United States**

### ***Direct Military Implications***

China’s objectives for its advanced weapons programs, if realized, could have disruptive military effects and necessitate altering U.S. strategic calculations in the Asia Pacific.<sup>244</sup>

**Maneuverable reentry vehicles**, a key component of China’s larger counterintervention effort,<sup>245</sup> have already raised questions regarding whether U.S. surface ships would need to avoid venturing into the “range ring” of China’s ASBMs in a contingency.<sup>246</sup> If China succeeds in building a system capable of successfully targeting moving aircraft carriers—which may never be fully known by public observers outside of actual combat—U.S. defensive options will be expensive and attempts to strike before launch highly escalatory. Ultimately, by compounding existing A2/AD challenges, these and other advanced weapons could delay or significantly increase the costs of a U.S. intervention in a regional contingency.<sup>247</sup>

The United States has been investing in responses to these weapons since at least 2004, although the competition between defensive and offensive measures will likely be an ongoing one. China’s development of the reconnaissance-strike complex to target these ASBMs will be expensive and increase its reliance on space-based assets, while the missiles themselves will be reliant on satellite data links, making them vulnerable to electronic warfare countermeasures such as jamming.<sup>248</sup>

**Hypersonic weapons** could, in the medium term, confer maneuverability upgrades relative to China’s existing ballistic and cruise missile arsenal, and speed upgrades relative to its existing cruise missiles. In the long run, they could also enable increases in range.<sup>249</sup> According to a 2016 report by the National Academies of Sciences, Engineering, and Medicine commissioned by the U.S. Air Force, high-speed, maneuvering weapons “could hold at risk the fundamental U.S. construct of global reach and presence” (which depends on forward deployment) based on the difficulty of defending against these systems’ combination of speed and maneuverability and their operation below a ballistic missile trajectory but above typical cruise missile operating altitudes.<sup>250</sup> The report argues that there is no established architecture for defending against these weapons, as exists for ballistic missile defense.<sup>251</sup> The weapons’ level of maneuverability—in particular, whether it is capable of evading interceptors—will be a critical factor in its ability to penetrate defenses. Dr. Acton testified to the Commission that hypersonic weapons would

likely be specifically useful for penetrating “area” defenses (which aim to defend large amounts of territory) rather than “point” defenses (which aim to defend small targets)—after adaptation, point defenses may actually perform better against gliders and hypersonic cruise missiles than against China’s existing ballistic missiles. This means that conventionally armed hypersonic weapons at regional ranges probably would not significantly alter the threat U.S. forces already face in the Western Pacific. Nuclear-armed gliders would preserve the status quo, as China’s nuclear arsenal can already inflict damage on the United States, meaning that conventionally armed intercontinental range gliders would present the most disruptive threat. If a conventionally-armed glider or hypersonic cruise missile with a regional range was capable of sufficiently rapid terminal maneuvering to evade point defenses, however, it could be a “game changer,” in his view.<sup>252</sup> Lastly, the possibility of nuclear or conventional capability could complicate U.S. determination of China’s strategic intent for hypersonic weapons, particularly for an HGV launched on a ballistic missile.<sup>253</sup>

**Directed energy weapons** such as HEL and HPM systems could give China a breakthrough capability to target U.S. platforms and enhance China’s A2/AD capabilities. They could also undermine future U.S. military concepts such as reliance on distributed, low-cost platforms to assure access to contested environments, a threat China could not efficiently counter with more expensive traditional missiles. In addition, as the United States does not utilize conventional ballistic missiles as offensive weapons, China’s directed energy program has a much easier goal: damaging a seeker on a guided U.S. precision strike weapon or a satellite sensor as opposed to burning a hole through a ballistic missile body, meaning China could do more with less power. These development efforts are high-risk and extremely uncertain, however, underscoring the importance of understanding China’s technological capabilities in this area.<sup>254</sup>

**Electromagnetic railguns** could provide China with higher numbers of rounds and significantly lower costs per round relative to its existing missile arsenal.<sup>255</sup> This could enhance China’s A2/AD capabilities,<sup>256</sup> specifically providing a cheaper alternative to counter U.S. attempts to assure access in contested environments through distributed, low-cost platforms (as in the case of directed energy weapons<sup>257</sup>).

**Counterspace weapons** could be used to deny key space-based C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) and navigation systems to the U.S. military in a contingency. Combined with attacks against non-space-based nodes, this could complicate the United States’ ability to flow forces into the region and conduct operations effectively. These weapons could also increase the PLA’s effectiveness against less capable militaries.<sup>258</sup> China has tested capabilities that could threaten U.S. satellites in nearly all orbits,<sup>259</sup> and satellites are highly vulnerable to directed energy effects due to their sensitive electronics and low tolerance for sub-system failure.<sup>260</sup> Mr. Chen advised the Commission that the United States should specifically watch for the development and deployment of a co-orbital system

able to deliver electronic warfare attacks.<sup>261</sup> As China's technologies mature these threats will continue to increase.

In addition, China's non-kinetic and electromagnetic counterspace weapons could enable less-escalatory "gray zone" attacks on satellites to test U.S. responses, prepare the battlefield by degrading key capabilities, or deter further U.S. involvement. Whether the public would be aware of such attacks, whether they could be attributed in a timely manner (if a jammer in a third country were used, for example), and what would be a proportionate response are unclear, meaning traditional methods of deterrence may be less effective against these threats.<sup>262</sup>

Given these threats, continued U.S. investments in hardened and distributed satellites as well as launch systems that can rapidly replace satellites take on additional importance.<sup>263</sup> The United States currently has the opportunity to implement more resilient new architectures as it begins follow-on programs for communication and missile warning satellites; more than 90 percent of the current military satellite communications bandwidth is not equipped with techniques to protect against jamming that are incorporated into "protected" communications satellites.<sup>264</sup> Importantly, China's ongoing military modernization and extension of its power projection capabilities also render it increasingly reliant on its own space assets,<sup>265</sup> which could potentially increase the utility of U.S. counterspace systems and its efforts to deter warfare in space.

**Unmanned/AI-equipped weapons** in large numbers could pose challenges for U.S. air defenses, particularly by using swarm technology.<sup>266</sup> Ms. Kania notes, "Within the next several years, a number of sophisticated UAVs, reportedly including those with stealth, anti-stealth, and supersonic capabilities, armed with multiple forms of precision weapons, could enter service with the PLA."<sup>267</sup> These could specifically expand the PLA's C4ISR and long-range precision strike abilities.<sup>268</sup> Broader advances in AI could further expand the threat posed by China's precision strike arsenal, enable machines better equipped for blockade and denial missions, and enable better control of cyber weapons and defenses, with real-time discovery and exploitation of U.S. cyber vulnerabilities.<sup>269</sup> In the long term, AI could contribute to navigation or even targeting for China's future precision-strike hypersonic weapons.<sup>270</sup> U.S. officials have noted the utility of directed energy systems to be used as possible "counter-swarm" weapons.<sup>271</sup>

For each of these technologies, a breakthrough that outpaces current predictions could magnify the military challenge and "change [U.S.] strategic calculations in the Asia Pacific and beyond," as stated by Mr. Stokes.<sup>272</sup> Dr. Grayson notes that predicting technological breakthroughs is always challenging, even for U.S. systems, but this challenge is compounded for the weapons China is pursuing at the global technological frontier with limited public information available.<sup>273</sup>

### ***Broader Competitive Implications***

Given Beijing's commitment to its current trajectory, and the lack of fundamental barriers to advanced weapons development beyond time and funding, the United States cannot assume it will have an

enduring advantage in developing next frontier military technology.<sup>274</sup> In addition, current technological trends render the preservation of any advantage even more difficult.<sup>275</sup> The United States now faces a peer technological competitor in an era in which commercial sector research and development with dual-use implications increasingly outpaces and contributes to military developments<sup>276</sup>—a country that is also one of its largest trading partners and that trades extensively with other high-tech powers. As the United States seeks to ensure it is prepared to deter aggression and defend key interests in the Asia Pacific region, such as the security of allies and partners, the peaceful resolution of disputes, and freedom of navigation,<sup>277</sup> recognizing this challenge will be crucial.

China has also centrally directed and managed policies for exploiting government funding, commercial technological exchange, foreign investment and acquisitions, and talent recruitment to bolster its dual-use technological advances. Along with traditional and cyber espionage,<sup>278</sup> it engages in state-backed overseas investments and acquisitions in the United States that touch on national security-related areas (see Chapter 1, Section 2, “Chinese Investment in the United States,” for more on this topic). Reuters reported in June 2017 that “an unreleased Pentagon report, viewed by Reuters, warns that China is skirting U.S. oversight and gaining access to sensitive technology through transactions that currently don’t trigger [Committee on Foreign Investment in the United States] review.”<sup>279</sup> Ms. Kania noted that China likely will use advances from partnerships with U.S. AI companies for dual-use purposes.<sup>280</sup> China also seeks to obtain key components in commercial markets both inside and outside the United States, and traditional U.S. export controls typically only capture tangible technologies, not procedures and other supporting skills.<sup>281</sup> Dr. Grayson noted to the Commission that a pilot program based on an advanced weapon such as an HEL could help test a new approach: a weapons system-based, top-down process that locates required core capabilities that are not commercially available, instead of the current technology-based, bottom-up method that includes many commercially-available technologies.<sup>282</sup> Foreign partners could also be involved in an export control strategy designed around these critical capabilities.<sup>283</sup> China has also offered incentives to U.S.-based students and experts through its Thousand Talents Program, underscoring the importance of U.S. efforts to recruit and retain science and technology talent. Finally, as China injects high levels of government funding into its pursuit of advanced military technologies, the United States cannot take its leadership for granted.

## ENDNOTES FOR SECTION 2

1. Robert Lawrence Kuhn, "Xi Jinping's Chinese Dream," *New York Times*, June 4, 2013.
2. Alastair Iain Johnston, "The Evolution of Interstate Security Crisis Management Theory and Practice in China," *Naval War College Review* 69:1 (2016), 40; Edward Wong, "Security Law Suggests a Broadening of China's 'Core Interests,'" *New York Times*, July 2, 2015; Ministry of National Defense of the People's Republic of China, *Defense Ministry's Regular Press Conference on Nov 26*, November 26, 2015; Caitlin Campbell et al., "China's 'Core Interests' and the East China Sea," *U.S.-China Economic and Security Review Commission*, May 10, 2013, 1–5.
3. Michael S. Chase, Cristina L. Garafola, and Nathan Beauchamp-Mustafaga, "Chinese Perceptions of and Responses to U.S. Conventional Military Power," *Asian Security*, March 23, 2017, 2–3.
4. Maneuverable reentry vehicles and hypersonic weapons: U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017; high energy lasers: U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017; high-powered microwave weapons: U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; electromagnetic railguns: Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015; counterspace weapons became more relevant following the 1991 Gulf War: U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, oral testimony of Kevin Pollpeter, February 23, 2017.
5. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.
6. China's State Council Information Office, *China's Military Strategy*, May 2015; U.S.-China Economic and Security Review Commission, *Hearing on the Implications of China's Naval Modernization for the United States*, written testimony of Cortez A. Cooper, June 11, 2009.
7. China's State Council Information Office, *China's Military Strategy*, May 2015; Larry M. Wortzel, *The Chinese People's Liberation Army and Information Warfare*, U.S. Army War College Strategic Studies Institute, March 2014, vi.
8. Andrew S. Erickson, "Showtime: China Reveals Two 'Carrier-Killer' Missiles," *National Interest*, September 3, 2015; David Lai and Marc Miller, "Introduction," in Roy Kamphausen, David Lai, and Andrew Scobell, eds., *Beyond the Strait: PLA Missions Other Than Taiwan*, Strategic Studies Institute, 2009, 9–10; David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects*, University of California Press, 2002, 4–5; Harry J. Kazianis, "America's Air-Sea Battle Concept: An Attempt to Weaken China's A2/AD Strategy," *China Policy Institute*, 2014, 2.
9. Tai Ming Cheung et al., "Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 22; Harry J. Kazianis, "America's Air-Sea Battle Concept: An Attempt to Weaken China's A2/AD Strategy," *China Policy Institute*, 2014, 2; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 15, 99. Translation; U.S.-China Economic and Security Review Commission, *Hearing on the Implications of China's Naval Modernization for the United States*, written testimony of Cortez A. Cooper, June 11, 2009; Toshi Yoshihara and James R. Holmes, *Red Star over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy*, Naval Institute Press, 2010, 11.
10. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
11. Forrest E. Morgan et al., "Dangerous Thresholds: Managing Escalation in the 21st Century," *RAND*, 2008, 56; National Ground Intelligence Center, *China: Medical Research on Bio-Effect of Electromagnetic Pulse and High-Power Microwave Radiation*, August 17, 2005, 6.
12. Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016; People's Network,

“Dong Feng 21D Troop Review Gives PLA Navy an Asymmetric ‘Assassin’s Mace,’” September 9, 2015.

13. Jonathan Ray et al., “China’s Industrial and Military Robotics Development,” *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 52.

14. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.

15. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

16. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; Tai Ming Cheung et al., “Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 28–29.

17. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.

18. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; Tai Ming Cheung et al., “Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 28–29, 38, 49.

19. Tai Ming Cheung et al., “Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 64–65.

20. James Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017.

21. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 362.

22. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017.

23. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 352–353, 372–373

24. Jordan Wilson, “China’s Expanding Ability to Conduct Conventional Missile Strikes on Guam,” *U.S.-China Economic and Security Review Commission*, May 10, 2016, 6, 11.

25. Jordan Wilson, “China’s Expanding Ability to Conduct Conventional Missile Strikes on Guam,” *U.S.-China Economic and Security Review Commission*, May 10, 2016, 4, 11.

26. Wang Changqin and Fang Guangming “PRC Military Sciences Academy Explains Need for Developing the DF-26 Anti-Ship Missile,” *China Youth Daily*, November 30, 2015. Translation; Andrew S. Erickson, “Showtime: China Reveals Two ‘Carrier-Killer’ Missiles,” *National Interest*, September 3, 2015; Wendell Minnick, “China’s Parade Puts U.S. Navy on Notice,” *Defense News*, September 3, 2015; Charles Clover, “China Unveils ‘Guam Express’ Advanced Anti-Ship Missile,” *Financial Times*, September 5, 2015; Franz-Stefan Gady, “Revealed: China for the First Time Publicly Displays ‘Guam Killer’ Missile,” *National Interest*, August 31, 2015.

27. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.

28. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.

29. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; James M. Acton, “Silver Bullet?: Asking the Right Questions About Conventional Prompt Global Strike,” *Carnegie Endowment for International Peace*, 2013, 100.

30. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.

31. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.

32. Andrew S. Erickson, “Raining Down: Assessing the Emerging ASBM Threat,” *Princeton-Harvard China and the World Program*, March 30, 2016.

33. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016.
34. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
35. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
36. John Costello, "The Strategic Support Force: Update and Overview," *China Brief*, December 21, 2016.
37. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
38. Peter Mattis, "China Reorients Strategic Military Intelligence," *IHS Jane's*, 2017, 3–4; Lincoln Davidson, "China's Strategic Support Force: The New Home of the PLA's Cyber Operations," *Council on Foreign Relations*, January 20, 2016.
39. U.S.-China Economic and Security Review Commission, *Hearing on China's Offensive Missile Forces*, written testimony of Dennis M. Gormley, April 1, 2015.
40. James Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017.
41. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016.
42. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016.
43. Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016.
44. Andrew S. Erickson, "Raining Down: Assessing the Emerging ASBM Threat," *Princeton-Harvard China and the World Program*, March 30, 2016.
45. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017; People's Network, "Dong Feng 21D Troop Review Gives PLA Navy an Asymmetric 'Assassin's Mace,'" September 9, 2015.
46. Jordan Wilson, "China's Expanding Ability to Conduct Conventional Missile Strikes on Guam," *U.S.-China Economic and Security Review Commission*, May 10, 2016, 5–7.
47. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; National Aeronautics and Space Administration, *Role of Mach Number in Compressible Flows*, May 5, 2015.
48. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
49. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017; National Academies of Sciences, Engineering, and Medicine, "High-Speed Maneuvering Weapons: A Threat to America's Global Vigilance, Reach, and Power (Unclassified Summary)," *National Academies Press*, 2016.
50. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 362; U.S.-China Economic and Security Review Commission, *Hearing on China's Offensive Missile Forces*, oral testimony of James Acton, April 1, 2015; Harry Kazianis, "The Real Military Game-Changer: Hypersonic Weapons 101," *Interpreter*, March 14, 2014; and Zachary Keck, "Will Hypersonic Capabilities Render Missile Defense Obsolete?" *Diplomat*, February 7, 2014.
51. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
52. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; Mark Gunzinger and Bryan Clark, "Winning the Salvo Competition: Rebalancing America's Air and Missile Defenses," *Center for Strategic and Budgetary Assessment*, 2016, 3.
53. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
54. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; U.S.-China

Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017; Daniel M. Norton, "The Future of Hypersonic Weapons," *Cipher Brief*, October 20, 2016, 2; Erika Solem and Karen Montague, "Updated: Chinese Hypersonic Weapons Development," *China Brief* 16:7, April 21, 2016.

55. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017; Erika Solem and Karen Montague, "Updated: Chinese Hypersonic Weapons Development," *China Brief* 16:7, April 21, 2016.

56. Guy Norris, "China Takes Wraps off National Hypersonic Plan," *Aviation Week and Space Technology*, April 10, 2017.

57. Jeffrey Lin and P.W. Singer, "China's Hybrid Spaceplane Could Reset the 21st Century Space Race," *Popular Science*, August 9, 2016; Erika Solem and Karen Montague, "Updated: Chinese Hypersonic Weapons Development," *China Brief* 16:7, April 21, 2016.

58. Guy Norris, "China Takes Wraps off National Hypersonic Plan," *Aviation Week and Space Technology*, April 10, 2017.

59. Harriet Marsden, "Russia Claims It Has Successfully Tested Hypersonic Missile 'Which Makes Western Defenses Obsolete,'" *Independent*, June 3, 2017; Michael Peck, "Britain Admits that Russian Missiles Can Blow Its New Aircraft Carriers Out of the Water," *National Interest*, April 30, 2017; TASS Russian News Agency, "Russia's Hypersonic Zircon Anti-Ship Missile Reaches Eight Times Speed of Sound," April 15, 2017.

60. Indian Space Research Organization, "Successful Flight Testing of ISRO's Scramjet Engine Technology Demonstrator," August 28, 2016.

61. Kyle Mizokami, "The U.S. and Australia Conducted a Secretive Hypersonic Missile Test," *Popular Mechanics*, July 18, 2017; U.S. National Air and Space Administration, "HIFIRE Scramjet Research Flight Will Advance Hypersonic Technology," May 10, 2012.

62. Erika Solem and Karen Montague, "Updated: Chinese Hypersonic Weapons Development," *China Brief* 16:7, April 21, 2016.

63. James M. Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017.

64. James M. Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, May 26, 2015.

65. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.

66. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Mark Stokes, February 23, 2017.

67. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.

68. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.

69. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017; Mark Gunzinger and Bryan Clark, "Winning the Salvo Competition: Rebalancing America's Air and Missile Defenses," *Center for Strategic and Budgetary Assessment*, 2016, 43; Jeffrey Lin and P.W. Singer, "China's New Microwave Weapons Can Disable Missiles and Paralyze Tanks," *Popular Science*, January 26, 2016.

70. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017; Mark Gunzinger and Bryan Clark, "Winning the Salvo Competition: Rebalancing America's Air and Missile Defenses," *Center for Strategic and Budgetary Assessment*, 2016, 43; Jeffrey Lin and P.W. Singer, "China's New Microwave Weapons Can Disable Missiles and Paralyze Tanks," *Popular Science*, January 26, 2016.

71. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

72. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

73. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

74. Major General William Hix, Director of Strategy, Plans, and Policy, Department of the Army, "Keynote: Army," Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017; Rear Admiral Mike Manazir, Deputy Chief of Naval Operations for Warfare

Systems, “Keynote: Navy,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.

75. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; Tai Ming Cheung et al., “Planning for Innovation: Understanding China’s Plans for Technological, Energy, Industrial, and Defense Development,” *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 28.

76. Elsa B. Kania, “The PLA’s Potential Breakthrough in High-Power Microwave Weapons,” *Diplomat*, March 11, 2017; Jeffrey Lin and P.W. Singer, “China’s New Microwave Weapons Can Disable Missiles and Paralyze Tanks,” *Popular Science*, January 26, 2016.

77. Elsa B. Kania, “The PLA’s Potential Breakthrough in High-Power Microwave Weapons,” *Diplomat*, March 11, 2017.

78. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; Elsa B. Kania, “The PLA’s Potential Breakthrough in High-Power Microwave Weapons,” *Diplomat*, March 11, 2017; Henri Kenhmann, “A Mysterious High Power Microwave,” *East Pendulum Web Page*, January 27, 2017. Translation; University of Electronic Science and Technology, “University Successfully Holds Ninth National High Power Microwave Symposium,” October 17, 2013. Translation; Fang Jin-Yong et al., “High Power Microwave Pulse Compression System Based on Cylindrical Resonant Cavity,” *Acta Physica Sinica* 60:4, April 15, 2011. Translation; Li Ping et al., “Technical Means of High Power Microwave Against Antiship Missile,” *Winged Missiles Journal*, 2009. Translation; Yu Wen et al., “Mechanism of Burnout of Semiconductor Devices,” *Physics* 28:6, March 8, 1999. Translation.

79. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

80. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

81. National Ground Intelligence Center, *China: Medical Research on Bio-Effect of Electromagnetic Pulse and High-Power Microwave Radiation*, August 17, 2005, 1–2.

82. National Ground Intelligence Center, *Assessment of Chinese Radiofrequency Weapon Capabilities*, April 2001, iii, 1.

83. National Ground Intelligence Center, *Assessment of Chinese Radiofrequency Weapon Capabilities*, April 2001, iii, 1.

84. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

85. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; Jeffrey Lin and P.W. Singer, “China Sells a New Laser Gun,” *Popular Science*, September 22, 2016; Jeffrey Lin and P.W. Singer, “Chinese Soldiers Have Laser Guns,” *Popular Science*, January 7, 2016.

86. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

87. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

88. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

89. Dr. Michael Carter, Program Manager for Department of Defense Programs, National Ignition Facility and Photon Science, Lawrence Livermore National Laboratory, “Labs as Strategic Partners,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 30, 2017.

90. American Institute of Physics, *National Ignition Facility May Never Ignite, DOE Admits*, June 20, 2016.

91. Chen Binglin, “World’s Strongest ‘Death Beam’ from China Still Can’t Fry an Egg, but It Could Blind an Enemy Drone,” *South China Morning Post*, November 25, 2015.

92. Ruxin Li et al., “Development of 10PW Super Intense Laser Facility at Shanghai,” *Shanghai Institute of Optics and Fine Mechanics*, November 28–29, 2016; Chen Binglin, “World’s Strongest ‘Death Beam’ from China Still Can’t Fry an Egg, but It Could Blind an Enemy Drone,” *South China Morning Post*, November 25, 2015.

93. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, oral testimony of David D. Chen, February 23, 2017.

94. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

95. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.
96. David D. Chen, Independent Analyst, interview with Commission staff, June 15, 2017.
97. James Mugg, "U.S. Navy's Railgun Dream Could Be Denied by Two Big Problems," *National Interest*, August 10, 2016.
98. Jay Bennett, "The Future of the Navy's Electromagnetic Railgun Could Be a Big Step Backwards," *Popular Mechanics*, June 6, 2016.
99. *People's Daily*, "China Makes Breakthrough in Electromagnetic Missile Launching Technology," November 20, 2015.
100. Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015.
101. Carolyn Meinel, "For Love of a Gun: The Tumultuous History of Electromagnetic Launch," *IEEE Spectrum*, July 2, 2007.
102. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017; Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015.
103. Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015; Andre Louis Octave Fauchon-Villeplee, "Electric Apparatus for Propelling Projectiles," *U.S. Patent Office* US1421435 A, July 4, 1924.
104. David D. Chen, Independent Analyst, interview with Commission staff, June 15, 2017.
105. Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015.
106. David D. Chen, Independent Analyst, interview with Commission staff, June 15, 2017.
107. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
108. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 292–294.
109. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 292–294.
110. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
111. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.
112. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.
113. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017; Lin Jinchun, Wu Xianzhong, Lu Shengjun, Jiang Chunshan, "Countermeasure Technology for MMW Satellite Links," *Aerospace Electronic Warfare*, October 2012, 20–22. Translation.
114. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017; Xu Xiaofeng, Zhu Xiaosong, Liu Liyuan, "Jamming Analysis Based on a Certain Satellite Communication System," *Aerospace Electronic Warfare*, October 2006, 28–29, 45. Translation; Zhao Haiyan, Cheng Pengjun, Shi Yingchun, "Introduction of Key Technologies in LEO Satellites Communications and EM Threat," *Aerospace Electronic Warfare*, March 2004. Translation.
115. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.
116. Peter R. Bond, ed., *Jane's Space Systems and Industry 2011–2012*, IHS Global Limited, 2011, 536.
117. Peter R. Bond, ed., *Jane's Space Systems and Industry 2011–2012*, IHS Global Limited, 2011, 588.
118. Kevin Pollpeter, "China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), March 2, 2015, 93; Kevin Pollpeter, "China's Space Robotic Arm Programs," *University of California Institute on Global Conflict and Cooperation*, October 2013; Marcia S. Smith, "Surprise Chinese Satellite Maneuvers Mystify Western Experts," *SpacePolicyOnline*, August 19, 2013.
119. Jeffrey Lin and P.W. Singer, "China's Largest Space Launch Vehicle Long March 7 Flies with Technological Triple Whammy," *Popular Science*, 8 July 2016;

Xinhua, *China Announces Success in Technology to Refuel Satellites in Orbit*, June 30, 2016.

120. Stephen Chen, "Is China Militarizing Space? Experts Say New Junk Collector Could Be Used As Anti Satellite Weapon," *South China Morning Post*, August 5, 2016.

121. Spaceflight101.com, "Companion Satellite Released from Tiangong-2 Space Lab for Orbital Photo Shoot," October 23, 2016.

122. Spaceflight101.com, "In-Space Eavesdropping? China's Shijian-17 Completes High-Altitude Link-Up," December 9, 2016.

123. U.S. Department of Defense, *Annual Report to Congress on the Military Power of the People's Republic of China*, July 2006, 35.

124. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 298; Space News, "NRO Confirms Chinese Laser Test Illuminated U.S. Spacecraft," October 3, 2006.

125. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.

126. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 298.

127. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 297; U.S. Department of Defense and U.S. Department of State, *Risk Assessment of United States Space Export Control Policy*, March 2012, section 4.3; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011*, 2011, 37.

128. Jeffrey Lin and P.W. Singer, "China's Hybrid Spaceplane Could Reset the 21st Century Space Race," *Popular Science*, August 9, 2016.

129. Guy Norris, "China Reveals Key Test Progress on Hypersonic Combined-Cycle Engine," *Aviation Week and Space Technology*, April 10, 2017.

130. Jeffrey Lin and P.W. Singer, "A Look at China's Most Exciting Hypersonic Aerospace Programs," *Popular Science*, April 18, 2017.

131. Jeffrey Lin and P.W. Singer, "China's Hybrid Spaceplane Could Reset the 21st Century Space Race," *Popular Science*, August 9, 2016.

132. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 308–309.

133. Leonard David, "When Will China's 'Heavenly Palace' Space Lab Fall Back to Earth?" *Space.com*, June 10, 2016.

134. Jeffrey Lin and P.W. Singer, "China's Answer to the Hubble Telescope," *Popular Science*, March 11, 2016.

135. Kevin Pollpeter, "China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), March 2, 2015, 98.

136. Kevin Pollpeter, Research Scientist, CNA, interview with Commission staff, June 17, 2017.

137. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.

138. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 283–284.

139. U.S. Senate Select Committee on Intelligence, *Statement for the Record: Worldwide Threat Assessment of the U.S. Intelligence Community*, written testimony of Daniel R. Coats, May 11, 2017, 8.

140. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 283–284; China's State Council Information Office, *China's Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 178–188. Translation.

141. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.

142. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.

143. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.

144. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, oral testimony of Kevin Pollpeter, February 23, 2017; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 187. Translation.

145. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.

146. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017; Lan Shunzheng, "New Concept for Future War—'Big Energy-centric Warfare,'" *National Defense Reference*, December 27, 2016. Translation.
147. Defense Science Board, *Summer Study on Autonomy*, June 2016, 4–5, 11.
148. Christopher Thomas and Gang Liang, "The Rise of the Machines: How Chinese Executives Think about Developments in Artificial Intelligence," *McKinsey & Company*, December 2016, 1.
149. Defense Science Board, *Summer Study on Autonomy*, June 2016, 5.
150. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 63.
151. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
152. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
153. Xinhua, "China Displays Electronic Warfare Equipment at Army Day Parade," July 30, 2017.
154. Tobias Burgers and Scott N. Romaniuk, "China's Drone-Missile Hybrid: The Next Step in Naval Drone Warfare," *Diplomat*, August 3, 2017; Kelvin Wong, "Details of Chinese Sea-Skimming Lethal Drone Prototype Emerge," *IHS Jane's*, July 28, 2017.
155. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 65.
156. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 65.
157. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 65–66.
158. Xinhua, "China Tests Underwater Robot in South China Sea," July 24, 2017.
159. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
160. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 68.
161. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
162. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 70.
163. Ben Blanchard, "China Eyes Artificial Intelligence for New Cruise Missiles," *Reuters*, August 19, 2016.
164. Abhijit Singh, "Is China Really Building Missiles with Artificial Intelligence?" *Diplomat*, September 21, 2016.
165. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
166. Emily Feng and Charles Clover, "Drone Swarms vs Conventional Arms: China's Military Debate," *Financial Times*, August 24, 2017; Xiang Bo, "China Launches Record-Breaking Drone Swarm," *Xinhua*, June 11, 2017.
167. Andrew Tate, "China Launches Record-Breaking UAV Swarm," *IHS Jane's Defense Weekly*, June 22, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; China Electronics Technology Group Corporation, "Airshow China Showcases World's Largest UAV Swarm: Debut of Future Form of Air Combat," November 1, 2016. Translation.
168. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; Fu Chengkun, "Six Major PLA Science and Technology [Advances] in 2014: A UUV to Protect Drilling Platforms," *Xinhua*, July 21, 2014. Translation; Jeffrey Lin and P.W. Singer, "Not A Shark, But A Robot: Chinese University Tests Long-Range Unmanned Mini Sub," *Popular Science*, June 4, 2014; Liang Jianhong, Wen Li, and Guo Yuxiao, "Experimental Design and Performance of Underwater Vehicle Based on Capacity of

- Voyage,” 2008 IEEE Conference on Robotics, Automation and Mechatronics, Chengdu, China, September 21–24, 2008.
169. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
170. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
171. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
172. Jonathan Ray et al., “China’s Industrial and Military Robotics Development,” *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 85–86.
173. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
174. Fu Chengkun, “Six Major PLA Science and Technology [Advances] in 2014: A UAV to Protect Drilling Platforms,” *Xinhua*, July 21, 2014. Translation.
175. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
176. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
177. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
178. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
179. Amy F. Wolf, “Conventional Prompt Global Strike and Long-Range Ballistic Missiles: Background and Issues,” *Congressional Research Service*, February 3, 2017, 20.
180. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
181. James M. Acton, “Silver Bullet?: Asking the Right Questions About Conventional Prompt Global Strike,” *Carnegie Endowment for International Peace*, 2013, 56.
182. Aviation Week and Space Technology, “Opinion: Time to Turn Hypersonics Research into Operational Weapons,” April 14, 2017; National Academies of Sciences, Engineering, and Medicine, “High-Speed Maneuvering Weapons: A Threat to America’s Global Vigilance, Reach, and Power (Unclassified Summary),” *National Academies Press*, 2016, vii.
183. Admiral John Richardson, Chief of Naval Operations, “Luncheon Keynote,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
184. Admiral John Richardson, Chief of Naval Operations, “Luncheon Keynote,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
185. Lieutenant General Marshall Webb, Commander, Air Force Special Operations Command, “Keynote: Special Operations,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
186. General James Holmes, Commander, Air Combat Command, “Keynote: Air Force,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
187. Raytheon, “Laser Strike: A High Energy Laser Mounted on a Helicopter Shoots a Target in Groundbreaking Test,” June 28, 2017; Derek Hawkins, “Laser-Equipped Helicopter Zaps Its First Target, to Defense Contractor’s Delight,” *Washington Post*, June 27, 2017.
188. Thomas Karako, “The Future of Missile Defense in the Asia Pacific,” *Foreign Policy Institute*, May 31, 2017; Jen Judson, “DoD Presses on in Pursuit of Laser Weapons,” *Defense News*, August 24, 2016.
189. Elsa B. Kania, “The PLA’s Potential Breakthrough in High-Power Microwave Weapons,” *Diplomat*, March 11, 2017.
190. Dr. Art Morrish, Vice President, Advanced Concepts and Technology, Space, and Airborne Systems, Raytheon, “Industry Panel,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
191. James Moran, Vice President, Army Systems, Defense, Space, and Security, Boeing, “Industry Panel,” Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
192. U.S.-China Economic and Security Review Commission, *Hearing on China’s Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

