

USCC 2012 ANNUAL REPORT



2012
REPORT TO CONGRESS
of the
**U.S.-CHINA ECONOMIC AND
SECURITY REVIEW COMMISSION**

ONE HUNDRED TWELFTH CONGRESS
SECOND SESSION

NOVEMBER 2012

Printed for the use of the
U.S.-China Economic and Security Review Commission
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U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 2012



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The Commission was created on October 30, 2000, by the Floyd D. Spence National Defense Authorization Act for 2001 §1238, Pub. L. No. 106-398, 114 STAT. 1654A-334 (2000) (codified at 22 U.S.C. §7002 (2001), as amended by the Treasury and General Government Appropriations Act for 2002 §645 (regarding employment status of staff) & §648 (regarding changing annual report due date from March to June), Pub. L. No. 107-67, 115 STAT. 514 (Nov. 12, 2001); as amended by Division P of the "Consolidated Appropriations Resolution, 2003," Pub. L. No. 108-7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of Commission); as amended by Pub. L. No. 109-108 (H.R. 2862) (Nov. 22, 2005) (regarding responsibilities of Commission and applicability of FACA); as amended by Pub. L. No. 110-161 (Dec. 26, 2007) (regarding changes in annual report due date; submission of financial reports; printing and binding of Congressional reports; employee compensation and performance reviews; and applicability of House rules for travel by members and staff).

The Commission's full charter <http://www.uscc.gov/about/charter.php> and Statutory Mandate <http://www.uscc.gov/about/overview.php> are available via the World Wide Web.

IN MEMORIAM

This Report is dedicated to the memory of Timothy L. Lipka, who faithfully served the Commission as Staff Assistant. He was a trusted and highly valued member of the Commission's staff. Tim's passing on July 1, 2012, was tragic and untimely. He is deeply missed by all who knew him.

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

NOVEMBER 9, 2012

The Honorable Daniel Inouye,
President Pro Tempore of the U.S. Senate, Washington, DC 20510
The Honorable John Boehner,
Speaker of the U.S. House of Representatives, Washington, DC 20510

DEAR SENATOR INOUE AND SPEAKER BOEHNER:

On behalf of the U.S.-China Economic and Security Review Commission, we are pleased to transmit the Commission's 2012 Annual Report to the Congress—the tenth major Report presented to Congress by the Commission—pursuant to Public Law 106-398 (October 30, 2000), as amended by Public Law No. 109-108 (November 22, 2005). 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.” In this Report, the Commission reached a broad and bipartisan consensus; it approved the Report unanimously, with all 12 members voting to approve and submit it.

In accordance with our mandate, this Report, which is current as of November 9, includes detailed treatment of our investigations of the areas identified by Congress for our examination and recommendation. These areas are:

- **PROLIFERATION PRACTICES**—The role of the People's Republic of China in the proliferation of weapons of mass destruction and other weapons (including dual-use technologies), including actions the United States might take to encourage the People's Republic of China to cease such practices;
- **ECONOMIC TRANSFERS**—The qualitative and quantitative nature of the transfer of United States production activities to the People's Republic of China, including the relocation of high technology, manufacturing, and research and development facilities, the impact of such transfers on United States national security, the adequacy of United States export control laws, and the effect of such transfers on United States economic security and employment;
- **ENERGY**—The effect of the large and growing economy of the People's Republic of China on world energy supplies and the role the United States can play (including joint research and development efforts and technological assistance), in influencing the energy policy of the People's Republic of China;
- **ACCESS TO UNITED STATES CAPITAL MARKETS**—The extent of access to and use of United States capital markets by the People's Republic of China, including whether or not existing disclosure and transparency rules are adequate to identify People's Republic of China companies engaged in harmful activities;
- **REGIONAL ECONOMIC AND SECURITY IMPACTS**—The triangular economic and security relationship among the United States, Taiwan, and the People's Republic of China (including the military modernization and force deployments of the People's Re-

public of China aimed at Taiwan), the national budget of the People's Republic of China, and the fiscal strength of the People's Republic of China in relation to internal instability in the People's Republic of China and the likelihood of the externalization of problems arising from such internal instability;

- UNITED STATES–CHINA BILATERAL PROGRAMS—Science and technology programs, the degree of noncompliance by the People's Republic of China with agreements between the United States and the People's Republic of China on prison labor imports and intellectual property rights, and United States enforcement policies with respect to such agreements;
- WORLD TRADE ORGANIZATION COMPLIANCE—The compliance of the People's Republic of China with its accession agreement to the World Trade Organization (WTO); and
- FREEDOM OF EXPRESSION—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 the areas of economic and security policy.

The Commission conducted its work through a comprehensive set of six public hearings, taking testimony from over 59 witnesses from the Congress, the executive branch, industry, academia, policy groups, and other experts. For each of its hearings, the Commission produced a transcript (posted on its website—www.uscc.gov). The Commission also received a number of briefings by officials of executive branch agencies, intelligence community agencies, and the armed services, including classified briefings on China's cyber operations and military and commercial aerospace modernization. (The Commission is preparing a classified report to Congress on those topics.)

Commissioners also made an official delegation visit to the Philippines, China, and Taiwan to hear and discuss perspectives on China and its global and regional activities. In these visits, the Commission delegations met with U.S. diplomats, host government officials, representatives of the U.S. and foreign business communities, and local experts.

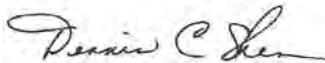
The Commission also relied substantially on the work of its excellent professional staff, and supported outside research in accordance with our mandate.

The Report includes 32 recommendations for Congressional action. Our ten most important recommendations appear on page 22 at the conclusion of the Executive Summary.

We offer this Report to the 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,



Dennis C. Shea
Chairman



William A. Reinsch
Vice Chairman

Commissioners Approving the 2012 Report



Dennis C. Shea, Chairman



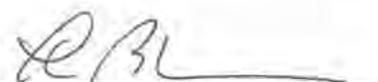
William A. Reinsch, Vice Chairman



Carolyn Bartholomew, Commissioner



Daniel A. Blumenthal, Commissioner



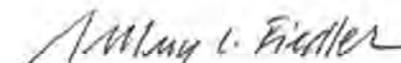
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C. Richard D'Amato, Commissioner



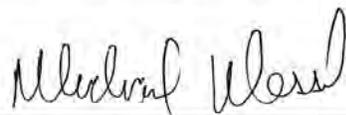
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Carte P. Goodwin, Commissioner



Daniel M. Slane, Commissioner



Michael R. Wessel, Commissioner



Larry M. Wortzel, Ph.D., Commissioner

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EXECUTIVE SUMMARY

Chapter 1: The U.S.-China Trade and Economic Relationship

When Chinese Premier Wen Jiabao announced this year's annual growth target of 7.5 percent in March, most analysts dismissed it as false modesty: The Chinese economy has consistently outperformed annual targets over the past decade, averaging close to 11 percent growth, despite the 2008–2009 global financial crisis. But with activity cooling much more than expected in recent months, the 7.5 percent target is starting to look ambitious. China's economy grew 7.4 percent in the third quarter of 2012, the seventh consecutive quarter of decelerating growth, as demand for Chinese goods and services at home and abroad slackened. If this trend continues, full-year growth is on course for its weakest showing since 1999. The government had hoped that increasing exports would help bolster the economy despite flagging domestic demand. Instead, exports are at risk of becoming a drag on the economy after slumping to just 1 percent annual growth in July 2012, from 11.3 percent in June.

Although the U.S. trade deficit in goods with China fell in 2009 as a result of the global recession, it has since surged, reaching a record high of \$295.4 billion in 2011, up from \$273.1 billion in 2010. For the first eight months of 2012, the United States exported \$69.9 billion worth of goods to China and imported \$273.1 billion from China, for a deficit of \$203.1 billion. The deficit in goods with China is by far the largest among U.S. trading partners and 40.6 percent of the total in 2011. Currency appreciation leveled out in 2012: The renminbi (RMB) did not appreciate as much as in 2011, and there are even signs that the Chinese government may devalue the RMB to boost exports.

Rebalancing China's economy to one less dependent on exports and more focused on meeting the need of China's consumers was declared a top priority by the governments of the United States and China. As Under Secretary of the Treasury Lael Brainard stated in July, rebalancing is imperative for China to avoid the "middle-income trap" and to navigate its demographic transition to a society of fewer workers and more retirees. However, under the pressure of declining growth, China is backsliding to continue its over-reliance on fixed investment and government spending to power growth.

Despite three decades of economic reform, state-owned and state-controlled enterprises still account for as much as half of the Chinese economy. Their political influence within China and their ability to compete on a global scale are both on the rise, and China's industrial policy envisions an ever larger role for the state sector, particularly in support of China's exports and overseas investments. Government corporations provide the means for the central

government to designate and control important segments of the economy. At the same time, the government employs its corporations to advance its foreign policy objectives and international commercial interests. Many, if not all, of the corporate officials chosen by the Chinese Communist Party (CCP) Central Organization Department are party members, and many of them become part of a revolving managerial class that cycles through the hierarchy of China's largest state-owned enterprises (SOEs). All the 130 leaders of the largest state-owned companies in 2011 were CCP members. In addition, 20 SOE executives served in 2010 on the CCP's Central Committee, which elects the ruling Politburo.

The existence of state-owned and state-controlled enterprises presents numerous challenges to U.S. corporate competitors in three distinct venues: within China, within the United States, and in third-country markets. Because SOEs are the preferred supplier for all levels of government in China, U.S. companies face a variety of discriminatory barriers to sales there. The same subsidies and preferences enjoyed by the state sector in China when competing with foreign companies in China also make Chinese SOEs stronger competitors in the U.S. market and third-country markets.

The influence of the Chinese state over Chinese private companies is also a concern. The Chinese government exerts its authority over the private sector in a number of ways, including subsidies for favored companies and industries, and sanctions for those out of favor. China's large, state-owned sector; elaborate, top-down economic planning; single-party, authoritarian rule; and a judiciary that follows CCP dictates help the government control the Chinese economy. Private companies, for example, struggle to secure loans from a state-owned banking system that generally prefers lending to state-owned "national champions."

The year 2011 marked the 28th straight year in which the United States has registered a trade deficit with China. China's state-directed financial system and export-driven growth model; its market barriers to various U.S. exports; its discriminatory policies that favor domestic companies over foreign investors in China's market; rampant Chinese theft of intellectual property; and China's unreliable rule of law, as well as its inconsistent adherence to World Trade Organization (WTO) commitments, continue to disadvantage American competitors.

There is a growing consensus among economists and many international trade experts that long-standing methods of measuring bilateral trade relations are inadequate for the contemporary realities of global production chains and are distorting our understanding of bilateral trade balances. In practice, initial economic studies suggest that the U.S.'s trade deficit with China may be overestimated by the traditional standard measurements for determining bilateral trade balances. These measurements, which calculate the gross values of goods flowing between two countries, may be obscuring key details for devising more effective trade enforcement policies.

Though they are often discussed as distinct and separate issues, the challenges of trade and investment that impact U.S. interests at home and abroad all stem from China's macroeconomic policies.

Improved understanding of the U.S.-China bilateral trade balance and the forces that shape it could be beneficial to policymakers faced with managing the relationship. However, resolving the many intractable trade issues that burden the U.S.-China relationship will remain a challenge for the U.S. government regardless of international improvements in the collection of trade data.

Conclusions

Trade and Economics Year in Review

- In 2011, the U.S. deficit with China reached \$295.4 billion, up 8 percent from the previous year. For the first eight months of 2012, the United States exported \$69.9 billion worth of goods to China and imported \$273.1 billion from China, for a deficit of \$203.1 billion.
- Chinese growth in the first half of 2012 slowed significantly from the double-digit averages of the previous decade. Export growth has also slackened dramatically, mostly as a consequence of weak demand for Chinese goods from its two main trade partners, the United States and Europe.
- As a consequence of domestic economic weakness, Chinese rebalancing policies appear to have been put on hold. As originally intended, rebalancing would have entailed restructuring domestic growth from export- to consumption-driven, reducing fixed investment, and allowing the RMB to appreciate.
- Instead, fearful of a protracted slowdown, the Chinese government has introduced a set of growth-boosting policies, such as encouraging banks to lend and rolling out new infrastructure projects. These policies, though much more moderate in scope, echo the massive stimulus undertaken by the Chinese government in 2008–2009 in the wake of the global financial crisis, which at the time shored up Chinese growth but exacerbated the economy's imbalances.
- China's adherence to the WTO principles and its Protocol of Accession remains spotty. Most recently, the U.S. Trade Representative has engaged China over its practice of using investigations and trade remedy actions in retaliation for challenges brought by the United States and not based on actual evidence.

Chinese State-owned and State-controlled Enterprises

- State-owned and state-controlled companies in China provide the opportunity for the central government to implement its industrial policy, create global competitors, and develop monopoly industries for the benefit of the government. The government does so at the expense of foreign competitors.
- Beijing reversed a 30-year process of economic reform of state-owned enterprises during the 2008 global financial crisis. A massive, \$585 billion economic stimulus was directed by the government through state-owned banks to many state-owned companies, particularly in the metals, mining, and construction

industries. As a result of the financial infusion, the state sector grew and became more influential within China. A resurgent Chinese state sector, armed with extensive government subsidies, competes unfairly with domestic Chinese firms and with China-based affiliates of American companies.

- The largest Chinese state-owned enterprises are generally managed by the Chinese central government through a holding company that answers directly to the State Council. The top leaders of 121 centrally owned, nonfinancial SOEs are chosen by a branch of the Chinese Communist Party and are typically party members. In turn, the SOEs influence government and party decisions on the economy. In addition to SOEs owned by the central government, there were 114,500 SOEs owned by provincial or local governments, according to a 2011 estimate by the World Bank.
- The banking system in China is almost entirely state owned and is dominated by five banks that account for nearly all lending. SOEs are the principal borrowers, while entrepreneurs and private companies find it hard to obtain loans even at higher rates. The country has an underdeveloped bond and equity market, putting private Chinese companies and foreign affiliates of U.S. companies at a further disadvantage. The rate of interest payments to depositors is set by the government at an artificially low rate, allowing the government to provide low loan rates to its favored clients in the state sector. This system of “financial repression” represents a transfer of wealth from the private sector to the state sector.
- Even those companies that are majority privately held are likely to be influenced or controlled by the government. Private Chinese companies are expected to follow the guidelines of the government, which are spelled out in Five-Year Plans and other official planning documents issued by the State Councils and implemented by various ministries.
- U.S. companies face unfair competition from Chinese SOEs within China, within the United States, and in third-country markets. Governments at all levels in China favor Chinese SOEs in procurement contracts. Chinese affiliates operating abroad do so with preferential financing from the government in China.
- Governments at all levels in the United States seek investment from China. But investment from Chinese SOEs carries a number of risks to U.S.-based competitors due to the preferential financing that Chinese governments provide. U.S. laws and regulations are inadequate to address the advantages given to Chinese SOEs operating in America. Although Chinese investment into the United States is low, China has large dollar holdings that could be converted into direct investment in the United States.
- When China joined the WTO in 2001, the government committed to economic reforms that included diminishing the role that the state plays in the economy. China has not complied

with many of these explicit obligations. The United States has a variety of remedies to use to counter China's failures to comply. They include bringing WTO complaints and antidumping and countervailing duty cases against the Chinese government and against Chinese industries. The Securities and Exchange Commission could issue regulations calling for enhanced disclosure by Chinese state-owned companies listed on U.S. exchanges of the subsidies given to the Chinese SOEs. The U.S. government could demand reciprocal treatment for foreign investment in China to match the treatment afforded by Chinese companies in America. Many U.S. firms are restricted to minority ownership of joint ventures in China or excluded entirely from some business sectors, while no such restrictions on Chinese companies exist in the United States. In some cases, reciprocal treatment is called for. The U.S. government could also exclude Chinese products and services from U.S. and state government services contracts and government construction projects until China opens its own government and SOE contracts to competitive bidding from American companies.

The Evolving U.S.-China Trade and Investment Relationship

- China's indigenous innovation policies and additional attention to certain strategic sectors identified in its 12th Five-Year Plan ensure that it will continue to provide support to national champions. For the foreseeable future, such companies will continue to be favored over foreign firms for government and state-owned enterprise procurement contracts and will continue to benefit from a range of subsidies, tax breaks, special development funds, increased credit support, and other assistance not enjoyed by their foreign competitors. These advantages continue to make Chinese national champions formidable competitors in China and in other markets globally, undermining U.S. industry innovation and success.
- Inconsistencies in central and subnational laws, practices, and enforcement efforts, particularly in the realm of intellectual property rights, continue to damage the U.S. economy as American businesses in the United States and China lose sales and jobs to competitors who do not play by the same rules and whom we have no means of persuading to address the problem.
- Foreign firms doing business in China risk the loss of their intellectual property and inventory to Chinese joint venture partners because of the lax enforcement of intellectual property rights and business contracts in China. U.S. technology companies are also increasingly vulnerable to Chinese intellectual property theft and resulting lost profits and market share.
- Growing Chinese investment may offer an important new source for U.S. job creation and economic growth, but it is too early to know whether the benefits will outweigh whatever longer-term economic costs Chinese state-owned and state-directed investments may bring.

- Any U.S.-China bilateral investment treaty agreement can be expected to involve a lengthy negotiation process and therefore should not be viewed as a potential near-term solution for any of the many bilateral trade and investment challenges, but the potential of such an agreement should nevertheless make it an important consideration for U.S. policymakers.
- The use of various emerging methodologies for measuring trade in value added may, in time, prove helpful to U.S. policymakers for crafting trade and economic policies that better exploit the U.S.'s strategic advantages, leveraging the U.S.-China trade relationship to the greater advantage of U.S. workers and businesses.

Chapter 2: China's Impact on U.S. Security Interests

China continued to advance its military modernization efforts over the last year and increased its official 2012 defense budget 11.2 percent from last year to \$106 billion, the 21st consecutive year-on-year increase. While this official figure makes China the world's second-largest defense spender after the United States, the publicly disclosed budget does not include many aspects of China's defense spending and expenditures, which may be as much as 50 percent greater.

China's military modernization, particularly its aircraft carrier, fighter aircraft, space, and ballistic missile programs are strengthening China's ability to execute its "Area Control Strategy," which is described in the Commission's *2011 Annual Report to Congress*. In September 2012, China's first aircraft carrier entered into service; it is expected to largely serve as a training platform to learn carrier operations. The U.S. Department of Defense expects China will build multiple carriers and associated support ships over the next decade. China continued flight testing of its next-generation fighter with stealth characteristics, the J-20, which may reach operational capability by 2018 and is reportedly intended to focus on South China Sea contingencies. In June, photos of the J-20's cockpit revealed similarities with the U.S.'s advanced jet fighter, the F-22, reviving concerns that espionage may have played a role in the jet's development. Photos and video have also emerged of a separate fighter prototype, the J-31. In early November 2011 and June 2012, China successfully docked unmanned and manned spacecraft, respectively, with the Tiangong-1 orbital space lab. The only other states to have successfully executed such a docking are Russia and the United States, and the maneuver is a critical skill necessary to conduct more sophisticated operations in space such as establishing a permanent space station. China also made further advances in its ballistic missile forces, including test-launching the DF-41, a new class of road-mobile, intercontinental ballistic missile, potentially with a multiple, independently targeted reentry vehicle capability.

The People's Liberation Army's (PLA) exercises in 2012 focused on naval, air, and joint force training, and the navy's international activities and areas of operation continued to expand. This training indicates that the PLA is working to improve its ability to operate jointly and in a greater range of operating areas.

China continues to develop its capabilities in the cyber arena. U.S. industry and a range of government and military targets face repeated exploitation attempts by Chinese hackers as do international organizations and nongovernmental groups including Chinese dissident groups, activists, religious organizations, rights groups, and media institutions. In 2012, Trend Micro released case studies on the China-linked campaigns that targeted government ministries, including military institutions in India and various military and industrial institutions in Japan, research institutions and agencies related to the space industry, and Tibetan activists. In January 2012, security researchers identified an apparently China-based cyber espionage operation targeting a U.S. Department of Defense's network authentication standard. In April 2012, denial of service attacks on the U.S.-based website Boxun.com, which reported heavily on the Bo Xilai scandal, led to speculation about Chinese state involvement. In July, Indian media reports accused China of successfully using removable media to compromise computers at India's Eastern Naval Command that were not connected to the Internet. From a government standpoint, perhaps the most significant example of malicious Chinese cyber activity exposed in 2012 was when the National Aeronautics and Space Administration (NASA) reported it was the victim of 47 "advanced persistent threat" attacks, 13 of which successfully compromised agency computers. Intruders stole user credentials for more than 150 NASA employees and gained full functional control over networks at the Jet Propulsion Laboratory.