193. James Mugg, "U.S. Navy's Railgun Dream Could Be Denied by Two Big Problems," *National Interest*, August 10, 2016; Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015.
194. Ronald O'Rourke, "Navy Lasers, Railgun, and Hypervelocity Projectile: Background and Issues for Congress," *Congressional Research Service*, March 17, 2017, 14.
195. CNN, "Navy Missile Hits Dying Spy Satellite, Says Pentagon," February 21, 2008.
196. Maximilian Betmann, "A Counterspace Awakening? Assessing the Recent Shift in U.S. National Security Space Strategy," *Space Review*, May 30, 2017; U.S. Department of Defense Missile Defense Agency, *U.S., Japan Successfully Conduct First SM-3 Block IIA Intercept Test*, February 3, 2017; Laura Greco, "Aegis as ASAT," *Union of Concerned Scientists*, April 26, 2012.
197. U.S.-China Economic and Security Review Commission, *2015 Annual Report to Congress*, November 2015, 293–294.
198. Defense Advanced Research Projects Agency, *DARPA Picks Design for Next-Generation Spaceplane*, May 24, 2017.
199. Defense Advanced Research Projects Agency, *DARPA Picks Design for Next-Generation Spaceplane*, May 24, 2017.
200. U.S. Air Force, "X-37B Orbital Test Vehicle," April 17, 2015.
201. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
202. Abhijit Singh, "Is China Really Building Missiles with Artificial Intelligence?" *Diplomat*, September 21, 2016.
203. U.S. Department of Defense, *Department of Defense Announces Successful Micro-Drone Demonstration*, January 9, 2017.
204. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 56.
205. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 56.
206. U.S. Department of Defense Directive No. 3000.12, *Autonomy in Weapons Systems*, November 21, 2012, updated May 8, 2017; Human Rights Watch, "Review of the 2012 U.S. Policy on Autonomy in Weapons Systems," April 15, 2013.
207. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
208. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
209. National Academies of Sciences, Engineering, and Medicine, "High-Speed Maneuvering Weapons: A Threat to America's Global Vigilance, Reach, and Power (Unclassified Summary)," *National Academies Press*, 2016, vii–viii.
210. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
211. Carolyn Meinel, "For Love of a Gun: The Tumultuous History of Electromagnetic Launch," *IEEE Spectrum*, July 2, 2007.
212. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.
213. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
214. Jonathan Ray et al., "China's Industrial and Military Robotics Development," *Defense Group, Inc. Center for Intelligence Research and Analysis* (prepared for the U.S.-China Economic and Security Review Commission), October 2016, 12.
215. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
216. Niall McCarthy, "The Countries with the Most STEM Graduates," *Forbes*, February 2, 2017.
217. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
218. Martin Seifert, "Mythbusters' Panel," Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
219. Martin Seifert, "Mythbusters' Panel," Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.

220. Stewart Wills, "Report: Industrial-Laser Demand from China on the Rise," *Optics and Photonics News*, May 12, 2017.
221. Joseph Jimenez, "There's a Research Revolution Going on in China—and One Day It Could Save Your Life," *World Economic Forum*, July 21, 2016.
222. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
223. Senate Armed Services Committee, *Hearing on Department of Defense Budget Posture*, written testimony of James N. Mattis, June 13, 2017.
224. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
225. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
226. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
227. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
228. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
229. Tai Ming Cheung et al., "Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 59, 274.
230. Scott Kennedy, *The Fat Tech Dragon: Baseline Trends in China's Innovation Drive*, Center for Strategic and International Studies, Washington, DC, May 25, 2017.
231. Tai Ming Cheung et al., "Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 58, 274.
232. Tai Ming Cheung et al., "Chinese State Programs for Civilian and Defense Science, Technology, Energy, and Industrial Development and the Implications for the United States," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 58, 275–276.
233. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
234. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017.
235. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
236. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
237. Steven Aftergood, "Classified Military R&D in China," *Federation of American Scientists*, September 15, 2016.
238. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
239. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.
240. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
241. Elsa Kania, "Beyond CFIUS: The Strategic Challenge of China's Rise in Artificial Intelligence," *Lawfare*, June 20, 2017.
242. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
243. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
244. Mark Stokes, "China's Evolving Space and Missile Industry," in Tai Ming Cheung, ed., *Forging China's Military Might: A New Framework for Assessing Innovation*, Johns Hopkins University Press, 2014, 241.
245. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
246. Andrew S. Erickson, "Chinese Anti-Ship Ballistic Missile (ASBM) Development: Drivers, Trajectories, and Strategic Implications," Jamestown Foundation, May 2013, 119.

247. Jan Van Tol, et al., "Air-Sea Battle: A Point-of-Departure Operational Concept," *Center for Strategic and Budgetary Assessments*, 2010, 20–21.
248. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Andrew S. Erickson, February 23, 2017.
249. James M. Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017.
250. National Academies of Sciences, Engineering, and Medicine, "High-Speed Maneuvering Weapons: A Threat to America's Global Vigilance, Reach, and Power (Unclassified Summary)," *National Academies Press*, 2016, 4–5.
251. National Academies of Sciences, Engineering, and Medicine, "High-Speed Maneuvering Weapons: A Threat to America's Global Vigilance, Reach, and Power (Unclassified Summary)," *National Academies Press*, 2016, 2, 4.
252. James M. Acton, Co-Director, Nuclear Policy Program, Carnegie Endowment for International Peace, interview with Commission staff, June 17, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of James M. Acton, February 23, 2017, 4.
253. National Academies of Sciences, Engineering, and Medicine, "High-Speed Maneuvering Weapons: A Threat to America's Global Vigilance, Reach, and Power (Unclassified Summary)," *National Academies Press*, 2016, 4.
254. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
255. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017.
256. Jeffrey Lin and P.W. Singer, "An Electromagnetic Arms Race Has Begun: China Is Making Railguns Too," *Popular Science*, November 23, 2015.
257. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
258. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
259. Kevin Pollpeter, "China's National Security Space Ambitions," *China Policy Institute Blog (University of Nottingham)*, October 20, 2014.
260. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony David Chen, February 23, 2017.
261. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David D. Chen, February 23, 2017.
262. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
263. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017; U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
264. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.
265. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Kevin Pollpeter, February 23, 2017.
266. David Hambling, "If Drone Swarms Are the Future, China May Be Winning," *Popular Mechanics*, December 23, 2016.
267. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, oral testimony of Elsa Kania, February 23, 2017.
268. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, oral testimony of Elsa Kania, February 23, 2017.
269. Defense Science Board, *Summer Study on Autonomy*, June 2016, 4.
270. Abhijit Singh, "Is China Really Building Missiles with Artificial Intelligence?" *Diplomat*, September 21, 2016.
271. Major General William Hix, Director of Strategy, Plans, and Policy, Department of the Army, "Keynote: Army," Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017; Rear Admiral Mike Manazir, Deputy Chief of Naval Operations for Warfare Systems, "Keynote: Navy," Directed Energy Summit 2017, Booz Allen Hamilton and Center for Strategic and Budgetary Assessments, Washington, DC, March 29, 2017.
272. Mark Stokes, "China's Evolving Space and Missile Industry," in Tai Ming Cheung, ed., *Forging China's Military Might: A New Framework for Assessing Innovation*, Johns Hopkins University Press, 2014, 241.
273. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.
274. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Richard D. Fisher, Jr., February 23, 2017;

U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Todd Harrison, February 23, 2017.

275. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.

276. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.

277. White House Office of the Press Secretary, *Fact Sheet: Advancing the Rebalance to Asia and the Pacific*, November 15, 2015; Andrew S. Erickson and Justin D. Mikolay, "Guam and American Security in the Pacific," in Andrew S. Erickson and Carnes Lord, eds., *Rebalancing U.S. Forces: Basing and Forward Presence in the Asia-Pacific*, Naval Institute Press, 2014, 17, 25; Andrew J. Nathan and Andrew Scobell, *China's Search for Security*, Columbia University Press, 2012, 357.

278. Tai Ming Cheung et al., "Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development," *University of California Institute on Global Conflict and Cooperation* (prepared for the U.S.-China Economic and Security Review Commission), July 28, 2016, 118, 123, 163.

279. Phil Stewart, "U.S. Weighs Restricting Chinese Investment in Artificial Intelligence," Reuters, June 14, 2017.

280. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Elsa Kania, February 23, 2017.

281. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

282. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

283. U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of Timothy Grayson, February 23, 2017.

# COMPREHENSIVE LIST OF THE COMMISSION'S RECOMMENDATIONS

## Chapter 1: U.S.-China Economic and Trade Relations

### *Section 2: Chinese Investment in the United States*

The Commission recommends:

1. Congress consider legislation updating the Committee on Foreign Investment in the United States (CFIUS) statute to address current and evolving security risks. Among the issues Congress should consider are:
  - Prohibiting the acquisition of U.S. assets by Chinese state-owned or state-controlled entities, including sovereign wealth funds.
  - Requiring a mandatory review of any transaction involving the acquisition of a controlling interest in U.S. assets by Chinese entities not falling under the above class of acquiring entities.
  - Requiring reviews of investments in U.S.-based greenfield assets by Chinese-controlled entities to assess any potential harm to U.S. national and economic security.
  - Expanding the definition of “control” to include joint ventures, venture capital funds, licensing agreements, and other arrangements or agreements that enable Chinese entities to access and/or determine the disposition of any asset.
  - Prohibiting any acquisition or investment that would confer “control” with regard to critical technologies or infrastructure. The U.S. Departments of Homeland Security, Commerce, and Defense shall prepare and regularly update a list of critical technologies or infrastructure that would not be eligible for acquisition or investment by any Chinese entities to ensure U.S. economic and national security interests are protected.
  - Including a net economic benefit test to assess the impact of acquisitions by Chinese entities in the United States to ensure they advance U.S. national economic interests.
  - Requiring that any proposed acquisition of a media property by a Chinese entity be assessed in terms of the acquiring entity’s history of adhering to Chinese Communist Party propaganda objectives and its potential to influence public opinion in the United States.
  - Authorizing an independent review panel, appointed by Congress, to review the actions and activities of CFIUS on a continuing basis.

- Allowing any CFIUS member agency to bring a transaction up for review and investigation.
2. Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.
  3. Congress amend the Foreign Sovereign Immunities Act (FSIA) of 1976 to:
    - Allow U.S. courts to hear cases against a foreign state's corporate affiliates under the commercial activity exception.
    - Require Chinese firms to waive any potential claim of sovereign immunity if they do business in the United States.
  4. Congress consider legislation to ban and delist companies seeking to list on U.S. stock exchanges that are based in countries that have not signed a reciprocity agreement with the Public Company Accounting Oversight Board (PCAOB).

### ***Section 3: U.S. Access to China's Consumer Market***

The Commission recommends:

5. Congress direct the Office of the U.S. Trade Representative to develop criteria for the Notorious Markets List to ensure listed companies can be held accountable for engaging in or facilitating copyright piracy and trademark counterfeiting.
6. Congress require the Office of the U.S. Trade Representative to expand the National Trade Estimate's coverage of China's digital trade barriers to include an assessment of their impact on U.S. industries and whether they comply with China's World Trade Organization commitments.

## **Chapter 2: U.S.-China Security Relations**

### ***Section 2: China's Military Modernization in 2017***

The Commission recommends:

7. Congress authorize U.S. defense spending at levels sufficient to address the growing challenge to U.S. interests posed by China's ongoing military modernization program and to ensure the United States will have the capacity to maintain readiness and presence in the Asia Pacific.

### ***Section 3: Hotspots along China's Maritime Periphery***

The Commission recommends:

8. Congress require the executive branch to develop a whole-of-government strategy for countering Chinese coercion activities in the Indo-Pacific coordinated through the National Security Council that utilizes diplomatic, informational, military, economic, financial, intelligence, and legal instruments of national power.

### Chapter 3: China and the World

#### ***Section 1: China and Continental Southeast Asia***

The Commission recommends:

9. Congress increase economic and development assistance and public diplomacy resources to Southeast Asia commensurate with its importance to U.S. strategic, economic, and political interests. A significant portion of additional funding should be directed to democracy, civil society, and governance capacity programs.
10. Congress direct the U.S. Department of State and the U.S. Agency for International Development to allocate sufficient funding for the Lower Mekong Initiative and maintain funding at a level consistent with its role as a platform for water policy coordination and as a provider of U.S. expertise for environmentally safe dam construction.
11. Congress direct the administration to increase cooperation on infrastructure projects supported by U.S. partners and allies, such as Asian Development Bank programs and bilateral projects administered by the Japan International Cooperation Agency. U.S. cooperation should leverage U.S. technical expertise regarding engineering, management, and social and environmental safeguards.

#### ***Section 2: China and Northeast Asia***

The Commission recommends:

12. Congress support initiatives that enable cooperation between the U.S. Coast Guard and maritime Asian coast guards (possibly to include joint patrols, shiprider agreements, and the expansion of the Code for Unplanned Encounters at Sea [CUES] to include coast guard and other maritime law enforcement agencies), given the prominent role of the China Coast Guard in aggressively advancing China's territorial ambitions in the East and South China seas.
13. Congress examine the state of the U.S.-Japan alliance in light of China's military modernization, paying particular attention to efforts to achieve a joint command structure for planning and executing complex combined operations.

#### ***Section 3: China and Taiwan***

The Commission recommends:

14. Congress urge the Administration to invite Taiwan to participate, at least as an observer, in U.S.-led bilateral and multilateral military and security-related exercises, including the Rim of the Pacific (RIMPAC) maritime exercise, Red Flag air-to-air combat training exercises, and Cyber Storm cybersecurity exercise, in order to support Taiwan's efforts to enhance its defense capabilities, expand opportunities for Taiwan to contribute to regional and international security, and counter China's efforts to limit Taiwan's international space.

15. Congress highlight the accomplishments and otherwise elevate the visibility of the Global Cooperation and Training Framework, which facilitates U.S.-Taiwan cooperation in areas such as public health and disaster relief. Such efforts possibly could include examining whether the program would benefit from additional staffing and funding.
16. Congress urge the executive branch to reexamine its practice regarding reciprocal visits by senior U.S. and Taiwan military officers and civilian officials with the aim of increasing high-level exchanges, including Cabinet-level officials and senior National Security Council officials, as part of an effort to enhance U.S.-Taiwan relations.
17. Congress ensure relevant U.S. military personnel are sufficiently familiar with Taiwan's defense situation by allocating funds for U.S. military personnel to take courses at Taiwan's defense educational institutions (such as Taiwan's war college, service command and staff schools, and airborne school) and other courses in Taiwan in an unofficial capacity through the American Institute in Taiwan, in order to ensure the U.S. military is prepared to act in support of Taiwan's defense if called on to do so.

#### ***Section 4: China and Hong Kong***

The Commission recommends:

18. Congress reauthorize annual reporting requirements of the United States-Hong Kong Policy Act of 1992, in an effort to ensure policymakers have the most up-to-date and authoritative information about developments in Hong Kong. The report should include an assessment of whether Hong Kong has maintained a "sufficient degree of autonomy" under the "one country, two systems" policy, among other developments of interest to the United States.
19. Congressional committees of jurisdiction examine and analyze potential U.S. policy options toward Hong Kong, including those to impose costs on Beijing for not abiding by its commitments to the territory, given mainland China's increased intrusions into Hong Kong's autonomy.
20. Members of Congress participate in congressional delegations to Hong Kong and meet with Hong Kong officials, legislators, and business representatives in the territory and while they visit the United States. In these meetings, they should raise concerns about Beijing's adherence to the "one country, two systems" policy and the recent crackdown on prodemocracy activists, including the imprisonment of Joshua Wong and others. They should also continue to express support for freedom of expression and rule of law in Hong Kong.