Figures about exploitations and attacks on U.S. Department of Defense information systems decreased in both 2010 and 2011, which the department attributed to greater leadership attention and the creation of U.S. Cyber Command. However, if the threat activity from the first half of the year persists at its current rate throughout the second half, 2012 will bring levels of malicious activities comparable to 2011.

The integrity of the defense and telecommunications supply chains poses a concern, as the growing complexity of technical systems and the increasing fragmentation of supply chains allow numerous points for subversion. A 2012 Senate Armed Services Committee investigation found numerous instances of suspect parts used in a variety of military systems and identified China as "the dominant source country for counterfeit electronic parts that are infiltrating the defense supply chain." According to U.S. government officials, malicious supply chain attacks have already taken place.

Many U.S. entities do not have the capability to sufficiently manage the threat of Chinese cyber espionage. Businesses often have concerns about exposing proprietary or other sensitive information and, notwithstanding Securities and Exchange Commission guidance encouraging the disclosure of material penetrations, many listed firms do not report significant breaches.

In conjunction with the modernization of its traditional military capabilities and cyber capabilities, China has made a series of quantitative and qualitative improvements to its nuclear forces. China is on the cusp, perhaps within two years, of attaining a true "nuclear triad" of land-based ballistic missiles, submarine-launched

ballistic missiles, and air-dropped nuclear bombs. For planning purposes, Chinese strategists consider the United States as the principal threat.

China has disclosed little information about the size, composition, and disposition of its nuclear forces, but its steady modernization, combined with the ambiguity of some of its official statements, raises questions about its nuclear policies. While China maintains a “no first use” policy, what this actually means is uncertain, and the circumstances that merit retaliation are undefined. China is in the process of modernizing and increasing its intercontinental ballistic missile inventory and conducted several tests late this year. The U.S. Defense Intelligence Agency estimates that the number of Chinese intercontinental ballistic missiles that can strike the continental United States may more than double by 2025.

Export enforcement capacity for nuclear-related goods and permissive interpretation of some of China’s international nuclear-related commitments remain a concern. Additionally, the increasing mobility of China’s nuclear weapons, and the maturation of its air- and sea-based varieties in particular, will challenge existing safeguards within China’s nuclear command-and-control architecture.

Conclusions

Military and Security Year in Review

- China continues to modernize its military, developing platforms to strengthen its power projection capability in the region. Developments in China’s aircraft carrier, advanced fighter aircraft, space, and missile programs signal the potential for the PLA to threaten U.S. forces operating in the western Pacific.
- China’s defense budget continues its trend of annual increases, making China the world’s second-largest defense spender after the United States. As in past years, actual defense expenditures are greater than the announced sums, given the omission of key items such as foreign procurement.
- Over the past year, China’s military and maritime enforcement agencies have demonstrated a greater presence in the East China Sea and South China Sea. This increased level of activity has inflamed regional tensions.
- The PLA’s training and military diplomatic activities, increasingly taking place farther afield with a growing diversity of partners, indicate a widening in its range of missions and skill sets.
- Notwithstanding several disruptions in late 2011 and early 2012, significant U.S.-China military engagements took place this year, suggesting the potential for greater institutionalization of military-to-military ties.
- Civil-military relations saw challenges this year in China as corruption within the PLA surfaced in the press, suggesting some uncertainties in relations between the PLA and the CCP. China also appears to be consolidating party control over the organizations charged with maintaining domestic security and stability.

China's Cyber Activities

- China-based cyber exploitations and attacks are executed by numerous different actors. The PLA has several distinct entities that operate in the domain, including elements of the headquarters staff and potentially each military branch, some combination of which would seek to execute cyber attacks during wartime. Several entities within China's intelligence and security services also likely have a cyber espionage mandate. Nominally independent groups likely engage in state-sponsored exploitation, and certain corporate actors, such as Chinese information technology or telecommunications firms, may also operate in cyberspace on the state's behalf.
- The Chinese military, the People's Liberation Army, is refining and implementing strategies for the cyber domain. Conceptually, the PLA bundles cyber issues together with other areas of conflict, such as electronic warfare, space warfare, and public opinion warfare. This approach seeks to provide the PLA with the ability to defend, and comprehensively leverage, information for China's benefit. China has no single public strategy to attain its civil goals in cyberspace, but the country's numerous development plans identify investment priorities and inform cyber-related bureaucratic objectives and decisions.
- The state of the Internet in China substantially affects the broader cyber domain. With close to 540 million Internet users and over 675 million Internet devices, much of the country's influence relates to its massive scale. As in the United States and elsewhere, Chinese users face a range of malicious cyber activities, and these devices are vulnerable and often compromised. China seeks to shape its cyber domain with heavy investment in emerging technologies and comparable investment in research, including in areas that relate to cyber exploitation and attack. To these ends, China's high-technology talent pool is on a favorable trajectory
- In 2012, Chinese state-sponsored actors continued to exploit U.S. government, military, industrial, and nongovernmental computer systems. Any individual penetration remains difficult to attribute, but security researchers are increasingly able to group exploitations into "campaigns" based on common features and gain better insight into those responsible. Although most China-based activity observed over the past year relied on basic and straightforward techniques, a series of new developments suggest Chinese exploitation capabilities are improving significantly. Irrespective of sophistication, the volume of exploitation attempts yielded enough successful breaches to make China the most threatening actor in cyberspace.
- China presents the largest challenge to U.S. supply chain integrity. Many components of defense systems and telecommunications infrastructure are manufactured in China or sourced from Chinese entities. This yields active problems with counterfeit and substandard components and raises the potential for the introduction into critical systems of intentionally

subverted components. Counterfeit parts can cause failures that raise costs, adversely affect military readiness, and subject servicemen and women to unnecessary dangers. Subverted components can allow foreign militaries or intelligence services to disrupt, destroy, or otherwise compromise U.S. systems.

- Chinese activities in cyberspace have a range of consequences for the international environment. Countries targeted by Chinese espionage increasingly seek their own cyber capabilities, which may yield destabilizing consequences. Beijing also advocates for policies in cyberspace that enhance state control over the Internet. To the extent China is successful in this regard, the shift would have adverse consequences for free speech and other norms and would come at the expense of nongovernmental participation in Internet administration.

China's Nuclear Developments

- Numerous uncertainties remain about China's nuclear warhead holdings. Outside assessments from western observers, which generally range from about 100 to 500 warheads, but cluster around 240, rely heavily upon assumptions. Observers from Taiwan and particularly Russia place these figures substantially higher. Consistent with its emphasis upon secrecy, China has not provided official confirmation of these estimates. Defensible projections of China's fissile material stocks suggest that the PLA could hold greater quantities of warheads, or obtain additional warheads, if so inclined.
- China's military doctrine prioritizes highly the security of its nuclear stockpiles and assurance of its nuclear command-and-control architecture. However, the potential for new warhead management procedures for China's nuclear arsenal raises questions about which entities are authorized to launch these weapons. According to some analysts, what appear to be occasional disconnects between China's civil and military leadership introduce uncertainties about the integrity of China's command authority procedures and whether the PLA might approach important decisions independent of the country's civilian leadership.
- China's public statements about its nuclear policies are consistently vague. China's proclaimed nuclear strategy is one that maintains deterrence by guaranteeing the ability to retaliate to a first strike. Although the characteristics of China's nuclear arsenal and associated doctrinal materials generally support this claim, the situations that would merit retaliation and the actions that constitute a first strike remain undefined. China's leadership is aware of, and values, this ambiguity. The Chinese defense establishment's fixation on the concepts of "active defense" and "gaining the initiative" in warfare introduce the possibility of escalation into, or within, the nuclear domain.
- The PLA continues to modernize and expand its nuclear stockpile. China is now on the cusp of attaining a credible nuclear triad of land-based intercontinental ballistic missiles, sub-

marine-launched ballistic missiles, and air-dropped nuclear bombs. Chinese strategists view mobility in each modality as central to effectiveness. The dominant, land-based leg of China's triad also utilizes extensive subterranean storage and distribution infrastructure to ensure survivability against a strike.

- China remains outside of the major arms limitation and control conventions, such as the New Strategic Arms Reduction Treaty and the Intermediate Range Nuclear Forces Treaty, which the United States historically approached bilaterally with Russia. Substantial drawdown commitments from Washington and Moscow in recent years, as well as China's use of weapons prohibited under these treaties, have raised questions about Beijing's diplomatic posture toward nuclear restrictions.

Chapter 3: China in Asia

The South China Sea is a region of strategic importance to the United States and the center of hotly contested territorial disputes. In terms of tonnage, about half of all globally shipped commercial goods and \$1.2 trillion in U.S. trade transit the South China Sea annually. Ongoing territorial disputes in the South China Sea grew more contentious in 2012 as claimants, especially China, became more vocal and active in asserting their positions. While China's maturing naval forces underpin its confidence and capabilities in the South China Sea, nonmilitary Chinese actors have been the major players in these disputes. In particular, fishing vessels, civilian maritime law enforcement agencies, energy companies, and local governments in coastal provinces play significant roles in establishing and strengthening China's claims.

Beijing intentionally cultivates ambiguity surrounding its claims, which allows it to delay the resolution of its disputes while consolidating its presence in contested areas and maximize its flexibility in dealing with disputes. Should a dispute in the South China Sea escalate, the United States risks being drawn into a conflict. U.S. security commitments in the region include the 1951 U.S.-Philippines Mutual Defense Treaty, in which "Each party recognizes that 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."

Throughout 2012, relations between the People's Republic of China (PRC) and the Republic of China (Taiwan) continued to reflect the lowered tensions, liberalized economic exchange, and improved official relations observed since Ma Ying-jeou was first elected as president of Taiwan in 2008. Over the past four years, both governments have adopted more conciliatory positions regarding cross-Strait policy: Beijing has eased back from earlier efforts to pressure Taiwan and isolate it diplomatically, and Taipei has turned away from confrontational efforts to assert Taiwan sovereignty and toward efforts to pursue greater economic integration.

Continued control of both the executive and legislative branches by the Kuomintang after Taiwan's 2012 elections means that the immediate future will likely see a high degree of continuity in Tai-

wan's economic, foreign, and security policy; however, the rapid momentum toward warmer relations seen in 2009–2010 has slowed. Dialogues to date have focused on “economics first, politics later; easy first, difficult later.” Many of the less contentious issues, such as direct passenger flights and mail service, increased tourism, and educational exchanges have been settled. The thornier issues that remain touch upon sensitive questions of sovereignty and national identity, leaving negotiators on both sides to wade into the “deep water” of future cross-Strait negotiations.

The cross-Strait military balance has continued to shift more firmly in favor of the PRC, with the PLA fielding more modern and capable platforms. Of particular concern to both Taiwan and U.S. military defense planners—as well as many of China's neighbors—is the steadily increasing capacity of Chinese military forces to employ extended-range strike warfare and other antiaccess/area denial capabilities. On September 21, 2011, the Obama Administration notified Congress of intended arms sales related to Taiwan's aging fleet of 145 F-16 A/Bs fighters; however, no commitment has been made regarding the possibility of U.S. sales of the more advanced C/D variant of the F-16 aircraft.

The year 2012 marked the 15th anniversary of China regaining sovereignty over Hong Kong. While the “one country, two systems” formulation continues to be used to describe Hong Kong's relationship with the mainland, developments over the past year suggest that Beijing's influence in the city's affairs is growing. According to a media survey released in April by the Hong Kong Journalists Association, 87 percent of journalists believe that press freedom in Hong Kong has deteriorated since former Chief Executive Donald Tsang took office in 2005. Evidence suggests that Beijing substantively intervened in the 2012 chief executive election on behalf of Leung Chun-ying, the eventual winner.

In December 2011, a University of Hong Kong poll found that only 17 percent of the territory's seven million residents identify themselves as “Chinese citizens,” a “new low since 2000,” indicating a growing gap in how the territory defines itself vis-à-vis the mainland. Discontent with the mainland is a source of concern for Beijing. Established in Hong Kong's Basic Law is the “ultimate aim” of electing the chief executive and Legislative Council “by universal suffrage.” But implementation of universal suffrage has already been twice delayed, and its fate is uncertain.

Beijing's growing interference in Hong Kong's political affairs casts doubt on the continued viability of the “one country, two systems” framework and Beijing's willingness to eventually grant Hong Kong universal suffrage. Hong Kong's status as a customs territory distinct from the mainland continues to raise concerns regarding the illicit transfer of technology to China. An April 2012 U.S. Government Accountability Office report revealed that integrated electronic circuits “have been diverted to China (a destination requiring a license for these items) through Hong Kong (where no license is required).” The report quoted an unnamed Commerce Department official stating that certain types of such circuits could “contribute to China's military advancement.”

Conclusions

China and the South China Sea

- Beijing's objectives in the South China Sea are to uphold what it insists is the legitimacy of China's territorial claims; to have unimpeded access to maritime resources like oil, natural gas, and fish; and to ensure control of its maritime periphery in order to guarantee the security of its sea lines of communication and deny what it views as threatening foreign military activities there.
- China appears to pursue a strategy in the South China Sea that involves delaying the resolution of its maritime disputes while growing its actual presence in contested areas and strengthening its navy and air force. The objective of this strategy is to strengthen China's position relative to the other claimants to ensure eventual resolution of disputes in China's favor.
- Beijing prefers that nonthreatening actors like civilian law enforcement agencies and commercial fishermen enforce China's claims and expand China's presence in disputed areas. The PLA Navy's maturing capabilities underpin Chinese assertiveness and foster insecurity among non-Chinese claimants.
- To the extent that China's activities in the South China Sea are meant to stabilize and secure its maritime periphery, its actions in 2012 appeared to have the opposite effect. China's assertiveness led other claimants to grow their presence in disputed areas, invest in military modernization, and look for maritime security support from the United States and its regional allies.
- China National Offshore Oil Corporation (CNOOC), one of China's state-owned oil companies, demonstrated itself to be an agent of the Chinese state in 2012. CNOOC advanced China's interests in the South China Sea by auctioning oil and gas blocks in waters disputed by Vietnam and by referring to its offshore energy infrastructure as "mobile national territory."

China and Taiwan

- The gap in cross-Strait military capabilities continues to widen despite a series of Taiwan defense initiatives, the implementations of which have been constrained by budgetary concerns. Nonetheless, in 2012, Taiwan accepted a \$3.7 billion U.S. proposal to upgrade its fleet of F-16 A/Bs and held a number of high-profile military exercises meant to demonstrate its capacity for self-defense.
- While cross-Strait dialogue continues to deepen on issues related to trade, cultural, and educational exchanges, recent years have seen little progress in cross-Strait security dialogues. Furthermore, as a consequence of domestic politics on both sides, the sensitive issues surrounding Taiwan's political status have yet to be discussed.

- In 2012, the U.S. government approved a visa waiver program for Taiwan residents traveling to the United States.

China and Hong Kong

- Hong Kong's 2012 elections were tumultuous, and the outcome was viewed as heavily influenced by Beijing, compounding fears about the integrity of the "one country, two systems" framework.
- Beijing's increasing influence in Hong Kong's affairs calls into question the security of advanced technology products exported from the United States to Hong Kong.
- Popular discontent in Hong Kong with the mainland increased in 2012 and led to a number of demonstrations and public quarrels. While the city still enjoys freedoms of expression not permitted on the mainland, there were a number of instances in which city authorities, acting out of deference to Beijing, challenged the exercise of those rights.
- Along with large wealth gaps and soaring real estate costs, Hong Kong's struggling economy is a concern for Beijing. A series of measures designed to provide economic assistance to the city have been adopted, and China's efforts to leverage the city to gradually internationalize the RMB have continued.
- Reports of direct censorship and self-censorship also increased in 2012. Leading Hong Kong publications claim to have received pressure to provide positive coverage of Beijing's favored candidate prior to the election. Conspicuous downplaying of human rights issues and troubling personnel changes amount to an unprecedented degree of interference in the Hong Kong press.

Chapter 4: China's Global Reach

Europe has been a reliable destination for Chinese exporters, and it has also become an increasingly attractive prospect for Chinese investors seeking to diversify their foreign holdings and to acquire valuable technologies and know-how. At the same time, the economic relationship has been plagued by growing European frustration, shared by the United States, over China's disregard for intellectual property rights, forced technology transfers, restrictions on market access for foreign firms, and the many direct and indirect subsidies offered by the Chinese state to Chinese exporters and investors.

Many questions remain about what role China will play in resolving the European sovereign debt crisis. European Union (EU) leadership has been trying to build support for a European Financial Stability Facility, while individual member states work hard at attracting Chinese investment, giving rise to fears that competition among countries for Chinese investment could allow China to "divide and conquer" Europe on matters of trade, security, and human rights.

Although Sino-European cooperation on antipiracy, peacekeeping operations, and other global security issues has largely been a posi-

tive development for the European Union and China, European defense and dual-use exports to China have emerged as an area of potential transatlantic disagreement. Despite a European arms embargo, EU defense exports to China totaled over \$90 million in 2010. Some European defense scholars have asserted that EU engagement with China in the military and high-tech sphere has contributed significantly to the advancement of China's defense capabilities.

Despite differences in perception of China's rise, U.S. and European security interests converge on the issue of maritime security in Asia. Approximately 90 percent of European trade is seaborne, and much of it transits the Strait of Malacca and the South China Sea. The United States is similarly reliant on shipping in the region, and both actors have an interest in preserving freedom of navigation and stable and secure sea lanes.

While Europe has struggled in recent years, China's continued economic growth has resulted in an intense need for natural resources, and its dependence on foreign energy is growing. About 51 percent of China's imported oil comes from the Middle East, with Saudi Arabia as its primary supplier; an additional 24 percent comes from Africa, where Angola is the primary supplier. Energy is a significant driver of China's engagement with troubled or unstable states like Iran, Sudan, and South Sudan. In an effort to diversify China's global energy sources, Chinese policymakers and companies are looking to North and Central Asia, and Southeast Asia, for more of their energy. China is becoming more active in the North American energy sector as well. Chinese companies invested over \$17 billion in North American energy from 2010 to early 2012; in 2011, North America was China's top regional destination for oil and gas acquisitions.

A June 2012 American Resources Policy Network report found that the United States is more dependent on China than on any other country for a basket of minerals identified as "critical." China produces over 90 percent of the world's rare earths; over 80 percent of antimony, magnesium metal, and tungsten; and between 50 percent and 80 percent of 15 additional minerals. Over the last few years, China has initiated policies to consolidate its rare earth industry, limit production, impose export restrictions, and start importing rare earths. Given China's withholding of rare earths from Japan over a diplomatic dispute, Beijing could seek to use its dominant position in critical mineral supply chains as leverage in political disputes with other countries, including the United States. In response to China's restrictive policies on rare earths (as well as tungsten and molybdenum), the United States, the European Union, and Japan requested WTO consultations with China in March 2012; after consultations failed to resolve the issue, the three powers requested a WTO dispute settlement panel in June.

With one-fifth of the world's population and only 7 percent of the world's water resources, China faces significant challenges related to water scarcity. Over 40 mid- to large-sized Chinese cities, including Beijing, suffer from significant water shortages, and many of the nation's water resources are severely polluted. Scientists have found high rates of cancer in populations living alongside many of China's polluted rivers. Widespread health problems associated

with pollution (including water pollution) are a major cause of social unrest in China. All of China's major rivers (including three of the world's five largest rivers measured by discharge) originate from the Tibetan plateau. China's management of these important transboundary waterways has significant economic, environmental, and health ramifications for downstream users in contiguous areas, and China has been involved in disputes over water rights with several of its neighbors including India, Kazakhstan, North Korea, Russia, and Vietnam. Some analysts predict that tensions over water resource issues in Asia could soon lead to open conflict.

China possesses the world's largest distant water fishing fleet, and the industry is set to grow due to significant political and financial support from the Chinese government. Fisheries experts report that Chinese distant water fleets engage in illegal, unreported, and unregulated fishing.

Conclusions

China and Europe

- China has a fundamental interest in seeing the euro crisis recede, as it depends on the European Union for the largest part of its exports. Throughout the euro crisis, China has consistently voiced support for the euro and for individual countries in distress, but there have not been any significant direct contributions.
- The opacity of bond purchases, especially in the secondary market for European bonds, makes it difficult to determine what role China has played in alleviating the EU's sovereign debt crisis. Statements by Chinese officials and economic trends suggest that Chinese companies have been using the euro crisis to deepen their foreign direct investment (FDI) in the European Union through acquisitions of technologies and brands, among other things.
- Chinese FDI flows to the European Union so far have been modest, but there is potential for significant growth. Chinese investment has been generally well received, but it is too early to assess its impacts, negative or positive.
- European companies face the same problems as U.S. companies: loss of intellectual property and technology to Chinese companies, an uneven playing field due to Chinese government subsidies offered to the domestic firms, and the lack of market access in many sectors and industries, and China's government procurement market. This presents a number of opportunities for U.S.-EU cooperation on trade-related issues.
- Transfers of European arms and dual-use technologies to China have enhanced China's capabilities in the naval and space domains. Such advancements could contribute to the development of China's military in a way that runs counter to U.S. interests in stability in the western Pacific and global commons.
- European policymakers and leaders generally do not perceive that they have substantial strategic interests in the Asia-Pa-

cific region, and they do not perceive China's military modernization to be a security threat. This view contrasts with that of the United States, a Pacific power with increasing security interests in the region that takes a more cautious view of China's military rise. As such, transatlantic alignment on security issues related to China and the Asia-Pacific is limited.