#### ***Section 5: China's Domestic Information Controls, Global Media Influence, and Cyber Diplomacy***

The Commission recommends:

21. Congress strengthen the Foreign Agents Registration Act to require the registration of all staff of Chinese state-run media

entities, given that Chinese intelligence gathering and information warfare efforts are known to involve staff of Chinese state-run media organizations and in light of the present uneven enforcement of the Act.

22. Congress require the U.S. Department of Commerce to collect information from U.S. companies that do business in China concerning requests from the Chinese government regarding censorship, surveillance, and data transfers, and report its findings to Congress.
23. Congress modify U.S. Federal Communications Commission regulations to require greater transparency regarding Chinese government ownership of media outlets and the clear labeling of media content sponsored by the Chinese government.
24. Congress urge the Office of the U.S. Trade Representative, when renegotiating the existing Bilateral Film Agreement between the United States and China, to increase the number of films that have access to Chinese theaters and increase the revenue sharing arrangement to a level reflecting the median arrangement existing around the globe. In addition, the arrangement should reserve a minimum of 50 percent of the quota for films from studios and independent distributors that are not owned or controlled by Chinese interests.

#### **Chapter 4: China's High Tech Development**

##### ***Section 1: China's Pursuit of Dominance in Computing, Robotics, and Biotechnology***

The Commission recommends:

25. Congress direct the National Science and Technology Council, in coordination with the National Economic Council and relevant agencies, to identify gaps in U.S. technological development vis-à-vis China, including funding, science, technology, engineering, and mathematics workforce development, interagency coordination, and utilization of existing innovation and manufacturing institutes, and, following this assessment, develop and update biennially a comprehensive strategic plan to enhance U.S. competitiveness in advanced science and technology.
26. Congress direct the Federal Bureau of Investigation in concert with the U.S. Department of Commerce's International Trade Administration to expand outreach to and develop educational materials and tools for U.S. academics, businesses, venture capitalists, and startups in dual-use sectors on potential risks associated with Chinese investors and partners, the Chinese government's role in acquiring technology through programs such as the Thousand Talents Program and Project 111, and steps to prevent industrial and cyber espionage.

**ADDITIONAL VIEWS OF COMMISSIONERS  
ROBIN CLEVELAND, GLENN HUBBARD, AND  
LARRY M. WORTZEL**

Among the Commission's recommendations to Congress in 2017, one addressed the responsibilities of the Committee on Foreign Investment in the United States. The beginning of this recommendation reads as follows, "The Commission recommends Congress consider legislation updating the Committee on Foreign Investment in the United States (CFIUS) statute to address current and evolving security risks. Among the issues Congress should consider are:"

Item six of the CFIUS recommendation suggests that Congress consider including a net economic benefit test "to assess the impact of acquisitions by Chinese entities in the United States to ensure they advance U.S. national economic interests."

We agree that Congress should conduct a broad review of national interests in assessing China's non-market activities, even though CFIUS is intended to focus on national security matters. Links between economic strength and national security make such a review appropriate. However, a "net economic benefit" test is a vague concept, and one prone to interpretation and rent-seeking. While we support the broad recommendation in which that language is contained, we do not support the "net economic benefit" test as articulated therein.

The Defense Production Act of 1950, PL 81-744, 50 U.S.C. App 2061 *et. seq.* along with other amending legislation such as the Oct. 1, 2008 amendment (PL 111-67) and the Foreign Investment and National Security Act of 2007 (FINSIA) (section 721) provide means for the President and CFIUS to include certain matters related to the U.S. economy. The three pieces of legislation, taken together, appear to allow for the protection of parts of the economy critical to national security: the U.S. defense industrial base as well as the protection of critical components, critical technological items, and critical infrastructure.

We believe that the existing body of law adequately ensures that China's non-market activities that undermine our manufacturing base can be addressed. Congress, however, should engage in a broad review effort to ensure that our national interests are adequately protected.

**ADDITIONAL VIEWS OF COMMISSIONERS  
JAMES M. TALENT AND MICHAEL R. WESSEL  
JOINED BY COMMISSIONER  
KATHERINE C. TOBIN**

We are happy to join the Commission's Report and expect it to be standard reference material for Congress and other organs of influence that monitor Sino-American relations.

We write these additional views to emphasize the vital importance of the United States acting quickly and decisively to address the changing balance of hard power in East Asia and China's near seas.

As the Commission's Reports have documented, the Chinese have engaged in a massive military buildup for the last twenty years. They have the world's largest and most lethal inventory of conventional ballistic and cruise missiles. They have substantially improved intelligence, surveillance, reconnaissance, and anti-satellite capabilities. They are increasing and modernizing their nuclear arsenal. They have a sizable and strong air force to which they are introducing fifth generation fighters.

The PLA Navy has more vessels than the United States Navy, is concentrated almost entirely in China's near seas, and is composed increasingly of modern multi-mission vessels. To this point the United States still has an advantage in the undersea domain, but that is changing as China continues to modernize and grow its submarine fleet and accelerate development of unmanned undersea vehicles.

In addition, as this year's Report shows, China is at the forefront of advanced weapons development. There are a number of areas where the PLA could make breakthroughs that would be decisive in a conflict with the United States and its regional allies.

America still has an advantage in the quality and experience of its armed forces and the sophistication of its doctrine, tactics, and command and control. But that advantage is declining as China continues to conduct complex training exercises, learn from its overseas deployments, and execute its comprehensive reorganization of the PLA.

Meanwhile, America's armed forces have been stretched thin from years of hard fighting and high operational tempo, and especially because of the defense sequester that was imposed on the Department of Defense.

The Budget Control Act of 2011, and the resulting sequester that took effect in 2013, cut one trillion dollars from the ten year defense budget which then Secretary of Defense Bob Gates presented to Congress in the spring of 2011. The effect on the armed forces has been catastrophic: the Army is smaller than it has been since before World War II and is continuing to shrink; the Navy is smaller than at any time since 1916; and the Air Force has fewer aircraft, and older air frames, than at any time since the inception of the service.

Add to that China's logistical advantage. China's naval forces are already concentrated in its near seas; it takes weeks for an American naval vessel to steam from the west coast to the Western Pacific.

In short, China is not just an asymmetric threat to the United States, or even a near-peer competitor. It has become, in its region, the dominant military power. That fact, more than any other, explains why China's aggressions over the last five years have been successful. Those include the "great wall of sand" in the South China Sea, the ADIZ in the East China Sea, aggression against the Philippines in defiance of international law, coercion of Vietnam over the Spratly Islands, increasing pressure on Taiwan, harassment of Japan over the Senkaku Islands, and other provocative acts.

We do not believe that Chinese leaders want conflict with the United States. At least they don't want escalating armed conflict. But they have deliberately amassed decisive military power and are using that power to coerce their neighbors and assert hegemonic influence throughout their strategic environment.

All of that is clear enough to any objective observer. The question is what the United States can do about it.

This year's Report, like Reports in the past, recommends that Congress appropriate sufficient funds to enable the Department of Defense to protect America's vital national interests in East Asia. That recommendation is good as far as it goes, and probably went as far as it should; it is not the Commission's place, as a body, to make specific recommendations to Congress regarding spending levels in the federal budget.

But in these additional views, we believe we have a duty to say that the defense sequester has to be repealed, that whatever compromises are necessary to repeal it must be made, and that the defense budget must be increased to at least the level Secretary Gates recommended in 2011. The Department of Defense must have additional resources to increase America's forward presence in the Western Pacific, in concert with our allies. That is the sine qua non of any effort to preserve the peace while protecting America's vital national interests, and indeed the rights of all nations.

At the same time, we must invest in our people and our technological and economic strength to make sure that America's leadership in those areas is preserved and strengthened.

To be sure, there are other diplomatic and economic measures that should be taken to impose costs on Chinese aggression. Many of those steps have already been taken as part of the Rebalance Policy; many are being taken now, and the Commission has recommended others in this Report. But we greatly fear that they will come to nothing unless the military balance is restored.

China has few natural allies in the region, and the Chinese economy has substantial vulnerabilities. But those weaknesses will not stop them as long as they can bully their neighbors, and the United States, into giving them what they want.

The equilibrium of East Asia has been deranged. That is no accident. It was China's deliberate policy goal for two decades. Yet it is fully within the capabilities of the United States, in combination and cooperation with allies and partners, to restore that equilibrium and stem the rising potential for conflict that threatens the region. The restoration must begin by using America's enormous reservoir of economic and technological strength to rebuild the power and forward presence of its armed forces.

## **APPENDIX I CHARTER**

The Commission was created on October 30, 2000 by the Floyd D. Spence National Defense Authorization Act of 2001, Pub. L. No. 106–398 (codified at 22 U.S.C. § 7002), as amended by:

- The Treasury and General Government Appropriations Act, 2002, Pub. L. No. 107–67 (Nov. 12, 2001) (regarding employment status of staff and changing annual report due date from March to June);
- The Consolidated Appropriations Resolution, 2003, Pub. L. No. 108–7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of the Commission);
- The Science, State, Justice, Commerce, and Related Agencies Appropriations Act, 2006, Pub. L. No. 109–108 (Nov. 22, 2005) (regarding responsibilities of the Commission and applicability of FACA);
- The Consolidated Appropriations Act, 2008, Pub. L. No. 110–161 (Dec. 26, 2007) (regarding submission of accounting reports, printing and binding, compensation for the executive director, changing annual report due date from June to December, and travel by members of the Commission and its staff);
- The Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113–291 (Dec. 19, 2014) (regarding responsibilities of the Commission).

### **22 U.S.C. § 7002. United States-China Economic and Security Review Commission**

#### **(a) Purposes**

The purposes of this section are as follows:

(1) To establish the United States-China Economic and Security Review Commission to review the national security implications of trade and economic ties between the United States and the People’s Republic of China.

(2) To facilitate the assumption by the United States-China Economic and Security Review Commission of its duties regarding the review referred to in paragraph (1) by providing for the transfer to that Commission of staff, materials, and infrastructure (including leased premises) of the Trade Deficit Review Commission that are appropriate for the review upon the submittal of the final report of the Trade Deficit Review Commission.

#### **(b) Establishment of United States-China Economic and Security Review Commission**

## (1) In general

There is hereby established a commission to be known as the United States-China Economic and Security Review Commission (in this section referred to as the “Commission”).

## (2) Purpose

The purpose of the Commission is to monitor, investigate, and report to Congress on the national security implications of the bilateral trade and economic relationship between the United States and the People’s Republic of China.

## (3) Membership

The Commission shall be composed of 12 members, who shall be appointed in the same manner provided for the appointment of members of the Trade Deficit Review Commission under section 127(c)(3) of the Trade Deficit Review Commission Act (19 U.S.C. 2213 note), except that—

(A) appointment of members by the Speaker of the House of Representatives shall be made after consultation with the chairman of the Committee on Armed Services of the House of Representatives, in addition to consultation with the chairman of the Committee on Ways and Means of the House of Representatives provided for under clause (iii) of subparagraph (A) of that section;

(B) appointment of members by the President pro tempore of the Senate upon the recommendation of the majority leader of the Senate shall be made after consultation with the chairman of the Committee on Armed Services of the Senate, in addition to consultation with the chairman of the Committee on Finance of the Senate provided for under clause (i) of that subparagraph;

(C) appointment of members by the President pro tempore of the Senate upon the recommendation of the minority leader of the Senate shall be made after consultation with the ranking minority member of the Committee on Armed Services of the Senate, in addition to consultation with the ranking minority member of the Committee on Finance of the Senate provided for under clause (ii) of that subparagraph;

(D) appointment of members by the minority leader of the House of Representatives shall be made after consultation with the ranking minority member of the Committee on Armed Services of the House of Representatives, in addition to consultation with the ranking minority member of the Committee on Ways and Means of the House of Representatives provided for under clause (iv) of that subparagraph;

(E) persons appointed to the Commission shall have expertise in national security matters and United States-China relations, in addition to the expertise provided for under subparagraph (B)(i)(I) of that section;

(F) each appointing authority referred to under subparagraphs (A) through (D) of this paragraph shall—

(i) appoint 3 members to the Commission;

(ii) make the appointments on a staggered term basis, such that—

(I) 1 appointment shall be for a term expiring on December 31, 2003;

(II) 1 appointment shall be for a term expiring on December 31, 2004; and

(III) 1 appointment shall be for a term expiring on December 31, 2005;

(iii) make all subsequent appointments on an approximate 2-year term basis to expire on December 31 of the applicable year; and

(iv) make appointments not later than 30 days after the date on which each new Congress convenes;

(G) members of the Commission may be reappointed for additional terms of service as members of the Commission; and

(H) members of the Trade Deficit Review Commission as of October 30, 2000, shall serve as members of the Commission until such time as members are first appointed to the Commission under this paragraph.

(4) Retention of support

The Commission shall retain and make use of such staff, materials, and infrastructure (including leased premises) of the Trade Deficit Review Commission as the Commission determines, in the judgment of the members of the Commission, are required to facilitate the ready commencement of activities of the Commission under subsection (c) or to carry out such activities after the commencement of such activities.

(5) Chairman and Vice Chairman

The members of the Commission shall select a Chairman and Vice Chairman of the Commission from among the members of the Commission.

(6) Meetings

(A) Meetings

The Commission shall meet at the call of the Chairman of the Commission.

(B) Quorum

A majority of the members of the Commission shall constitute a quorum for the transaction of business of the Commission.

(7) Voting

Each member of the Commission shall be entitled to one vote, which shall be equal to the vote of every other member of the Commission.

(c) Duties

(1) Annual report

Not later than December 1 each year (beginning in 2002), the Commission shall submit to Congress a report, in both unclassified and classified form, regarding the national security implications and impact of the bilateral trade and economic relationship between the United States and the People's Republic of China. The report shall include a full analysis, along with conclusions and recommendations for legislative and administrative actions, if any, of the national security implications for the United States of the trade and current balances with the People's Republic of China in goods and services, financial transactions, and technology transfers. The Commission shall also take into account patterns of trade and transfers through third countries to the extent practicable.

(2) Contents of report

Each report under paragraph (1) shall include, at a minimum, a full discussion of the following:

(A) The role of the People's Republic of China in the proliferation of weapons of mass destruction and other weapon systems (including systems and technologies of a dual use nature), including actions the United States might take to encourage the People's Republic of China to cease such practices.

(B) The qualitative and quantitative nature of the transfer of United States production activities to the People's Republic of China, including the relocation of manufacturing, advanced technology and intellectual property, and research and development facilities, the impact of such transfers on the national security of the United States (including the dependence of the national security industrial base of the United States on imports from China), the economic security of the United States, and employment in the United States, and the adequacy of United States export control laws in relation to the People's Republic of China.

(C) The effects of the need for energy and natural resources in the People's Republic of China on the foreign and military policies of the People's Republic of China, the impact of the large and growing economy of the People's Republic of China on world energy and natural resource supplies, prices, and the environment, and the role the United States can play (including through joint research and development efforts and technological assistance) in influencing the energy and natural resource policies of the People's Republic of China.

(D) Foreign investment by the United States in the People's Republic of China and by the People's Republic of China in the United States, including an assessment of its economic and security implications, the challenges to market access confronting potential United States investment in the People's Republic of China, and foreign activities by financial institutions in the People's Republic of China.

(E) The military plans, strategy and doctrine of the People's Republic of China, the structure and organization of the People's Republic of China military, the decision-making process of the People's Republic of China military, the interaction between the civilian and military leadership in the People's Republic of China, the development and promotion process for leaders in the People's Republic of China military, deployments of the People's Republic of China military, resources available to the People's Republic of China military (including the development and execution of budgets and the allocation of funds), force modernization objectives and trends for the People's Republic of China military, and the implications of such objectives and trends for the national security of the United States.

(F) The strategic economic and security implications of the cyber capabilities and operations of the People's Republic of China.

(G) The national budget, fiscal policy, monetary policy, capital controls, and currency management practices of the People's Republic of China, their impact on internal stability in the People's Republic of China, and their implications for the United States.

(H) The drivers, nature, and implications of the growing economic, technological, political, cultural, people-to-people, and security relations of the People's Republic of China's with other countries, regions, and international and regional entities (including multilateral organizations), including the relationship among the United States, Taiwan, and the People's Republic of China.