China's Demand for and Control of Global Resources

- China's leaders view China's growing dependence on foreign energy as a strategic vulnerability. China depends on unreliable producer states (like Iran, Sudan, and South Sudan) for much of its oil imports. China also relies heavily on maritime trade routes for its energy imports, exposing China's energy trade to crucial chokepoints like the Strait of Malacca and the Strait of Hormuz. Beijing's insecurity about these circumstances leads China to diversify its foreign sources of oil and transport routes.
- China's overseas energy interests are expanding as China seeks new sources of supply and places to invest. The majority of China's foreign energy comes from the Middle East and Africa. China also has significant energy interests in North, Central, and Southeast Asia. North America has emerged as the top destination for Chinese energy investments in recent years.
- China's state-owned oil companies are major players in China's foreign energy activities. The state-owned oil companies' recent success in their North American deals illustrates their growing international prestige as well as their competitiveness. While the state-owned oil companies often behave like commercial actors, significant political and financial support from the Chinese government gives the companies an unfair advantage when competing with U.S. or foreign energy companies for deals.
- The United States is heavily dependent on China for much of its mineral imports. China is a primary supplier of 21 critical mineral commodities upon which the United States is 100 percent dependent. Beijing demonstrated during a diplomatic row with Japan that it was willing to use its dominant role in the rare earths supply chain as leverage against Tokyo.
- China faces several challenges related to water scarcity and pollution. China's use of hydropower dams and water diversion projects on transboundary rivers can have detrimental economic, environmental, health, and security impacts in downstream states in Central, South, and Southeast Asia. This creates tensions between China and its regional neighbors.
- China is the world's largest fishing nation. In addition to domestic fishing, China has the world's largest distant water fleet, which operates on the high seas and in the maritime territories of several countries throughout Asia, Africa, and South America. China's distant water fishing industry often engages in illegal, unreported, and unregulated fishing, especially in waters off the coast of Africa.

Chapter 5: Assessing China's Efforts to Become an Innovative Society

Since January 2006, Chinese industrial policy has focused on moving manufacturing away from labor-intensive, low-wage, and resource-dependent factory work to a higher position on the value-added, high-technology scale. A critical part of that plan requires the development of a culture of innovation in China. The plan requires government programs to support basic research, to create an advanced scientific and technical education system, to maintain strong intellectual property protection, and to foster entrepreneurship, the building blocks of an innovative society.

So far, China's record of reaching these benchmarks is mixed. China has made considerable progress in shifting its manufacturing away from simple consumer goods toward high-technology by investing heavily in the infrastructure of innovation. In some areas, the effort has been enormous. For example, postgraduate degrees awarded to Chinese scientists and engineers rose from 30,328 in 2001 to 172,336 in 2009, a 468 percent increase. This progress resulted from a dramatic expansion of science and technology university programs in China, from 239 in 2000 to 834 in 2010.

Complementing China's developing innovation capabilities is an elaborate strategy for obtaining America's advanced technology by subterfuge, either stealing it outright or by requiring U.S. companies to turn over technology to Chinese business partners as a condition for investment and market access in China. Other tactics China employs to give its companies and industries an unfair advantage include currency manipulation; tax incentives for exports; limits on foreign purchases designed to force technology transfers; land grants and rent subsidies to Chinese-owned firms; preferential loans from banks; tax incentives for Chinese-owned firms; cash subsidies; benefits to state-owned enterprises; generous export financing; government-sanctioned monopolies; a weak and discriminatory patent system; joint venture requirements; cyber espionage to steal intellectual property; direct discrimination against foreign firms; limits on imports and sales by foreign firms; onerous regulatory certification requirements; and limiting exports of critical materials in order to deny foreign firms key inputs. Taken together, such activities constitute "innovation mercantilism."

There is evidence that some Chinese investments have paid off, while others have failed. During the past decade, the U.S. trade deficit with China in advanced technology products climbed from \$11.8 billion in 2002 to \$109.4 billion in 2011, an 827 percent increase. Still, China's efforts to boost intellectual property protections for Chinese inventors have stagnated; its goal of nurturing an entrepreneurial class by creating a private system of equity and bank financing is lagging far behind; and questions have been raised about the quality of Chinese scientific and engineering training and the utility of an education system that values rote memorization over creativity.

Conclusions

- The central government of China has assigned a high priority within its industrial policy planning on developing a culture of

innovation. The intent is to replace low-wage, resource-intensive manufacturing with high value-added production.

- Funding for research and development is increasing, and China has invested heavily in enhancing its science and engineering education. This is apparent from the large increase in university graduates with science and engineering degrees. But China still lacks a financing system to support entrepreneurs and the willingness to enforce intellectual property protections, two requirements for an innovative society.
- China depends on industrial espionage, forced technology transfers, and piracy and counterfeiting of foreign technology as part of a system of “innovation mercantilism.” China can avoid the expense and difficulty of basic research and unique product development by obtaining what it needs illegally. China’s success is evident, in part, by the large increase in the U.S. trade deficit with China on advanced technology products.
- China has also successfully developed a capacity for “second-generation innovation.” As a result, U.S.-based multinational companies increasingly use China as a center for product research, engineering, and manufacturing while retaining design, marketing, and sales within the United States. This has allowed some U.S. companies to remain price competitive but has led to the loss of manufacturing jobs in the United States.
- China’s leadership has implemented extensive infrastructure, including formal plans and funding vehicles, to invest in and promote research and development and innovation. The plans have ambitious goals and clearly articulated time lines. Investments and efforts are diffused among numerous categories of special projects and technologies.
- Historically, China’s heavy emphasis on central planning has at times disadvantaged “bottom-up” entrepreneurial efforts or curiosity-driven research, but over the past ten years China’s innovation planning has become diffuse.
- China’s investments in science and technology focus overwhelmingly upon experimental development over applied and basic research. This emphasis helps in China’s rapid commercialization of products but raises questions about Chinese scientists’ ability to produce “leapfrogging” innovations, as directed by China’s planning documents.
- Local governments in China fund about half of the country’s research and development activities. This funding comes along with expectations that research will focus on technologies with more immediate, practical benefits.

Supercomputing Conclusions

- The Chinese government views progress in the field of supercomputing, as one Ministry of Science and Technology statement put it, as an “important symbol to measure and reflect the technological competitiveness of a country’s comprehensive national strength, the strategic high ground of the world’s high-tech fields.”

- China is innovating in select areas of supercomputing. The nation's recent impressive achievements in the sector do not suggest it is about to decisively overtake the U.S.'s leadership position. However, China has the people and resources to continue producing notable advancements.

Cloud Computing Conclusions

- China faces complex prospects in the cloud computing sector. Its status as a chosen technology under the 12th Five-Year Plan, and the attendant high-level leadership support and financial benefits, helps provide a favorable environment for success.
- Several issues pose obstacles to broader internal adoption as well as Chinese ambitions to ultimately export cloud services. Censorship requirements have adverse applications for domestic and foreign entities alike. Broader security questions pose another issue; as a recent *People's Daily* article put it, in the cloud, “[f]ew Chinese companies have the awareness to protect themselves at the moment.” Intellectual property protection as well as host of legal and jurisdictional ambiguities further complicate matters.
- With respect to innovation specifically, cloud computing offers a difficult test case. Chinese entities are making circumscribed innovations in the field but that cloud technologies are heavily concentrated, by design, outside of users' views makes complete assessment challenging.

Defense Systems Conclusions

- China's technological capabilities in the defense sector have grown remarkably over the past two decades. Consequently, China's military has access to increasingly impressive military platforms, munitions, and support systems. China's efforts in the field are well funded and receive a high level of leadership support.
- Assessing the level of innovation in China's new military hardware remains difficult. China's military capabilities have been uneven for decades, with pockets of excellence in some areas (e.g., nuclear weapons and delivery systems in the 1960s) and persistent flaws in other areas (e.g., turbofan jet engines through today). However, the Chinese defense industrial base is on a continually improving trajectory. Innovation will probably not occur uniformly, but pockets of innovation are arising.

Chapter 6: China's Political Transitions in 2012

The year 2012 has been a turbulent one for politics in the PRC. The country saw its greatest open political crisis in a generation, with the very public downfall of CCP Politburo member Bo Xilai and the accompanying suspended death sentence handed down to his wife, Gu Kailai. This story—involving an alleged murder plot, accusations of corruption, and an alleged defection attempt by a senior police official—shattered the carefully constructed façade of unity fostered by the state's propaganda organs and revealed rifts

in the elite circles of the Communist Party. This drama took place against the backdrop of preparations for a major leadership succession. The 18th National Congress of the Chinese Communist Party, which convened in early November, marks only the second transition of power since the death of paramount leader Deng Xiaoping in 1997. This transition to a “Fifth Generation” of party leadership will test both the procedures for orderly succession established by the CCP over the past two decades as well as the ability of the party’s senior ranks to overcome factional divides and coalesce under a new, collective leadership.

China faces challenging decisions regarding the use of its growing military power, economic clout, and diplomatic influence. In the critical years ahead, the views and policy preferences of the country’s leadership will set the trajectory for China’s emergence as a major world power. However, it is difficult to determine the character and worldviews of China’s new political leaders. These officials will need time to consolidate their positions in the new hierarchy, and factional divides and the need for consensus decision-making will likely preclude any bold, new policy initiatives. This will likely produce a strong tendency to defer decisions on contentious issues in the U.S.-China relationship, such as the restructuring of China’s export-driven economic model, the dominant role of state-owned enterprises in major sectors of the economy, the orientation of Chinese foreign policy, and China’s maritime territorial disputes with its neighbors. The United States must carefully monitor events in Beijing as China’s new leaders consolidate their positions inside the Communist Party. Absent unforeseen events, dramatic changes in the direction of PRC foreign and economic policy are unlikely in the near term, and the ability of China’s leaders to respond to new policy initiatives will be constrained.

Conclusions

- A new group of younger, rising officials will assume the most senior postings in the Chinese Communist Party at the 18th Party Congress in November 2012. These “Fifth-Generation” cadres tend to have a number of factors in common: Many suffered during the Cultural Revolution; most have experience in provincial-level government administration; and nearly all have more formal education than their predecessors, with studies focused in economics and the social sciences. A disproportionate number of these rising leaders are also “princelings,” the children of prominent revolutionary-era Communist officials.
- Factionalism remains a serious issue at the elite level of Chinese politics, centered on two major patronage networks: the “Shanghai” and “Princeling Party” group that owes fealty to former CCP General Secretary Jiang Zemin; and the “Communist Youth League Faction” loyal to CCP General Secretary Hu Jintao. The membership of the Politburo and Politburo Standing Committee from the years 2002 to 2012 has reflected representation for both of these two groups, with Hu Jintao holding the top leadership slot and loyalists of Jiang Zemin occupying the largest number of seats.

- Presumptive CCP General Secretary Xi Jinping and presumptive PRC Premier Li Keqiang are expected to be the two most senior figures in the new leadership line-up, but they will not dominate the policy process: The newly appointed leadership of the CCP will likely continue to operate in a collective, consensus-driven fashion. This decision-making dynamic—combined with the continuing influence of retired party leaders—means that there will be considerable internal debate regarding major policy issues and that there will likely be little substantive change to PRC policy in the near-term.

THE COMMISSION’S KEY RECOMMENDATIONS

The Commission believes that ten of its 32 recommendations to Congress are of particular significance. The complete list of recommendations appears at the Report’s conclusion on page 455.

The Commission recommends that:

- Congress examine foreign direct investment from China to the United States and assess whether there is a need to amend the underlying statute (50 U.S.C. app 2170) for the Committee on Foreign Investment in the United States (CFIUS) to (1) require a mandatory review of all controlling transactions by Chinese state-owned and state-controlled companies investing in the United States; (2) add a net economic benefit test to the existing national security test that CFIUS administers; and (3) prohibit investment in a U.S. industry by a foreign company whose government prohibits foreign investment in that same industry.
- Congress request that the administration assess and report to Congress on possible vulnerabilities for U.S. government and private sector parties in data storage and the provision of web services, such as cloud computing, in terms of national and economic security interests. Such assessment should focus on the provision of such services by Chinese companies and whether specific mitigation, abatement, or notice provisions are necessary.
- Congress direct the U.S. Department of Commerce to report annually on Chinese investment in the United States including, among other things, data on investment in the United States by Chinese SOEs and other state-affiliated entities.
- Congress require the U.S. Department of State to detail current and planned efforts to integrate China into existing and future nuclear arms reduction, limitation, and control discussions and agreements. Committees of jurisdiction within Congress should request periodic updates on these efforts.
- Congress direct the administration to establish an interagency task force with the secretaries of Commerce, Defense, Energy, the Interior, and State and the director of the U.S. Geological Survey to (a) develop a governmentwide definition and list of “critical minerals”; (b) develop a plan regarding those minerals

to reduce the vulnerability of the United States to pressure from China or any other country for political or economic advantage; and (c) require federal agencies to use existing statutory and regulatory tools to encourage critical minerals extraction and manufacture in the United States.

- Congress direct that, in undertaking any bilateral investment treaty negotiation with China, the U.S. administration should insist upon terms that ensure reciprocity and explicitly address the unfair challenges posed by China's SOEs in all markets.
- Relevant Congressional committees conduct an in-depth assessment of Chinese cyber espionage practices and their implications and report the findings in an unclassified format.
- Congress direct the U.S. Securities and Exchange Commission (SEC) to revise its protocols for reviewing filings by foreign entities listed on or seeking to be listed on the U.S. stock exchanges. The SEC should develop country-specific data to address unique country risks to assure that U.S. investors have sufficient information to make investment decisions. The SEC should focus, in particular, on state-owned and -affiliated companies, and subsidies and pricing mechanisms that may have material bearing on the investment.
- Congress require the Department of Defense to report to Congress on the extent to which its current procurement regulations and contracting procedures allow it to exclude the acquisition of any foreign-produced equipment from any department system where there is concern as to the potential impact of cyber vulnerabilities.
- Congress review the U.S.-Hong Kong Policy Act of 1992 to determine its continued applicability. In particular, Congress should review the security of advanced technology products exported from the United States to Hong Kong.

INTRODUCTION

China is undergoing a period of intense political transition and economic challenge that will test the ability of the Chinese Communist Party (CCP) to maintain its control over the country. The CCP has staked its legitimacy on continued economic growth in order to maintain the support of its middle class and its restive rural population of 700 million. To keep Chinese factories full and provide jobs to the rural millions seeking a better life in the cities, the party recognizes that the Chinese economy must continue economic growth and expand the social safety net. If growth is to continue, however, it will be necessary to implement politically difficult reform.

China's 12th Five-Year Plan (2011–2015) calls for the government to rebalance the economy toward domestic consumption and away from its historic reliance on export-led growth and vast infrastructure investments. The plan also encourages more government services, health care, education and pension reform, and a shift from resource-intensive manufacturing to the production of higher value-added goods. These reforms would benefit the American economy by further opening China to U.S. goods. The United States has long encouraged such market reform in China and has welcomed China's first steps to expand government services, particularly in rural areas.

Unfortunately, in recent years China has been backsliding from market reforms in favor of an increased role of the state in the economy. China's response to the global financial crisis also had the effect of strengthening its state sector by disproportionately benefitting state-owned companies. To date, China has failed to make significant moves to rebalance its economy, reduce export dependence, and increase domestic consumption. While such widespread economic reforms are difficult to implement, and while vested interests, such as exporters, are likely to oppose reforms that make it more difficult for their sectors to thrive, China is faced with a stark choice. As its economic growth slows and its export markets shrink, China can either transition to a new, rebalanced economy or face stagnation and even decline.

While China must resist the temptation to stay the comfortable but unsustainable course of the export-led economy it has nurtured over the past two decades, it faces a different dilemma in foreign affairs. Since 1989, China has maintained a long-standing policy following Deng Xiaoping's admonition to "hide your capacities, bide your time, accomplish things where possible." However, China's continuing military modernization is strengthening its confidence and ability to advance Chinese government interests, especially in the Asia Pacific. For example, China has been relentless in upholding what it insists is the legitimacy of its territorial claims in the East and South China seas. China's increased assertiveness has es-

calated regional tensions, prompting other countries to bolster their own defense capabilities and form or strengthen security partnerships. The United States has responded to China's muscular naval posture in the Pacific by planning to deploy more warships to the Pacific over the coming years. China is faced with another choice: either adhere to internationally recognized norms of behavior for freedom of navigation and the resolution of territorial disputes or face growing opposition from its neighbors and other members of the international community.

China and the United States are growing increasingly interdependent. The United States looks to China to rebalance its economy, and China needs to increase imports and domestic consumption. What the United States wants from the relationship with China is clear: the reciprocal and balanced trade relationship that we should have with a World Trade Organization partner and for China to respect the rule of law both domestically and abroad.

In the middle of a once-in-a-decade change in the top leadership of the Chinese Communist Party, Chinese and international observers are looking toward the next generation of leaders to determine how China will manage this important period of transition. Much has been said about the personalities of Xi Jinping, the expected future general secretary of the CCP and president of China, and Li Keqiang, the expected future premier of China. Due to the opacity of Chinese politics, it is difficult to assess how these two individuals will influence the CCP and the Chinese government. However, a few things are clear. First, internal political struggles in the CCP will likely continue, and retired leaders Jiang Zemin and Hu Jintao, and their supporters, will continue to exercise significant influence. Second, the Politburo Standing Committee, China's top leadership body, is unlikely to be dominated entirely by any particular individual or political faction, which will necessitate compromise among China's leaders. Third, China's state-owned enterprises will likely continue to operate in the interest of the party as well as in their own self-interest. Fourth, the People's Liberation Army is likely to remain a powerful political force, both taking direction from and influencing CCP and Chinese government leadership. Finally, public security organs and the People's Armed Police will probably increase surveillance and control of the populace.

These developments suggest that the United States will continue to face a range of challenges when dealing with China. The United States should demand reciprocity and seek mutual benefit in its relationship with China, and both nations should remain mindful of our interdependence. Our nations would both be better off as partners rather than competitors; however, this will depend on whether China is willing to make the reforms necessary for it to transition into a responsible actor on the global stage.

CHAPTER 1
THE U.S.-CHINA TRADE
AND ECONOMIC RELATIONSHIP
SECTION 1: TRADE AND ECONOMICS
YEAR IN REVIEW

Introduction

China's economy grew 7.4 percent in the third quarter of 2012, the seventh consecutive quarter of decelerating growth, as demand at home and abroad slackened. If this trend continues, full-year growth is on course for its weakest showing since 1999.¹ A steep slide in exports has put even more pressure on Beijing. For the past five years, exports have been declining as a share of China's gross domestic product (GDP), but foreign shipments are still important, employing tens of millions of workers. The government had hoped export growth would help provide some cushion against flagging domestic demand. Instead, falling exports are at risk of becoming a drag on the economy, slumping to 1 percent annual growth in July 2012, from 11.3 percent in June.² Currency appreciation, too, leveled out in 2012: The renminbi (RMB) did not appreciate as much as in 2011, and there are even signs that it might depreciate again to help boost falling exports. Despite the slowdown, with the upcoming leadership transition, the country's top leaders are more focused on politics than economics.³

Weak growth placed Beijing at a crossroads between introducing a new round of stimulus measures and using the slowdown to deepen structural reform. In practice, the government implemented piecemeal measures in an effort to achieve both. For example, People's Bank of China, the central bank, used interest rate cuts and other measures to stimulate lending, even as restrictions on the property market, which was overheated, were kept in place. Unless the government renews its commitment to a robust reform agenda, this inconsistency casts doubt on whether rebalancing will continue. If growth rebounds, rebalancing may be reversed as exports pick up. If growth slows further, the government may give in to pressure to introduce a larger stimulus, again putting further rebalancing in doubt.

Rebalancing China's economy to one less dependent on exports and fixed investment and more focused on meeting the needs of China's consumers was declared a top priority by the governments of the United States and China. As Under Secretary of the Treasury Lael Brainard noted in July, "China faces tough choices to sustain growth and avoid the middle-income trap. The policy choices

China makes will be important to America's economic interests—to our exports, our workers, our businesses, and our farmers.”⁴

As the Commission noted in its 2011 Report, China's 12th Five-Year Plan (2011–2015), a government blueprint for the economy, details a number of reform priorities aimed at restructuring the Chinese economy by encouraging domestic consumption, decreasing reliance on exports and investment, supporting the private sector, and shifting to higher value-added manufacturing.