(I) The compliance of the People's Republic of China with its commitments to the World Trade Organization, other multilateral commitments, bilateral agreements signed with the United States, commitments made to bilateral science and technology programs, and any other commitments and agreements strategic to the United States (including agreements on intellectual property rights and prison labor imports), and United States enforcement policies with respect to such agreements.

(J) The implications of restrictions on speech and access to information in the People's Republic of China for its relations with the United States in economic and security policy, as well as any potential impact of media control by the People's Republic of China on United States economic interests.

(K) The safety of food, drug, and other products imported from China, the measures used by the People's Republic of China Government and the United States Government to monitor and enforce product safety, and the role the United States can play (including through technical assistance) to improve product safety in the People's Republic of China.

(3) Recommendations of report

Each report under paragraph (1) shall also include recommendations for action by Congress or the President, or both, including specific recommendations for the United States to invoke Article XXI (relating to security exceptions) of the General Agreement on Tariffs and Trade 1994 with respect to the People's Republic of China, as a result of any adverse impact on the national security interests of the United States.

(d) Hearings

(1) In general

The Commission or, at its direction, any panel or member of the Commission, may for the purpose of carrying out the provisions of this section, hold hearings, sit and act at times and places, take testimony, receive evidence, and administer oaths to the extent that the Commission or any panel or member considers advisable.

(2) Information

The Commission may secure directly from the Department of Defense, the Central Intelligence Agency, and any other Federal department or agency information that the Commission considers necessary to enable the Commission to carry out its duties under this section, except the provision of intelligence information to the Commission shall be made with due regard for the protection from unauthorized disclosure of classified information relating to sensitive intelligence sources and methods or other exceptionally sensitive matters, under procedures approved by the Director of Central Intelligence.

(3) Security

The Office of Senate Security shall—

(A) provide classified storage and meeting and hearing spaces, when necessary, for the Commission; and

(B) assist members and staff of the Commission in obtaining security clearances.

(4) Security clearances

All members of the Commission and appropriate staff shall be sworn and hold appropriate security clearances.

(e) Commission personnel matters

(1) Compensation of members

Members of the Commission shall be compensated in the same manner provided for the compensation of members of the Trade Deficit Review Commission under section 127(g)(1) and section 127(g)(6) of the Trade Deficit Review Commission Act (19 U.S.C. 2213 note).

(2) Travel expenses

Travel expenses of the Commission shall be allowed in the same manner provided for the allowance of the travel expenses of the Trade Deficit Review Commission under section 127(g)(2) of the Trade Deficit Review Commission Act.

(3) Staff

An executive director and other additional personnel for the Commission shall be appointed, compensated, and terminated in the same manner provided for the appointment, compensation, and termination of the executive director and other personnel of the Trade Deficit Review Commission under section 127(g)(3) and section 127(g)(6) of the Trade Deficit Review Commission Act. The executive director and any personnel who are employees of the United States-China Economic and Security Review Commission shall be employees under section 2105 of title 5 for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title. [Amended by P.L. 111-117 to apply section 308(e) of the United States China Relations Act of 2000 (22 U.S.C. 6918(e)) (relating to the treatment of employees as Congressional employees) to the Commission in the same manner as such section applies to the Congressional-Executive Commission on the People's Republic of China.]

(4) Detail of government employees

Federal Government employees may be detailed to the Commission in the same manner provided for the detail of Federal Government employees to the Trade Deficit Review Commission under section 127(g)(4) of the Trade Deficit Review Commission Act.

(5) Foreign travel for official purposes

Foreign travel for official purposes by members and staff of the Commission may be authorized by either the Chairman or the Vice Chairman of the Commission.

(6) Procurement of temporary and intermittent services

The Chairman of the Commission may procure temporary and intermittent services for the Commission in the same manner provided for the procurement of temporary and intermittent services for the Trade Deficit Review Commission under section 127(g)(5) of the Trade Deficit Review Commission Act.

(f) Authorization of appropriations

(1) In general

There is authorized to be appropriated to the Commission for fiscal year 2001, and for each fiscal year thereafter, such sums as may be necessary to enable the Commission to carry out its functions under this section.

## (2) Availability

Amounts appropriated to the Commission shall remain available until expended.

## (g) Applicability of FACA

The provisions of the Federal Advisory Committee Act (5 U.S.C. App.) shall apply to the activities of the Commission.

## (h) Effective date

This section shall take effect on the first day of the 107th Congress.

(Pub. L. 106–398, § 1 [[div. A], title XII, § 1238], Oct. 30, 2000, 114 Stat. 1654 , 1654A–334; Pub. L. 107–67, title VI, §§ 645(a), 648, Nov. 12, 2001, 115 Stat. 556; Pub. L. 108–7, div. P, § 2(b)(1), (c)(1), Feb. 20, 2003, 117 Stat. 552; Pub. L. 109–108, title VI, § 635(b), Nov. 22, 2005, 119 Stat. 2347; Pub. L. 110–161, div. J, title I, Dec. 26, 2007, 121 Stat. 2285; Pub. L. 113–291, div. A, title XII, § 1259B(a), Dec. 19, 2014, 128 Stat. 3578.)

**Amendments**

2014—Subsec. (c)(2). Pub. L. 113–291 added subpars. (A) to (K) and struck out former subpars. (A) to (J) which described required contents of report.

2007—Subsec. (c)(1). Pub. L. 110–161 substituted “December” for “June”.

2005—Subsec. (g). Pub. L. 109–108 amended heading and text of subsec. (g) generally. Prior to amendment, text read as follows: “The provisions of the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Commission.”

2003—Pub. L. 108–7, § 2(b)(1)(A), inserted “Economic and” before “Security” in section catchline.

Subsec. (a)(1), (2). Pub. L. 108–7, § 2(b)(1)(B), inserted “Economic and” before “Security”.

Subsec. (b). Pub. L. 108–7, § 2(b)(1)(C)(i), inserted “Economic and” before “Security” in heading.

Subsec. (b)(1). Pub. L. 108–7, § 2(b)(1)(C)(ii), inserted “Economic and” before “Security”.

Subsec. (b)(3). Pub. L. 108–7, § 2(b)(1)(C)(iii)(I), which directed the amendment of introductory provisions by inserting “Economic and” before “Security”, could not be executed because “Security” does not appear.

Subsec. (b)(3)(F). Pub. L. 108–7, § 2(c)(1), added subpar. (F) and struck out former subpar. (F) which read as follows: “members shall be appointed to the Commission not later than 30 days after the date on which each new Congress convenes;”

Subsec. (b)(3)(H), (4), (e)(1), (2). Pub. L. 108–7, § 2(b)(1)(C)(iii)(II), (iv), (D)(i), (ii), which directed insertion of “Economic and” before “Security”, could not be executed because “Security” does not appear.

Subsec. (e)(3). Pub. L. 108–7, § 2(b)(1)(D)(iii)(II), inserted “Economic and” before “Security” in second sentence.

Pub. L. 108–7, § 2(b)(1)(D)(iii)(I), which directed the amendment of first sentence by inserting “Economic and” before “Security”, could not be executed because “Security” does not appear.

Subsec. (e)(4), (6). Pub. L. 108-7, §2(b)(1)(D)(iv), (v), which directed the amendment of pars. (4) and (6) by inserting “Economic and” before “Security”, could not be executed because “Security” does not appear.

2001—Subsec. (c)(1). Pub. L. 107-67, §648, substituted “June” for “March”.

Subsec. (e)(3). Pub. L. 107-67, §645(a), inserted at end “The executive director and any personnel who are employees of the United States-China Security Review Commission shall be employees under section 2105 of title 5 for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title.”

## **APPENDIX II**

### **BACKGROUND OF COMMISSIONERS**

#### **Carolyn Bartholomew, Chairman**

Chairman Carolyn Bartholomew was reappointed to the Commission by House Democratic Leader Nancy Pelosi for a two-year term expiring on December 31, 2017. She previously served as the Commission's chairman for the 2007 and 2009 Report cycles and served as vice chairman for the 2006, 2008, 2010, and 2016 report cycles.

Chairman Bartholomew has worked at senior levels in the U.S. Congress, serving as counsel, legislative director, and chief of staff to now House Democratic Leader Nancy Pelosi. She was a professional staff member on the House Permanent Select Committee on Intelligence and also served as a legislative assistant to then U.S. Representative Bill Richardson.

In these positions, Chairman Bartholomew was integrally involved in developing U.S. policies on international affairs and security matters. She has particular expertise in U.S.-China relations, including issues related to trade, human rights, and the proliferation of weapons of mass destruction. Chairman Bartholomew led efforts in the establishment and funding of global AIDS programs and the promotion of human rights and democratization in countries around the world. She was a member of the first Presidential Delegation to Africa to Investigate the Impact of HIV/AIDS on Children and a member of the Council on Foreign Relations' Congressional Staff Roundtable on Asian Political and Security Issues.

In addition to U.S.-China relations, her areas of expertise include terrorism, trade, proliferation of weapons of mass destruction, human rights, U.S. foreign assistance programs, and international environmental issues. She is a consultant to non-profit organizations and also serves on the board of directors of the Kaiser Aluminum Corporation.

Chairman Bartholomew received a Bachelor of Arts degree from the University of Minnesota, a Master of Arts in Anthropology from Duke University, and a Juris Doctorate from Georgetown University Law Center. She is a member of the State Bar of California.

#### **The Honorable Dennis C. Shea, Vice Chairman**

Vice Chairman Dennis Shea was reappointed by Senate Republican Leader Mitch McConnell for a term expiring December 31, 2018. An attorney with more than 25 years of experience in government and public policy, he is the founder of Shea Public Strategies LLC, a public affairs firm based in Alexandria, Virginia. Before starting the firm, he served as Vice President for Government Affairs—Americas for Pitney Bowes Inc., a Fortune 500 company.

Vice Chairman Shea's government service began in 1988 when he joined the Office of Senate Republican Leader Bob Dole as counsel, subsequently becoming the Senator's deputy chief of staff in the Office of the Senate Majority Leader. In these capacities, he advised Senator Dole and other Republican Senators on a broad range of domestic policy issues, was involved in the drafting of numerous pieces of legislation, and was recognized as one of the most influential staffers on Capitol Hill. In 1992, Vice Chairman Shea's service with Senator Dole was interrupted when he ran for Congress in the Seventh District of New York.

During the 1996 elections, Vice Chairman Shea continued to help shape the national public policy debate as the director of policy for the Dole for President Campaign. Following the elections, he entered the private sector, providing legislative and public affairs counsel to a wide range of clients while employed at BKSH & Associates and Verner, Liipfert, Bernhard, McPherson, and Hand.

In 2003, Vice Chairman Shea was named the Executive Director of the President's Commission on the United States Postal Service. Many of the Commission's recommendations were subsequently adopted in the landmark 2006 postal reform legislation.

In 2004, Vice Chairman Shea was confirmed as Assistant Secretary for Policy Development and Research at the U.S. Department of Housing and Urban Development. As Assistant Secretary, Vice Chairman Shea led a team responsible for conducting much of the critical analysis necessary to support the Department's mission. In 2005, Vice Chairman Shea left to serve as Senior Advisor to Senator Elizabeth Dole in her capacity as chairman of the National Republican Senatorial Committee.

Vice Chairman Shea received a J.D., an M.A. in History, and a B.A. in Government, from Harvard University. He is admitted to the bar in New York and the District of Columbia. The Vice Chairman currently resides in Alexandria, Virginia with his wife Elizabeth and daughter Juliette.

### **Robin Cleveland**

Commissioner Cleveland was reappointed by Senate Republican Leader Mitch McConnell for a two-year term expiring December 31, 2018. After three decades of government service, Commissioner Cleveland is now serving as the Executive Director of the Office of Student Life at the Graduate School of Education and Human Development at The George Washington University. Commissioner Cleveland worked for U.S. Senator Mitch McConnell in a number of positions in his personal office, on the Senate Select Committee on Intelligence, the Foreign Relations Committee, and the Senate Appropriations Committee. In addition, Commissioner Cleveland served as the Counselor to the President of the World Bank, and as the Associate Director of the Office of Management and Budget in the Executive Office of the President. During her tenure serving President Bush, Commissioner Cleveland co-lead the interagency effort to develop and implement two Presidential initiatives: the Millennium Challenge Corporation and the President's Emergency Plan for AIDS Relief. These efforts reflect her commitment to link policy, performance, and resource management.

Commissioner Cleveland graduated from Wesleyan University with honors and received her M.A. in Education and Human Development from The George Washington University.

### **The Honorable Byron L. Dorgan**

Senator Byron Dorgan was appointed by Senate Democratic Leader Harry Reid for a two-year term expiring December 31, 2017. Senator Dorgan served six terms in the U.S. House and three terms in the U.S. Senate. In 2010 he announced that he would not seek re-election to the U.S. Senate and he retired after serving thirty years in Congress.

#### *U.S. Senate*

Senator Dorgan served in the U.S. Senate for eighteen years from 1992 to 2011. He served in the Democratic Leadership from 1994 to 2011, first as Assistant Democratic Floor Leader and then as Chairman of the Democratic Policy Committee.

He was a member of the Appropriations Committee, the Energy and Natural Resources Committee, the Commerce Science and Technology Committee, and the Indian Affairs Committee.

He was Chairman of the Indian Affairs Committee. During his tenure, he also served as Chairman of numerous subcommittees including the Commerce Subcommittee on Aviation; the Energy Subcommittee on Energy & Power, and the Subcommittee on National Parks; the Appropriations Subcommittee on Energy & Water, and the Subcommittee on Treasury, Postal & General Government. He was a Ranking Member on a number of other subcommittees as well.

He served on the Joint Economic Committee and was Co-Chairman of the Congressional-Executive Commission on China.

#### *U.S. House*

While in the U.S. House, Congressman Dorgan was a member of the Ways and Means Committee from 1982 to 1992. He also served as a member of the House Agriculture Committee and the Select Committee on Hunger.

#### *Private Sector Career*

In 2011, after retiring from the Senate, he joined the Arent Fox law firm as a Senior Policy Advisor and is Co-Chair of the Government Relations Practice.

In 2011 he also became a Senior Fellow at the Bipartisan Policy Center, a Washington DC think tank. He serves as the Co-Chair of the BPC Energy Project.

From 2011 to present he has been an Adjunct Visiting Professor at Georgetown University where he guest lectures on government policy to graduate level students at the McCourt School of Public Policy.

In 2016 he was appointed to serve as a Commissioner on the U.S.-China Economic and Security Review Commission.

Dorgan is a New York Times Bestselling Author. His books include the NYT bestseller "Take This Job and Ship It!", "Reckless... How Debt, Deregulation and Dark Money Nearly Bankrupted America (And How We Can Fix It)". He also co-authored two novels, "Blow-

out” and “Gridlock” which were classified as eco-thrillers dealing with energy challenges.

He created and founded a non-profit organization called the Center for Native American Youth (CNAY) dedicated to improving the lives of Native American young people. The Center focuses its work on educational opportunities, teen suicide prevention and community building. Among a variety of outreach efforts, the Center conducts youth summits on Indian Reservations across the country and works to bring national awareness to challenges and successes of Native youth.

He serves on a number of Boards and Commissions including the Board of Governors of the Argonne National Laboratory in Illinois as well as several corporate boards.

Commissioner Dorgan has a Bachelors of Science degree from the University of North Dakota and a Masters of Business Administration from the University of Denver. He is married to Kim Dorgan and has four children: Scott (wife Denise, children Madison and Mason), Shelly (deceased), Brendon and Haley.

#### **The Honorable Carte P. Goodwin**

Senator Carte P. Goodwin was appointed to the Commission by Senate Democratic Leader Harry Reid for a two-year term expiring on December 31, 2017.

He is an attorney with the law firm Frost Brown Todd, LLC where he serves as the Member-in-Charge of its Charleston office, vice chair of the Appellate Practice Group, and a member of Civic Point, the firm’s government affairs subsidiary. Goodwin’s practice includes litigation and appellate advocacy, and advising clients on government relations, intellectual property matters and commercial transactions.

In July of 2010, West Virginia Governor Joe Manchin III appointed Goodwin to the United States Senate to fill the vacancy caused by the passing of Senator Robert C. Byrd, where he served until a special election was held to fill the remainder of Senator Byrd’s unexpired term.

From 2005 to 2009, Goodwin served four years as General Counsel to Governor Manchin, during which time he also chaired the Governor’s Advisory Committee on Judicial Nominations. In addition, Goodwin chaired the West Virginia School Building Authority and served as a member of the State Consolidated Public Retirement Board. Following his return to private practice in 2009, Goodwin was appointed to chair the Independent Commission on Judicial Reform, along with former Supreme Court Justice Sandra Day O’Connor, which was tasked with evaluating the need for broad systemic reform to West Virginia’s judicial system.

Goodwin also previously worked as a law clerk for the Honorable Robert B. King of the United States Court of Appeals for the Fourth Circuit. A native of Mt. Alto, West Virginia, Goodwin received his Bachelor of Arts degree in Philosophy from Marietta College in Marietta, Ohio, in 1996 and received his Doctor of Law degree from the Emory University School of Law, graduating Order of the Coif in 1999.

Goodwin currently resides in Charleston, West Virginia, with his wife, Rochelle; son, Wesley Patrick; and daughter, Anna Vail.

**Glenn Hubbard, Ph.D.**

Glenn Hubbard was appointed to the Commission by Speaker of the House Paul Ryan for a two-year term expiring on December 31, 2018. He was named dean of Columbia Business School on July 1, 2004. A Columbia faculty member since 1988, he is also the Russell L. Carson Professor of Finance and Economics.

Hubbard received his BA and BS degrees summa cum laude from the University of Central Florida, where he received the National Society of Professional Engineers Award. He also holds AM and PhD degrees in economics from Harvard University. After graduating from Harvard, Hubbard began his teaching career at Northwestern University, moving to Columbia in 1988. He has been a visiting professor at Harvard's Kennedy School of Government and Harvard Business School as well as the University of Chicago. Hubbard also held the John M. Olin Fellowship at the National Bureau of Economic Research.

In addition to writing more than 100 scholarly articles in economics and finance, Glenn is the author of three popular textbooks, as well as co-author of *The Aid Trap: Hard Truths About Ending Poverty*, *Balance: The Economics of Great Powers From Ancient Rome to Modern America*, and *Healthy, Wealthy, and Wise: Five Steps to a Better Health Care System*. His commentaries appear in *Business Week*, the *Wall Street Journal*, the *New York Times*, the *Financial Times*, the *Washington Post*, *Nikkei*, and the *Daily Yomiuri*, as well as on television and radio.

In government, Hubbard served as deputy assistant secretary for tax policy at the U.S. Treasury Department from 1991 to 1993. From February 2001 until March 2003, he was chairman of the U.S. Council of Economic Advisers under President George W. Bush. While serving as CEA chairman, he also chaired the economic policy committee of the OECD. In the corporate sector, he is a director of ADP, BlackRock Closed-End Funds, and MetLife. Hubbard is co-chair of the Committee on Capital Markets Regulation; he is a past Chair of the Economic Club of New York and a past co-chair of the Study Group on Corporate Boards.

Hubbard and his family live in New York.

**Daniel M. Slane**

Daniel Slane was reappointed to the Commission by Speaker of the House Paul Ryan for a two-year term expiring on December 31, 2017. Commissioner Slane served as the Commission's Chairman for the 2010 Report cycle and as Vice Chairman for the 2011 Report cycle.

Commissioner Slane served for two years on active duty as a U.S. Army Captain in Military Intelligence; in addition he served for a number of years as a Case Officer with the U.S. Central Intelligence Agency. Commissioner Slane worked in The White House during the Ford Administration.

In 1996, Commissioner Slane became a member of the board of trustees of The Ohio State University and was chairman from 2005 to 2006. The Ohio State University is the nation's largest universi-

ty, with an annual budget of over \$4 billion. He is also the former chairman of University Hospital, a 1,000-bed regional hospital in Columbus, and the former chairman of the James Cancer Hospital, a National Cancer Institute Comprehensive Cancer Center. Commissioner Slane serves on the board of two financial institutions and a number of nonprofit organizations.

Commissioner Slane is the founder and co-owner of the Slane Company, whose principal business includes real estate development, lumber, and furniture. He has extensive international business experience, including operating a business in China. Prior to becoming a member of the Commission, Commissioner Slane manufactured plywood and related wood products at factories in Harbin, Dalian, and Balu (Pizhou), China. In 2007, he sold his interest in that company.

Commissioner Slane received a Bachelor of Science in Business Administration and a Juris Doctorate from The Ohio State University. He holds a Master's Degree in International Law from the Europa Institute at the University of Amsterdam in The Netherlands. Commissioner Slane is a member of the Ohio Bar and was formerly a partner in the law firm of Grieser, Schafer, Blumenstiel, and Slane.

#### **The Honorable Jonathan N. Stivers**

Jonathan Stivers was appointed to the Commission by House Democratic Leader Nancy Pelosi for a term expiring on December 31, 2018. Commissioner Stivers has more than two decades of experience in the Executive and Legislative Branches focusing on foreign policy including U.S-China relations, Asian Affairs, trade, global economics and finance, development, global health, and democracy and human rights.

In the Obama Administration, Commissioner Stivers served as the Assistant Administrator for the Bureau for Asia at the U.S. Agency for International Development (USAID). In this Senate-confirmed position he managed a budget of approximately \$1.2 billion in foreign assistance and led a staff of approximately 1,200 development professionals in 32 countries in East Asia and the Pacific Islands, South Asia and Central Asia. He testified before Congressional committees on almost two dozen occasions on topics such as the Asia-Pacific Rebalance policy, annual budget requests, the democratic transition in Burma, earthquake recovery in Nepal, democracy and human rights in Southeast Asia, and sustainable development and property rights in the Philippines and Cambodia.

During his time in the Administration Commissioner Stivers led USAID efforts to promote democratic reform in Burma including the U.S. serving as the lead donor for the 2015 election paving the way for the first democratic government in over 50 years. Other actions included developing the plan to support earthquake recovery and reconstruction in Nepal, leading the effort to create an innovative anti-human trafficking program in Southeast Asia, designing a strategic plan to support new democratic reform in Sri Lanka, and helping to heal wounds of the past in Vietnam and Laos through development initiatives. He also participated in high-level dialogues including the U.S.-India Strategic & Commercial Dialogue in New Delhi and the U.S.-China Development Cooperation Dialogue in Beijing.

In the U.S. Congress, Commissioner Stivers served as Senior Advisor to the Speaker of the U.S. House of Representatives and Democratic Leader Pelosi. He played a leadership role on numerous foreign policy initiatives related to trade, global health, development and human rights. He played a key role in advancing legislation that provided historic increases in global health funding, securing emergency relief after the Haiti earthquake, passing the JADE Act that tightened sanctions on the Burmese government and passing the Currency Reform Act in the House of Representatives.

While serving in the Democratic Leadership, he was responsible for the operations of the Steering & Policy Committee including all committee assignments and appointments. He also worked on the House floor to help count votes and build support on major legislation including the Affordable Care Act, Wall Street Reform, the War in Iraq, and annual budget and appropriations legislation.

Commissioner Stivers also served as Senior Legislative Assistant to the Ranking Member of the Appropriations Subcommittee on Foreign Operations and in the Office of the Democratic Whip. In these positions, he wrote and negotiated foreign policy provisions in the annual appropriations legislation and gained expertise in parliamentary procedure, communications, and member services.

Commissioner Stivers earned a Masters of International Policy and Practice from The Elliott School of International Affairs at The George Washington University in Asian Affairs and a Bachelor of Arts from James Madison College at Michigan State University in International Relations.

Originally from Detroit, Michigan, Commissioner Stivers currently resides in Washington, D.C. with his wife and two daughters.

### **The Honorable James M. Talent**

Senator Jim Talent was reappointed by Senate Republican Leader Mitch McConnell for a two-year term expiring December 31, 2017. He is a national security leader who specializes in issues related to the Department of Defense. He has been active in Missouri and national public policy for over 25 years.

Senator Talent's public service began in 1984, when at the age of 28 he was elected to the Missouri House of Representatives where he served eight years, the last four as the Republican leader in the Missouri House.

In 1992, he was elected to the first of four terms in the U.S. House of Representatives where he represented Missouri's Second Congressional District. During his eight years in the U.S. House of Representatives, Talent co-authored the historic welfare reform bill, championed national security issues on the House Armed Services Committee, and enacted legislation to help revitalize distressed neighborhoods, both urban and rural. He was the Chairman of the House Small Business Committee from 1997-2001, where he worked on regulatory reform issues and on legislation to lower health care costs for small business people and their employees. Under Senator Talent's leadership, the Small Business Committee became one of the most prolific and bi-partisan in the House of Representatives, passing numerous bills without a single dissenting vote.

In 2002, Missourians elected Talent to serve in the United States Senate where he worked with Republicans and Democrats to enact critical legislation for Missouri. He served on the Senate Armed Services, Energy and Natural Resources, and Agriculture Committees. Working with Oregon Democrat Ron Wyden, Senator Talent was successful in securing critical funding through construction bonding in the highway bill. He and Senator Dianne Feinstein (D-CA) succeeded in passing the most comprehensive anti-methamphetamine bill ever enacted into law. Senator Talent was a leader on energy issues and was instrumental in the passage of the renewable fuel standard.

After leaving the Senate in 2007, Senator Talent joined The Heritage Foundation as a Distinguished Fellow specializing in military affairs and conservative solutions to poverty. In 2008, he served as Vice Chairman of the Commission on Prevention of Weapons of Mass Destruction Proliferation and Terrorism. In 2010, he served on the independent panel that reviewed the Quadrennial Defense Review of the Department of Defense. He also served on the independent panel that reviewed the Quadrennial Defense Review of 2014. He also has been a member of the executive panel advising the Chief of Naval Operations. Senator Talent was the first national figure outside Massachusetts to endorse Governor Mitt Romney for president in 2007 and was Governor Romney's senior policy advisor in both the 2008 and 2012 campaigns for president.

Senator Talent is an attorney and currently a Senior Fellow at the Bipartisan Policy Center and a Visiting Senior Fellow and Director, National Security 2020 Project, Marilyn Ware Center for Security Studies at the American Enterprise Institute. He earned his B.A. from Washington University in St. Louis and his J.D. from the University of Chicago Law School.

#### **The Honorable Katherine C. Tobin, Ph.D.**

Dr. Katherine Tobin was reappointed to the U.S.-China Economic and Security Review Commission by Senate Democratic Leader Harry Reid for a two-year term expiring December 31, 2018. Dr. Tobin has fifteen years of experience as a business manager, market researcher and consultant in corporate America at institutions including Hewlett-Packard Corporation, IBM and Catalyst. She also has worked for fifteen years as a university faculty member and administrator.

In 2009, Dr. Tobin was appointed by President Obama as Deputy Assistant Secretary for Performance Improvement at the U.S. Department of Education. She focused on strengthening the Department's capacity to work more effectively with its political and educational partners at the national, state and local levels.

In 2006, Dr. Tobin was appointed by President George W. Bush and served as a member of the Board of Governors of the U.S. Postal Service. Dr. Tobin provided strategic vision to the executive team, helped direct and control expenditures, reviewed business practices, conducted long-range planning and set policies on all postal matters. She also chaired the Board's Audit and Finance Committee at a critical time, when, due to Congress's 2006 legislation, the U.S.

Postal Service needed to strengthen its organizational and financial controls to become compliant by 2010 with the Sarbanes-Oxley Act.

During her years at Hewlett-Packard, Dr. Tobin worked in the Corporation's Computer Systems Division and the Systems Technology Division which were responsible for developing minicomputer systems purchased around the world for business, medical and scientific usage. Dr. Tobin worked closely with R&D and marketing teams early in the product development life cycle to insure that customer needs were clearly understood and translated into engineering and market specifications.

Working as a consultant with IBM's senior leaders, Dr. Tobin conducted research on the corporation's values across all its global operations, institutional brand awareness and preference, distribution channels management, and the creation of a new business plan for IBM's Global Financing business.

Dr. Tobin earned a Ph.D. and Master of Arts degree from Stanford University. She earned a Master of Arts degree in Teaching from the University of Massachusetts and a Bachelor of Arts in English from Skidmore College. Currently, she also serves as a member of the U.S. Postal Service's Citizens' Stamp Advisory Committee which recommends to the Postmaster General subjects reflecting America's values and achievements for portrayal on commemorative stamps.

#### **Michael R. Wessel**

Commissioner Michael R. Wessel, an original member of the U.S.-China Economic and Security Review Commission, was reappointed by House Democratic Leader Nancy Pelosi for a term expiring on December 31, 2017.

Commissioner Wessel served on the staff of former House Democratic Leader Richard Gephardt for more than two decades, leaving his position as general counsel in March 1998. In addition, Commissioner Wessel was Congressman Gephardt's chief policy advisor, strategist, and negotiator. He was responsible for the development, coordination, management, and implementation of the Democratic leader's overall policy and political objectives, with specific responsibility for international trade, finance, economics, labor, and taxation.

During his more than 20 years on Capitol Hill, Commissioner Wessel served in a number of positions. As Congressman Gephardt's principal Ways and Means aide, he developed and implemented numerous tax and trade policy initiatives. He participated in the enactment of every major trade policy initiative from 1978 until his departure in 1998. In the late 1980s, he was the executive director of the House Trade and Competitiveness Task Force, where he was responsible for the Democrats' trade and competitiveness agenda as well as overall coordination of the Omnibus Trade and Competitiveness Act of 1988. He currently serves as staff liaison to the Administration's Advisory Committee on Trade Policy and Negotiations as well as the Labor Advisory Committee to the USTR and Secretary of Labor.

Commissioner Wessel was intimately involved in the development of comprehensive tax reform legislation in the early 1980s and every major tax bill during his tenure. Beginning in 1989, he became the principal advisor to the Democratic leadership on economic policy

matters and served as tax policy coordinator to the 1990 budget summit.

In 1988, he served as national issues director for Congressman Gephardt's presidential campaign. During the 1992 presidential campaign, he assisted the Clinton presidential campaign on a broad range of issues and served as a senior policy advisor to the Clinton Transition Office. In 2004, he was a senior policy advisor to the Gephardt for President Campaign and later co-chaired the Trade Policy Group for the Kerry presidential campaign. In 2008, he was publicly identified as a trade and economic policy advisor to the Obama presidential campaign and advised the Clinton campaign in 2016.

He has coauthored a number of articles with Congressman Gephardt and a book, *An Even Better Place: America in the 21st Century*. Commissioner Wessel served as a member of the U.S. Trade Deficit Review Commission in 1999–2000, a congressionally created commission charged with studying the nature, causes, and consequences of the U.S. merchandise trade and current account deficits.

Today, Commissioner Wessel is President of The Wessel Group Incorporated, a public affairs consulting firm offering expertise in government, politics, and international affairs. Commissioner Wessel holds a Bachelor of Arts and a Juris Doctorate from The George Washington University. He is a member of the Bars of the District of Columbia and of Pennsylvania and is a member of the Council on Foreign Relations. He and his wife Andrea have four children.

#### **Larry M. Wortzel, Ph.D.**

Dr. Larry M. Wortzel was reappointed by Speaker of the House Paul Ryan for a term expiring on December 31, 2018. Commissioner Wortzel served for 32 years in the United States Armed Forces, three years in the Marine Corps followed by 29 years in the Army. A graduate of the U.S. Army War College, Commissioner Wortzel earned his Doctor of Philosophy degree from the University of Hawaii-Manoa.

Commissioner Wortzel's military experience includes seven years in the infantry as well as assignment in signals intelligence collection, human source intelligence collection, counterintelligence, and as a strategist. He served two tours of duty in Beijing, China, as a military attaché and spent twelve years in the Asia-Pacific Region.

Commissioner Wortzel is the former Director of the Strategic Studies Institute at the U.S. Army War College. Concurrently he was professor of Asian studies. He retired from the U.S. Army as a colonel at the end of 1999. After his military retirement, Commissioner Wortzel was director of the Asian Studies Center and vice president for foreign policy and defense studies at The Heritage Foundation.

Commissioner Wortzel has written or edited ten books and numerous scholarly articles on China and East Asia. His books include *Class in China: Stratification in a Classless Society*; *China's Military Modernization: International Implications*; *Dictionary of Contemporary Chinese Military History*; and *The Dragon Extends its Reach: Chinese Military Power Goes Global*.

He and his wife live in Williamsburg, Virginia.