Consumption continued its incremental climb, a trend reinforced by increases in social welfare spending. China's current account surplus diminished by 6 percentage points of GDP, as exports weakened and capital outflows increased. However, it is uncertain whether these changes marked a fundamental structural change, based on government policy, or were simply a cyclical response to an economic slump. There are also powerful forces, such as entrenched local interests and the export sector, acting against further rebalancing and reform and for a return to the liquidity- and export-driven growth of recent years. Moreover, continued economic malaise among China's biggest trade partners makes further bold reforms unlikely.

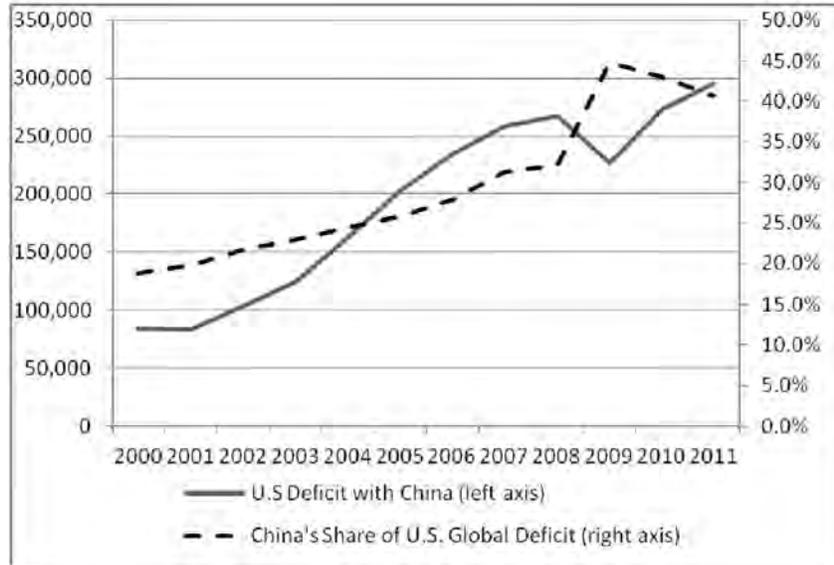
Although China's growing trade surplus with the United States suggests that China's economy is in good health, recent economic data paint a bleaker picture. When Chinese Premier Wen Jiabao announced this year's annual growth target of 7.5 percent in March, most analysts dismissed it as false modesty: The Chinese economy has consistently outperformed annual targets over the past decade, averaging close to 11 percent growth, despite the 2008–2009 global financial crisis. But with activity cooling much more than expected in recent months, the 7.5 percent target is starting to look ambitious.⁵

U.S.-China Trade and Investment Relations

While China's overall trade surplus started shrinking due to protracted global economic weakness, its surplus with the United States has continued to increase. After falling in 2009 as a result of the global recession, the U.S. trade deficit in goods with China has since surged, reaching a new record high of \$295.4 billion in 2011, up from \$273.1 billion in 2010 (see figure 1, below).

For the first eight months of 2012, the United States exported \$69.9 billion worth of goods to China and imported \$273.1 billion from China, for a deficit of \$203.1 billion. The deficit in goods with China is by far the largest among U.S. trading partners, 40.6 percent of the total in 2011, down slightly from 43 percent of the total in 2010 (see figure 1, below).⁶

Figure 1: U.S. Deficit with China (in U.S. \$ million) and China's Share of the U.S. Global Goods Trade Deficit (in percent), 2000–2011



Source: U.S. Census Bureau, *U.S. Trade in Goods and Services* (Washington, DC: U.S. Department of Commerce, August 2012).

U.S. goods exports to China in 2011 were \$103.9 billion, up 13.1 percent (\$12 billion) from 2010. U.S. goods imports from China totaled \$399.3 billion in 2011, a 9.4 percent increase (\$34.4 billion) from 2010.⁷ The composition of U.S. exports and imports is presented in tables 1 and 2, below.⁸

Table 1: Top Five U.S. Exports to China, 2010–2011 (in U.S. \$ billion)

	2010	2011	Percent change
Machinery	11.2	12.2	9%
Misc. grain, seed, fruit (soybeans)	11.0	10.7	–3%
Electric machinery	11.5	10.1	–12%
Vehicles	4.5	6.8	50%
Aircraft	5.8	6.4	11%

Source: International Trade Administration, *TradeStats Express* (Washington, DC: U.S. Department of Commerce, various dates). <http://tse.export.gov/TSE/TSEhome.aspx>.

Table 2: Top Five U.S. Imports from China, 2010–2011 (in U.S. \$ billion)

	2010	2011	Percent change
Electric machinery	90.8	98.7	9%
Machinery	82.7	94.9	15%
Toys and sports equipment	25.0	22.6	−9%
Furniture and bedding	20.0	20.5	3%
Footwear	15.9	16.7	5%

Source: International Trade Administration, *TradeStats Express* (Washington, DC: U.S. Department of Commerce, various dates). <http://tse.export.gov/TSE/TSEhome.aspx>.

The U.S. trade deficit with China in advanced technology products (ATP)* continues to grow. In 2010, the United States exported \$21.4 billion of ATP goods to China, while Chinese exports to the United States were \$115.6 billion. By 2011, U.S. exports declined to \$20.1 billion, while Chinese exports grew to \$129.5 billion.⁹

While U.S. foreign direct investment (FDI)† in China has a long history, Chinese investment flows to the United States are a relatively recent phenomenon, which is reflected in the data.‡ According to research by Rhodium Group, in 2011 Chinese FDI directed to the United States was just \$4.5 billion, down from \$5.7 billion invested in 2010.¹⁰ By comparison, China’s portfolio investments in the United States were far higher: Investments in U.S. Treasury securities by China reached an estimated \$1.2 trillion by August 2012, making China the biggest foreign holder.¹¹ China also holds \$159 billion in U.S. equities, \$24 billion in U.S. agency securities, and \$16 billion in corporate bonds, as of July 2011 (latest data available).¹²

* Advanced technology products are high-technology products whose technology is from a recognized high-technology field (e.g., biotechnology); that represent leading-edge technology in that field, and that constitute a significant part of all items covered in the selected classification code. ATP classifications are assigned by the Foreign Trade Division of the U.S. Census Bureau.

† FDI is investment to acquire a “long-term relationship and reflecting a lasting interest and control” in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. There are two types of FDI: inward FDI and outward FDI, resulting in a net FDI inflow (positive or negative) and stock of FDI, which is the cumulative number for a given period. FDI excludes most portfolio investment, which is usually investment through the purchase of shares of an insufficient number to allow control of the company or its board of directors. A foreign direct investor may acquire voting power or control of an enterprise through several methods: by incorporating a wholly owned subsidiary or company (e.g., a “greenfield” investment); by acquiring shares in an associated enterprise; through a merger or an acquisition of an unrelated enterprise; or by participating in an equity joint venture with another investor or enterprise. For more information, see UNCTAD [United Nations Conference on Trade and Development], *World Investment Report 2010: Investing in a Low Carbon Economy “Methodological Note”* (New York and Geneva: United Nations, 2010); and World Bank, “Foreign Direct Investment” (Washington, DC). <http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD>.

‡ Estimating the true value of Chinese investment in the United States and U.S. investment in China has been historically problematic, and the true magnitude of the bilateral investment relationship may not be apparent from the raw data. In addition to significant time lags, different data definitions, and collection methods used by Chinese and U.S. statistical bureaus, investment from China is often rerouted through Hong Kong or Caribbean tax havens, which makes tracking its ultimate destination very difficult. The Commission has explored this and related issues in great detail in the 2011 Report’s section on “Chinese State-Owned Enterprises and U.S.-China Bilateral Investment.” See U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 40–63.

China's role as a direct investor in the United States remains small (in 2011 China's investment was just 2 percent of the total FDI flowing to the United States), but a number of big acquisitions proposed in 2012 suggest that this might be changing. Almost \$8 billion of deals have been announced so far this year, including Sinopec's \$2.4 billion bid for big stakes in a number of oil and gas developments from Devon Energy, the Dalian Wanda's \$2.6 billion bid for movie theater chain AMC, and a potential \$1.8 billion bid by Chinese aerospace manufacturer Superior Aviation for Hawker Beechcraft.¹³

The evolving nature of the U.S.-China trade and investment relationship, including bilateral investment patterns and China's trade-distorting practices, is addressed in depth in chapter 1, section 3, of this Report. For a discussion of Chinese energy investments in the United States, see chapter 4, section 2, of this Report.

Is China's Economy Rebalancing?

The persistent nature and magnitude of the U.S. trade deficit with China is one of the major points of contention between the two countries. These concerns have heightened, because China's trade rebalancing has largely been put on hold due to the global financial crisis. The crisis created concerns for preserving China's short-term economic performance, which trumps the importance of enacting the major reforms needed for long-term restructuring. Without these serious market-based reforms, China will find it difficult to balance its presence in the global economy.¹⁴ Despite the lack of significant reform, China's controversial global trade surplus has narrowed considerably over the duration of the financial crisis, though primarily due to external factors such as continued economic malaise in the United States and Europe.

The Trade Balance and the Current Account

Reducing net exports is an important part of rebalancing China's economy. As outlined in the 12th Five-Year Plan, China claims it intends to transition from export-driven growth while increasing the amount of goods and services it imports. This, in turn, should allow China to reduce its excessive current account surplus and foreign exchange holdings. Based on these criteria, there was some progress in 2012. Net exports declined as a share of GDP in the first half of 2012 compared to the previous year.¹⁵ At the same time, the current account surplus with the world as a whole narrowed to 2.8 percent of GDP, the smallest since 2002.¹⁶ China's balance of payments recorded a deficit in the second quarter of 2012; for the first time since 1998, more money was leaving China than arriving. This left China's overall balance of payments in deficit for the quarter, diminishing China's international reserves by \$11.8 billion (or just under 0.4 percent).¹⁷ China's foreign exchange reserves were the highest in the world at \$3.24 trillion at the end of June 2012, an increase of \$43 billion year-on-year.