**Michael R. Danis, Executive Director**

Formerly served as a senior intelligence officer with the Defense Intelligence Agency. Mr. Danis managed the agency's technology transfer division; the U.S. government's sole analytical entity tasked with producing intelligence assessments regarding all aspects of foreign acquisition of U.S. controlled technology and high-tech corporations. He also established and led a unique team of China technology specialists producing assessments on China's military-industrial complex, and the impact of U.S. export-controlled and other foreign technology on Chinese weapons development programs. While serving in the U.S. Air Force, Mr. Danis was twice temporarily assigned to the office of the defense attaché in Beijing.



## APPENDIX III

### PUBLIC HEARINGS OF THE COMMISSION

Full transcripts and written testimonies are available online at the Commission's website: [www.uscc.gov](http://www.uscc.gov).

#### **January 26, 2017: Public Hearing on “Chinese Investment in the United States: Impacts and Issues for Policymakers” Washington, DC**

Commissioners present: Carolyn Bartholomew, Chairman; Hon. Dennis C. Shea, Vice Chairman; Robin Cleveland (Hearing Co-Chair); Hon. Byron L. Dorgan; Hon. Carte P. Goodwin; Daniel M. Slane; Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel (Hearing Co-Chair).

Witnesses: Thilo Hanemann, Rhodium Group; James Stengel, Orrick; Jeffrey Johnson, SquirrelWerkz; Robert Atkinson, Information Technology and Innovation Foundation; Patrick Woodall, Food & Water Watch; Patrick Jenevein, Tang Energy Group, and WattStock LLC; Shaswat Das, Hunton & Williams LLP; Paul Gillis, Peking University; Peter Halesworth, Heng Ren Partners LLC.

#### **February 23, 2017: Public Hearing on “China’s Advanced Weapons” Washington, DC**

Commissioners present: Carolyn Bartholomew, Chairman (Hearing Co-Chair); Hon. Dennis C. Shea, Vice Chairman; Hon. Byron L. Dorgan; Hon. Carte P. Goodwin; Daniel M. Slane; Hon. Jonathan N. Stivers; Hon. James M. Talent (Hearing Co-Chair); Hon. Katherine C. Tobin; Michael R. Wessel; Larry M. Wortzel.

Witnesses: James Acton, Carnegie Endowment for International Peace; Andrew Erickson, U.S. Naval War College; Mark Stokes, Project 2049 Institute; Timothy Grayson, Fortitude Mission Research LLC; David Chen, independent analyst; Richard Fisher, International Assessment and Strategy Center; Todd Harrison, Center for Strategic and International Studies; Elsa Kania, Long Term Strategy Group; Kevin Pollpeter, CNA.

**March 16, 2017: Public Hearing on “China’s Pursuit of Next Frontier Tech: Computing, Robotics, and Biotechnology”  
Washington, DC**

Commissioners present: Carolyn Bartholomew, Chairman; Hon. Dennis C. Shea, Vice Chairman; Hon. Byron L. Dorgan; Daniel M. Slane (Hearing Co-Chair); Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin (Hearing Co-Chair); Michael R. Wessel.

Witnesses: Addison Snell, Intersect360 Research; Mark Brinda, Bain and Company; John Costello, Flashpoint; Henrik Christensen, University of California, San Diego; Jonathan Ray, Defense Group, Inc.; Patrick Sinko, Rutgers University; Benjamin Shobert, Rubicon Strategy Group; Kenneth Oye, Massachusetts Institute of Technology; Edward You, Federal Bureau of Investigation.

**April 13, 2017: Public Hearing on  
“Hotspots along China’s Maritime Periphery”  
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Vice Chairman (Hearing Co-Chair); Robin Cleveland; Hon. Carte P. Goodwin (Hearing Co-Chair); Daniel M. Slane; Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin; Larry M. Wortzel.

Witnesses: Robert Sutter, George Washington University; Timothy Heath, RAND Corporation; Mark Cozad, RAND Corporation; Christopher Yung, Marine Corps University; Ian Easton, Project 2049 Institute; James Fanell, Geneva Center for Security Policy; Michael Green, Center for Strategic and International Studies; Mira Rapp-Hooper, Center for a New American Security; Jacqueline Deal, Long Term Strategy Group.

**May 4, 2017: Public Hearing on “China’s Information Controls, Global Media Influence, and Cyber Warfare Strategy”  
Washington, DC**

Commissioners present: Carolyn Bartholomew (Hearing Co-Chair), Chairman; Hon. Dennis C. Shea, Vice Chairman; Hon. Byron L. Dorgan; Hon. Carte P. Goodwin; Daniel M. Slane; Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel; Larry M. Wortzel (Hearing Co-Chair).

Witnesses: Xiao Qiang, University of California, Berkeley; Margaret Roberts, University of California, San Diego; Sophie Richardson, Human Rights Watch; Dan Southerland, formerly Radio Free Asia; Shanthi Kalathil, National Endowment for Democracy; Sarah Cook, Freedom House; Chris Demchak, U.S. Naval War College; James Lewis, Center for Strategic and International Studies.

**June 8, 2017: Public Hearing on “China’s Relations with  
Northeast Asia and Continental Southeast Asia”  
Washington, DC**

Commissioners present: Carolyn Bartholomew, Chairman; Hon. Dennis C. Shea, Vice Chairman; Robin Cleveland (Hearing Co-Chair); Hon. Byron L. Dorgan; Daniel M. Slane; Hon. Jonathan N. Stivers (Hearing Co-Chair); Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel.

Witnesses: Abraham Denmark, formerly U.S. Department of Defense; Andrew Scobell, RAND Corporation; Balbina Hwang, American University, and Georgetown University; Sheila Smith, Council on Foreign Relations; Murray Hiebert, Center for Strategic and International Studies; Yun Sun, Stimson Center; Karl Jackson, Johns Hopkins University School of Advanced International Studies.

**June 22, 2017: Public Hearing on  
“U.S. Access to China’s Consumer Market”  
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Vice Chairman; Hon. Byron L. Dorgan (Hearing Co-Chair); Hon. Carte P. Goodwin; Glenn Hubbard (Hearing Co-Chair); Daniel M. Slane; Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel; Larry M. Wortzel.

Witnesses: Michael Zakkour, Tompkins International; Richard Cant, ADX Net Inc.; Cathy Morrow Roberson, Logistics Trends & Insights LLC; Michael Hirson, Eurasia Group; Anne Stevenson-Yang, J Capital Research; Zennon Kapron, Kapronasia; Christine Bliss, Coalition of Services Industries.\*

**July 12, 2017: Public Roundtable on  
“The Health of China’s Economy”  
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Vice Chairman (Roundtable Co-Chair); Hon. Byron L. Dorgan; Hon. Jonathan N. Stivers; Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel (Roundtable Co-Chair); Larry M. Wortzel.

Witnesses: Gene Ma, Institute of International Finance; Brian McCarthy, Emerging Sovereign Group.

---

\*Submitted material for the record.



**APPENDIX IIIA**  
**LIST OF WITNESSES TESTIFYING BEFORE**  
**THE COMMISSION**  
**2017 Hearings**

Full transcripts and written testimonies are available online at the Commission's website: <a href="http://www.uscc.gov">www.uscc.gov</a> .
---

**Alphabetical Listing of Witnesses Testifying before the Commission**

Panelist Name	Panelist Affiliation	Commission Hearing
Acton, James	Carnegie Endowment for International Peace	February 23, 2017
Atkinson, Robert	Information Technology and Innovation Foundation	January 26, 2017
Bliss, Christine*	Coalition of Services Industries	June 22, 2017
Brinda, Mark	Bain and Company	March 16, 2017
Cant, Richard	ADX Net Inc.	June 22, 2017
Chen, David	independent analyst	February 23, 2017
Christensen, Henrik	University of California, San Diego	March 16, 2017
Cook, Sarah	Freedom House	May 4, 2017
Costello, John	Flashpoint	March 16, 2017
Cozad, Mark	RAND Corporation	April 13, 2017
Das, Shaswat	Hunton & Williams LLP	January 26, 2017
Deal, Jacqueline	Long Term Strategy Group	April 13, 2017
Demchak, Chris	U.S. Naval War College	May 4, 2017
Denmark, Abraham	formerly U.S. Department of Defense	June 8, 2017
Easton, Ian	Project 2049 Institute	April 13, 2017

\*Submitted material for the record.

**Alphabetical Listing of Witnesses Testifying before the  
Commission—Continued**

<b>Panelist Name</b>	<b>Panelist Affiliation</b>	<b>Commission Hearing</b>
Erickson, Andrew	U.S. Naval War College	February 23, 2017
Fanell, James	Geneva Center for Security Policy	April 13, 2017
Fisher, Richard	International Assessment and Strategy Center	February 23, 2017
Gillis, Paul	Peking University	January 26, 2017
Grayson, Timothy	Fortitude Mission Research LLC	February 23, 2017
Green, Michael	Center for Strategic and International Studies	April 13, 2017
Halesworth, Peter	Heng Ren Partners LLC	January 26, 2017
Hanemann, Thilo	Rhodium Group	January 26, 2017
Harrison, Todd	Center for Strategic and International Studies	February 23, 2017
Heath, Timothy	RAND Corporation	April 13, 2017
Hiebert, Murray	Center for Strategic and International Studies	June 8, 2017
Hirson, Michael	Eurasia Group	June 22, 2017
Hwang, Balbina	American University and Georgetown University	June 8, 2017
Jackson, Karl	Johns Hopkins University School of Advanced International Studies	June 8, 2017
Jenevein, Patrick	Tang Energy Group and Watt-Stock LLC	January 26, 2017
Johnson, Jeffrey	SquirrelWerkz	January 26, 2017
Kalathil, Shanthi	National Endowment for Democracy	May 4, 2017
Kania, Elsa	Long Term Strategy Group	February 23, 2017
Kapron, Zennon	Kapronasia	June 22, 2017
Lewis, James	Center for Strategic and International Studies	May 4, 2017
Ma, Gene	Institute of International Finance	July 12, 2017
McCarthy, Brian	Emerging Sovereign Group	July 12, 2017
Oye, Kenneth	Massachusetts Institute of Technology	March 16, 2017
Pollpeter, Kevin	CNA	February 23, 2017
Rapp-Hooper, Mira	Center for a New American Security	April 13, 2017

**Alphabetical Listing of Witnesses Testifying before the  
Commission—Continued**

<b>Panelist Name</b>	<b>Panelist Affiliation</b>	<b>Commission Hearing</b>
Ray, Jonathan	Defense Group, Inc.	March 16, 2017
Richardson, Sophie	Human Rights Watch	May 4, 2017
Roberson, Cathy Morrow	Logistics Trends & Insights LLC	June 22, 2017
Roberts, Margaret	University of California, San Diego	May 4, 2017
Scobell, Andrew	RAND Corporation	June 8, 2017
Shobert, Benjamin	Rubicon Strategy Group	March 16, 2017
Sinko, Patrick John	Rutgers University	March 16, 2017
Smith, Sheila	Council on Foreign Relations	June 8, 2017
Snell, Addison	Intersect360 Research	March 16, 2017
Southerland, Dan	formerly Radio Free Asia	May 4, 2017
Stengel, James	Orrick	January 26, 2017
Stevenson-Yang, Anne	J Capital Research	June 22, 2017
Stokes, Mark	Project 2049 Institute	February 23, 2017
Sutter, Robert	George Washington University	April 13, 2017
Woodall, Patrick	Food & Water Watch	January 26, 2017
Xiao, Qiang	University of California, Berkeley	May 4, 2017
You, Edward	Federal Bureau of Investigation	March 16, 2017
Yun, Sun	Stimson Center	June 8, 2017
Yung, Christopher	Marine Corps University	April 13, 2017
Zakkour, Michael	Tompkins International	June 22, 2017



**APPENDIX IV**  
**LIST OF RESEARCH MATERIAL**  
**Contracted and Staff Research Reports**  
**Released in Support of the 2017 Annual Report**

*Disclaimer*

The reports in this section were prepared at the request of the Commission to support its deliberations. They have been posted to the Commission's website in order to promote greater public understanding of the issues addressed by the Commission in its ongoing assessment of U.S.-China economic relations and their implications for U.S. security, as mandated by Pub. L. No. 106-398, Pub. L. No. 108-7, Pub. L. No. 109-108, Pub. L. No. 110-161, and Pub. L. No. 113-291. The posting of these reports to the Commission's website does not imply an endorsement by the Commission or any individual Commissioner of the views or conclusions expressed therein.

**Contracted Reports**

***Chinese Investment in U.S. Aviation***

Prepared for the Commission by Chad J. R. Ohlandt, Lyle J. Morris,  
Julia A. Thompson, Arthur Chan, and Andrew Scobell

RAND Corporation

March 2017

[https://www.uscc.gov/sites/default/files/Research/RAND\\_Chinese%20Investment%20in%20US%20Aviation\\_FINAL.pdf](https://www.uscc.gov/sites/default/files/Research/RAND_Chinese%20Investment%20in%20US%20Aviation_FINAL.pdf)

***Chinese Investment in the United States: Recent Trends and the Policy Agenda***

Prepared for the Commission by Thilo Hanemann and Daniel H. Rosen

Rhodium Group

December 2016

[https://www.uscc.gov/sites/default/files/Research/Chinese\\_Investment\\_in\\_the\\_United\\_States\\_Rhodium.pdf](https://www.uscc.gov/sites/default/files/Research/Chinese_Investment_in_the_United_States_Rhodium.pdf)

***China's Industrial and Military Robotics Developments***

Prepared for the Commission by Jonathan Ray, Katie Atha, Edward Francis, Caleb Dependahl, James Mulvenon, Daniel Alderman, and Leigh Ann Ragland-Luce

Defense Group Inc.

October 2016

[https://www.uscc.gov/sites/default/files/Research/DGI\\_China%27s%20Industrial%20and%20Military%20Robotics%20Development.pdf](https://www.uscc.gov/sites/default/files/Research/DGI_China%27s%20Industrial%20and%20Military%20Robotics%20Development.pdf)

**Staff Research Reports, Issue Briefs, and Backgrounders*****October Economics and Trade Bulletin***

Written by Economics and Trade Staff

October 2017

[https://www.uscc.gov/sites/default/files/Research/October%202017%20Trade%20Bulletin\\_0.pdf](https://www.uscc.gov/sites/default/files/Research/October%202017%20Trade%20Bulletin_0.pdf)

***China's Position on a Code of Conduct in Space***

September 2017

[https://www.uscc.gov/sites/default/files/Research/USCC\\_China%27s%20Position%20on%20a%20Code%20of%20Conduct%20in%20Space.pdf](https://www.uscc.gov/sites/default/files/Research/USCC_China%27s%20Position%20on%20a%20Code%20of%20Conduct%20in%20Space.pdf)

***September Economics and Trade Bulletin***

Written by Economics and Trade Staff

September 2017

<https://www.uscc.gov/sites/default/files/Research/September%202017%20Trade%20Bulletin.pdf>

***U.S. Exposure to Forced Labor Exports from China***

Written by Research Fellow Alexander Bowe

August 2017

<https://www.uscc.gov/sites/default/files/Research/Forced%20Labor%20Report.pdf>

***August Economics and Trade Bulletin***

Written by Economics and Trade Staff

August 2017

<https://www.uscc.gov/sites/default/files/Research/August%202017%20Trade%20Bulletin.pdf>

***China's Response to U.S.-South Korean Missile Defense System Deployment and its Implications***

Written by Policy Analyst Ethan Meick and Senior Policy Analyst Nargiza Salidjanova

July 2017

[https://www.uscc.gov/sites/default/files/Research/Report\\_China%27s%20Response%20to%20THAAD%20Deployment%20and%20its%20Implications.pdf](https://www.uscc.gov/sites/default/files/Research/Report_China%27s%20Response%20to%20THAAD%20Deployment%20and%20its%20Implications.pdf)

***July Economics and Trade Bulletin***

Written by Economics and Trade Staff

July 2017

<https://www.uscc.gov/sites/default/files/Research/July%202017%20Trade%20Bulletin.pdf>

***June Economics and Trade Bulletin***

Written by Economics and Trade Staff

June 2017

<https://www.uscc.gov/sites/default/files/Research/June%202017%20Trade%20Bulletin.pdf>

***U.S. Financial Exposure to China***

Written by Policy Analyst Michelle Ker

May 2017

<https://www.uscc.gov/sites/default/files/Research/U.S.%20Financial%20Exposure%20to%20China.pdf>

***May Economics and Trade Bulletin***

Written by Economics and Trade Staff

May 2017

<https://www.uscc.gov/sites/default/files/Research/May%202017%20Trade%20Bulletin.pdf>

***Evaluation of China's Nonmarket Economy Status***

Written by Economics and Trade Staff

April 2017

<https://www.uscc.gov/Research/evaluation-china%E2%80%99s-nonmarket-economy-status>

***April Economics and Trade Bulletin***

Written by Economics and Trade Staff

April 2017

<https://www.uscc.gov/sites/default/files/Research/April%202017%20Trade%20Bulletin.pdf>

***Chinese Product Safety: A Persistent Challenge to U.S. Regulators and Importers***

Written by Policy Analyst Matthew Snyder and Research Fellow Bartly Carfagno

March 2017

<https://www.uscc.gov/sites/default/files/Research/Chinese%20Product%20Safety.pdf>

***China-Russia Military-to-Military Relations: Moving Toward a Higher Level of Cooperation***

Written by Policy Analyst Ethan Meick

March 2017

<https://www.uscc.gov/sites/default/files/Research/China-Russia%20Mil-Mil%20Relations%20Moving%20Toward%20Higher%20Level%20of%20Cooperation.pdf>

***March Economics and Trade Bulletin***

Written by Economics and Trade Staff

March 2017

<https://www.uscc.gov/sites/default/files/Research/March%202017%20Trade%20Bulletin.pdf>

***China's High-Speed Rail Diplomacy***

Written by Policy Analyst Michelle Ker

February 2017

<https://www.uscc.gov/sites/default/files/Research/China%27s%20High%20Speed%20Rail%20Diplomacy.pdf>

***The 13th Five-Year Plan***

Written by Research Director and Policy Analyst Katherine Koleski  
February 2017

<https://www.uscc.gov/sites/default/files/Research/The%2013th%20Five-Year%20Plan.pdf>

***As Chinese Pressure on Taiwan Grows, Beijing Turns Away from Cross-Strait “Diplomatic Truce”***

Written by Policy Analyst Matthew Southerland  
February 2017

[https://www.uscc.gov/sites/default/files/Research/Issue%20Brief\\_As%20Chinese%20Pressure%20on%20Taiwan%20Grows%20Beijing%20Turns%20Away%20from%20Cross-Strait%20Diplomatic%20Truce.pdf](https://www.uscc.gov/sites/default/files/Research/Issue%20Brief_As%20Chinese%20Pressure%20on%20Taiwan%20Grows%20Beijing%20Turns%20Away%20from%20Cross-Strait%20Diplomatic%20Truce.pdf)

***February Economics and Trade Bulletin***

Written by Economics and Trade Staff  
February 2017

<https://www.uscc.gov/sites/default/files/Research/February%202017%20Trade%20Bulletin.pdf>

***Fentanyl: China’s Deadly Export to the United States***

Written by Policy Analyst Sean O’Connor  
February 2017

[https://www.uscc.gov/sites/default/files/Research/USCC%20Staff%20Report\\_Fentanyl-China%E2%80%99s%20Deadly%20Export%20to%20the%20United%20States020117.pdf](https://www.uscc.gov/sites/default/files/Research/USCC%20Staff%20Report_Fentanyl-China%E2%80%99s%20Deadly%20Export%20to%20the%20United%20States020117.pdf)

***January Economics and Trade Bulletin***

Written by Economics and Trade Staff  
January 2017

[https://www.uscc.gov/sites/default/files/Research/January%202017%20Trade%20Bulletin\\_0.pdf](https://www.uscc.gov/sites/default/files/Research/January%202017%20Trade%20Bulletin_0.pdf)

***China’s Alternative to GPS and its Implications for the United States***

Written by Policy Analyst Jordan Wilson  
January 2017

[https://www.uscc.gov/sites/default/files/Research/Staff%20Report\\_China%27s%20Alternative%20to%20GPS%20and%20Implications%20for%20the%20United%20States.pdf](https://www.uscc.gov/sites/default/files/Research/Staff%20Report_China%27s%20Alternative%20to%20GPS%20and%20Implications%20for%20the%20United%20States.pdf)

***December Economics and Trade Bulletin***

Written by Economics and Trade Staff  
December 2016

[https://www.uscc.gov/sites/default/files/Research/Dec%202016%20TB\\_12%206%2016\\_FINAL.pdf](https://www.uscc.gov/sites/default/files/Research/Dec%202016%20TB_12%206%2016_FINAL.pdf)

***November Economics and Trade Bulletin***

Written by Economics and Trade Staff  
November 2016

<https://www.uscc.gov/sites/default/files/Research/November%202016%20Trade%20Bulletin.pdf>

**APPENDIX V**

**CONFLICT OF INTEREST AND LOBBYING  
DISCLOSURE REPORTING**

The Commission seeks to hold itself to the highest standards of transparency in carrying out its mission. In accordance with its policy for avoiding conflicts of interest, Commissioners who believe they have an actual or perceived conflict of interest must recuse themselves from the source or subject matter of the conflict. The following Commissioners recused themselves from the portions of the 2017 Report cycle below:

- Vice Chairman Dennis C. Shea recused himself from discussion of recommendations concerning the Office of the U.S. Trade Representative.

Lobbying disclosure reports filed by any Commissioners who engage in “lobbying activities” as defined by the Lobbying Disclosure Act in connection with their outside employment activities may be accessed via public databases maintained by the House (<http://disclosures.house.gov/ld/ldsearch.aspx>) and Senate (<https://soprweb.senate.gov/index.cfm?event=selectfields>).



## APPENDIX VI

### ACRONYMS AND ABBREVIATIONS

<b>A2/AD</b>	antiaccess/area denial
<b>AD</b>	antidumping
<b>ADIZ</b>	air defense identification zone
<b>ADMM</b>	ASEAN Defense Ministers' Meeting
<b>ADR</b>	American depository receipts
<b>AFP</b>	Armed Forces of the Philippines
<b>AI</b>	artificial intelligence
<b>AIIB</b>	Asian Infrastructure Investment Bank
<b>AmCham</b>	American Chamber of Commerce
<b>APEC</b>	Asia-Pacific Economic Cooperation
<b>ASAT</b>	antisatellite
<b>ASBM</b>	antiship ballistic missile
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>AVIC</b>	Aviation Industry Corporation of China
<b>C4ISR</b>	command, control, communications, computers, intelligence, surveillance, and reconnaissance
<b>CAC</b>	Cyberspace Administration of China
<b>CBRC</b>	China Banking Regulatory Commission
<b>CCG</b>	China Coast Guard
<b>CCP</b>	Chinese Communist Party
<b>CCTV</b>	China Central Television
<b>CEO</b>	chief executive officer
<b>CFIUS</b>	Committee on Foreign Investment in the United States
<b>CMC</b>	Central Military Commission (China)
<b>COC</b>	Code of Conduct
<b>CUES</b>	Code for Unplanned Encounters at Sea
<b>CVD</b>	countervailing duty
<b>DARPA</b>	Defense Advanced Research Projects Agency (U.S. Department of Defense)
<b>DDoS</b>	direct denial of service
<b>DOD</b>	U.S. Department of Defense
<b>DPP</b>	Democratic Progressive Party (Taiwan)
<b>EAG</b>	ethnic armed group
<b>EEZ</b>	exclusive economic zone
<b>EMRG</b>	electromagnetic railgun
<b>EU</b>	European Union
<b>FAI</b>	fixed asset investment
<b>FARA</b>	Foreign Agents Registration Act
<b>FDI</b>	foreign direct investment
<b>fintech</b>	financial technology
<b>FONOP</b>	freedom of navigation operation

<b>FPI</b>	foreign private issuer
<b>FSIA</b>	Foreign Sovereign Immunities Act
<b>FTA</b>	free trade agreement
<b>FY</b>	fiscal year
<b>GAO</b>	U.S. Government Accountability Office
<b>GDP</b>	gross domestic product
<b>GPS</b>	global positioning system
<b>HA/DR</b>	humanitarian assistance/disaster relief
<b>HEL</b>	high energy laser
<b>HGV</b>	hypersonic glide vehicle
<b>HIPAA</b>	Health Insurance Portability and Accountability Act
<b>HPC</b>	high-performance computing
<b>HPM</b>	high-power microwave
<b>ICANN</b>	Internet Corporation for Assigned Names and Numbers
<b>ICBM</b>	intercontinental ballistic missile
<b>ICP</b>	Internet content provider
<b>ICT</b>	information and communications technology
<b>IMF</b>	International Monetary Fund
<b>INF</b>	Intermediate Range Nuclear Force
<b>INTERPOL</b>	International Criminal Police Organization
<b>IOSCO</b>	International Organization of Securities Commissions
<b>IP</b>	intellectual property
<b>IPO</b>	initial public offering
<b>IRBM</b>	intermediate-range ballistic missile
<b>ISR</b>	intelligence, surveillance, and reconnaissance
<b>IT</b>	information technology
<b>ITA</b>	International Trade Administration
<b>ITAR</b>	U.S. International Trafficking in Arms Regulations
<b>JICA</b>	Japan International Cooperation Agency
<b>KCG</b>	Korean Coast Guard
<b>KCNA</b>	(North) Korean Central News Agency
<b>KMT</b>	Kuomintang (Taiwan)
<b>KORUS</b>	U.S.-Korea Free Trade Agreement
<b>LegCo</b>	Legislative Council (Hong Kong)
<b>LPD</b>	amphibious transport dock
<b>LST</b>	tank landing ship
<b>MaRV</b>	maneuverable reentry vehicle
<b>MES</b>	market economy status
<b>MIIT</b>	Ministry of Industry and Information Technology
<b>MLP</b>	Medium and Long-Term Plan
<b>MOU</b>	Memorandum of Understanding
<b>MRBM</b>	medium-range ballistic missile
<b>NASA</b>	U.S. National Aeronautics and Space Administration
<b>NDRC</b>	National Development and Reform Commission
<b>NGO</b>	nongovernment organization
<b>NLD</b>	National League for Democracy (Burma)
<b>nm</b>	nautical mile
<b>NME</b>	non-market economy
<b>NPCSC</b>	National People's Congress Standing Committee
<b>NPL</b>	nonperforming loan
<b>OBOR</b>	One Belt, One Road

<b>OECD</b>	Organization for Economic Cooperation and Development
<b>P2P</b>	peer-to-peer
<b>PBOC</b>	People's Bank of China
<b>PCAOB</b>	Public Company Accounting Oversight Board
<b>PLA</b>	People's Liberation Army
<b>PMI</b>	purchasing managers' index
<b>QR</b>	Quick Response
<b>R&amp;D</b>	research and development
<b>RCEP</b>	Regional Comprehensive Economic Partnership
<b>RF</b>	radio frequency
<b>RIMPAC</b>	Rim of the Pacific
<b>RMB</b>	renminbi
<b>ROC</b>	Republic of China (Taiwan)
<b>SAM</b>	surface-to-air missile
<b>SAPPRFT</b>	State Administration of Press, Publication, Radio, Film and Television (China)
<b>SEC</b>	U.S. Securities and Exchange Commission
<b>SME</b>	small- and medium-sized enterprise
<b>SOE</b>	state-owned enterprise
<b>STEM</b>	science, technology, engineering, and mathematics
<b>THAAD</b>	Theater High Altitude Area Defense
<b>TIFA</b>	Trade and Investment Framework Agreement
<b>TPP</b>	Trans-Pacific Partnership
<b>TRQ</b>	tariff rate quota
<b>UAV</b>	unmanned aerial vehicle
<b>UGV</b>	unmanned ground vehicle
<b>UN</b>	United Nations
<b>UNCLOS</b>	UN Convention on the Law of the Sea
<b>UNCTAD</b>	UN Conference on Trade and Development
<b>USAID</b>	U.S. Agency for International Development
<b>USTR</b>	Office of the U.S. Trade Representative
<b>USV</b>	unmanned surface vehicle
<b>UUV</b>	unmanned underwater vehicle
<b>VIE</b>	variable interest entity
<b>VOA</b>	Voice of America
<b>VPN</b>	virtual private network
<b>WMP</b>	wealth management product
<b>WTO</b>	World Trade Organization



**2017 COMMISSION STAFF**

MICHAEL R. DANIS, *Executive Director*

---

KRISTIEN T. BERGERSON, *Senior Policy Analyst, Security and Foreign Affairs*  
 CAITLIN E. CAMPBELL, *Supervisory Senior Policy Analyst, Security and Foreign Affairs*  
 CHRISTOPHER P. FIORAVANTE, *Management Analyst*  
 MICHELLE KER, *Policy Analyst, Economics and Trade*  
 KATHERINE E. KOLESKI, *Research Director and Policy Analyst, Economics and Trade*  
 ETHAN S. MEICK, *Policy Analyst, Security and Foreign Affairs*  
 SEAN O'CONNOR, *Policy Analyst, Economics and Trade*  
 NARGIZA SALIDJANOVA, *Supervisory Senior Policy Analyst, Economics and Trade*  
 MATTHEW SNYDER, *Policy Analyst, Economics and Trade*  
 MATTHEW O. SOUTHERLAND, *Policy Analyst, Security and Foreign Affairs*  
 LESLIE A. TISDALE, *Congressional Liaison and Communications Coordinator*  
 JORDAN WILSON, *Policy Analyst, Security and Foreign Affairs*  
 KATHLEEN WILSON, *Finance and Operations Director*

**ACKNOWLEDGEMENTS**

The Commission would like to express its deep appreciation to those who testified before the Commission as expert witnesses, the researchers and analysts who prepared research papers under contract to the Commission, and others who assisted with the Commission's work by briefing the Commissioners on a wide array of economic and security issues. The Commissioners are also grateful to the agencies of the executive branch and Intelligence Community that briefed Commissioners on key issues of importance to the U.S.-China relationship. All these efforts helped inform the Commission's and the public's debates on issues vital to ongoing U.S.-China relations.

The Commission offers its special thanks to Acting Assistant Secretary of State Susan A. Thornton, Bureau of East Asian and Pacific Affairs, and her staff for their outstanding support of the Commission's fact-finding trip to Taiwan, Hong Kong, South Korea, Japan, Thailand, and Burma in May 2017. The Commission owes a deep debt of gratitude and thanks to the following officials of the U.S. Department of State for their outstanding assistance and support provided during the Commission's travel to Asia, and for their assistance in arranging the Commission's meetings with government officials, business representatives, academics, journalists, and other experts, which was instrumental in the success of the Commission's trip: Consul General Kurt Tong, U.S. Consulate in Hong Kong, and staff, including Brian Bedell; Chargé d'Affaires Marc Knapper, U.S. Embassy in Seoul, and staff, including Craig Kim; then Chargé d'Affaires Robert Rapson, U.S. Embassy in Tokyo, and staff, including Adam Van Deusen; Ambassador Glyn T. Davies, U.S. Embassy in Bangkok, and staff, including Deputy Chief of Mission Peter Haymond, Tahra Vose, Jeff Jung, and Simon Sriphe; and Ambassador Scot Marciel, U.S. Embassy in Rangoon, and staff, including Kristen Bauer, J.D. Wood, Brooke Petitti, and Phoo Pwint Phyu. The Commission would also like to thank Ambassador James F. Moriarty, Chairman, American Institute in Taiwan, Director Kin W. Moy, and staff, including Ryan Engen and Michael Pignatello for their outstanding assistance provided during the Commission's delegation visit to Taiwan.

The Commissioners are especially grateful to Executive Director Michael R. Danis for his exceptional professional efforts in managing the work of the Commission and in the preparation of the Annual Reports to Congress from 2009 through 2017. Special mention is due to Margaret Beresik and Erin Mulligan, who served as copyeditors of the Report, and to Victoria McLaughlin, who served as transcriber for the Commission's 2017 public hearings. The Commissioners express their thanks to former staff members Rickisha Berrien-Lopez, Alexis Brigmon, and Michael Pilger. A special thanks also to Alexander Bowe, Bartly Carfagno, and Han May Chan, the Commission's current and former interns and fellows, who assisted the Commissioners and staff during the 2017 Report cycle. Finally, the Commission expresses its gratitude to the policy analyst staff for their exemplary assistance in framing the debate and assisting in writing and editing the final Report, and to the administrative staff for ensuring the smooth operation of the Commission.