The Chinese Ministry of Commerce (MOFCOM) said in 2012 that China drew in \$66.7 billion in FDI between January and July, down 3.6 percent on the same period a year earlier. July's inflow of FDI alone was \$7.6 billion, down 8.7 percent year-on-year. Fall-

ing inward investment is especially worrying for the government, as around 200 million jobs in the country are estimated to be oriented toward the export sector, and fixed asset investment generates about half of China's economic output.¹⁸ The FDI data follow a raft of other economic indicators for July that revealed a decline in new bank lending, export, import, and industrial output growth, prompting analysts to start cutting GDP forecasts.¹⁹

The main cause of declining net exports was the deceleration of export growth rather than an increase in imports. The recovery of exports in 2010–2011, following the deep crisis in 2009, was partially reversed in the first half of 2012. Export growth was also unusually volatile: After a slide in April, growth recovered slightly, only to grind to a near halt in July.²⁰ China's exporters suffered in particular from weak demand in the eurozone countries, which constitute China's largest trade partner. In an August 2012 report, the People's Bank of China warned that the failure of European countries to resolve the eurozone crisis would do "severe damage" to the global economy and open the possibility of a double-dip recession.²¹ "Right now, the sharp drop of exports to EU [European Union] countries is the biggest important factor weighing on China's export growth," MOFCOM spokesman Shen Danyang told a news conference held alongside the publication of FDI data.²² (For a comprehensive assessment of the China-Europe relationship, see chap. 4, sec. 1, of this Report.)

It is unlikely that China can diversify away from its traditional export markets quickly enough to make up for the shortfall in demand from the United States and Europe. The combined share of Europe and North America in China's total exports declined from 43.2 percent to 38.9 percent in 2008–2012, as emerging markets slightly increased their share from 55 to 59 percent. However, given that exports contracted sharply in 2008–2009, and stagnated in the first half of 2012, this appears to be a cyclical rather than a structural change in the composition of exports. Major export markets such as machinery and equipment, which contributed 10 to 15 percent of China's export growth over the past decade, are unlikely to rebound until demand in the United States and Europe is restored.²³

A New Stimulus for China?

Despite a slowing economy, China's central government has shied away from major fiscal stimulus. China is in the midst of a once-in-a-decade transfer of power that the Chinese Communist Party (CCP) wants to portray against a backdrop of prosperity and stability, thereby legitimizing its grip on power. But the leadership has been reluctant to act aggressively. Further stimulus risks exacerbating the problems created by the 4 trillion RMB (\$585 billion) stimulus launched during the global financial crisis,* including speculative real estate bubbles and bad debts

*For an in-depth discussion of China's response to the global financial crisis, including its stimulus, see U.S.-China Economic and Security Review Commission, *2009 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2009), pp.38–55.

A New Stimulus for China?—Continued

run up by local governments and state-owned enterprises (SOEs). There are concerns that even more fixed-asset investment would simply add to China's existing stock of inefficient economic capacity.²⁴ Moreover, some of the causes behind the slowdown are beyond the government's control: The crisis in the United States and Europe means much less demand for Chinese goods from its biggest export markets.²⁵

Nonetheless, China introduced modest, pro-growth policy adjustments at the start of June 2012, when it cut interest rates for the first time in nearly four years, following that up less than a month later with another rate cut. There are indications that, under the pressure of declining growth, China is backsliding to overreliance on investment and government spending to power growth. Premier Wen Jiabao said early last month that investment was essential to stabilizing growth.²⁶ Taking this cue, a series of spending plans have been announced in recent months.

In September 2012, the National Development and Reform Commission, China's top economic planning agency, approved plans for around 1 trillion RMB (\$158 billion), or 2 per cent of GDP, in infrastructure spending. Plans include 25 urban rail projects, 13 highway construction projects, seven waterway projects, and nine waste water treatment plants.²⁷ The money will be rolled out over several years, and the government has not described the investments as a stimulus package.²⁸ The central government also announced a plan involving 2.4 trillion RMB (around \$380 billion) of investment in energy conservation and carbon emissions reduction by 2015.²⁹

Echoing the 2008–2009 stimulus, when local governments borrowed heavily from state-owned banks to fund investments, several big Chinese cities have also announced large investment plans intended to boost slowing growth rates.³⁰ In addition to a dozen small investment packages announced by local governments, Chinese megacities Tianjin and Chongqing each unveiled plans for investments of 1.5 trillion RMB (\$236 billion) in large industries such as petrochemicals, automobiles, and electronics over the next few years.

It is not clear, however, whether the plans are new or previously announced. Chongqing's five-year plan from 2011 to 2015, unveiled by the city early last year, also called for 1.5 trillion RMB (\$236 billion) of new investment.³¹ Moreover, analysts agree that the figures announced by provincial leaders are more ambitious projections for investment they hope to attract from foreign and state investors rather than concrete spending plans.³²

A New Stimulus for China?—Continued

The government is conscious of the risk of loading up the economy with too much cheap credit, as it did during 2008–2009 when it let local governments go on a borrowing binge that racked up some 10.7 trillion RMB (around \$1.6 trillion) in debt by the end of 2010. Analysts think as much as 2 trillion–3 trillion RMB (\$300 billion–\$450 billion) of those loans may have turned sour and might never be repaid.³³ Barry Eichengreen, professor of economics at the University of California, Berkeley, has noted that the growth-boosting policy initiatives announced to date, like additional infrastructure projects and looser lending, will shore up growth for a time but will worsen the economy’s imbalances and store up problems for the future.³⁴

Beyond the continued global economic slump, there are several reasons to doubt China’s departure from export-driven growth. First, it is questionable whether the government will allow exports to decline, given the local government’s interest in maintaining high employment and tax revenue collections. China’s Export-Import Bank, for example, continues to increase the amount of subsidies it provides to exporters, in part because of falling demand from abroad.³⁵

Second, China’s imports remain tied to investment spending, such as the infrastructure projects launched during the 2008–2009 stimulus. A breakdown of China’s imports shows that commodities, minerals, and machinery, linked to China’s export- and industry-heavy sectors, not consumer goods, continue to dominate.³⁶ At the height of the global financial crisis, China’s imports of coal, iron ore, and oil continued to increase in volume.³⁷

Finally, if China’s current account is also decreasing due to net capital outflows, this is not necessarily genuine rebalancing. Capital outflows played a major role in reducing China’s current account balance for the first time in 2012, amounting to a net \$110 billion, the highest level ever recorded.³⁸ As Michael Pettis, economist at Peking University, has noted, a shortage of liquidity caused by capital outflows may help rebalancing by discouraging liquidity-driven overinvestment in the domestic market.³⁹

However, rather than a consequence of rising import consumption by a new middle class, the capital outflows were mainly the consequence of “capital flight” by wealthy Chinese. Analysis by the *Wall Street Journal* suggests that in the year through September 2012, some \$225 billion left China, including both legal and illicit flows.⁴⁰ According to economist Derek Scissors, many wealthy Chinese may be “voting with [their] feet to leave a deceptively weak China.”⁴¹ A 2012 survey by Chinese magazine *Hurun* showed that more than 16 percent of households with 10 million RMB (\$1.6 million) in annual income have already emigrated or handed in immigration papers for another country. Only 28 percent of those asked expressed great confidence in the prospects over the next two years, down from 54 percent in the 2011 report.⁴²

Currency Revaluation

Increasing the value of the RMB in relation to the dollar is a key component of rebalancing, because it makes China's exports more expensive and increases the purchasing power of Chinese consumers interested in imported goods. Between June 2010 and December 2011, China's currency appreciated by 11 percent against the dollar in inflation-adjusted terms. The real effective exchange rate* has increased by 27 percent since July 2005.⁴³ The positive contribution this has made to commercial relations between the United States and China was duly noted by the U.S. Treasury.⁴⁴ The International Monetary Fund (IMF), too, has praised China's progress by noting in its 2012 annual assessment of China's economy that the RMB was "moderately" rather than "substantially undervalued," the language used in previous years. This was also based on the decline in China's current account surplus, its slower accumulation of international reserves, and past real effective exchange rate appreciation.⁴⁵

Policy signals on currency from the Chinese government remain contradictory, putting further appreciation in doubt. On the one hand, China has widened its daily exchange rate bands against the dollar from ± 0.5 percent to ± 1.0 percent in the mainland currency market, and the RMB hit a record high of 6.2284 per dollar in February 2012. On the other hand, the rate of exchange has been virtually flat against the dollar in 2012.⁴⁶ In fact, by the end of June, the RMB had depreciated against the dollar by as much as 1.6 percent before strengthening again in September.⁴⁷

The undervaluation of China's currency remains a serious concern for the United States. Appreciation has not been sufficient to counteract China's persistent exchange rate undervaluation in the years following its 2001 admission to the World Trade Organization (WTO). Treasury Undersecretary Lael Brainard has pointed out that "[f]rom the time China joined the WTO to 2006, its trade-weighted exchange rate depreciated by 15 percent, adjusting for inflation. [However], with China's productivity growth outpacing that of its trading partners, we should have seen strong appreciation throughout the period."⁴⁸ William R. Cline and John Williamson of the Peterson Institute for International Economics estimated in 2011 (latest available) that the RMB needs to appreciate against the dollar by 28.5 percent to reach market rate.⁴⁹

Many economists also began to predict the RMB would stay flat or even depreciate slightly in the medium term, after a narrowing July trade surplus and dampened hopes of a rebound.⁵⁰ Some also believed that the People's Bank of China would shift focus to limit the RMB's strength in order to help China's beleaguered exporters.⁵¹

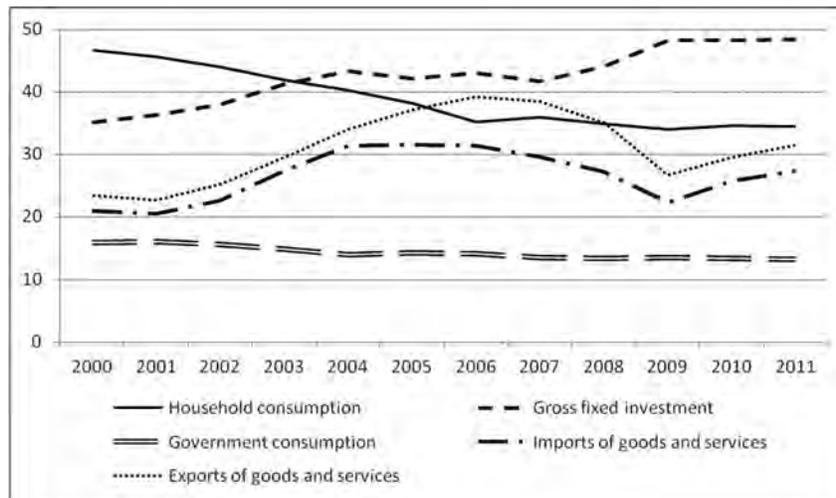
Household Consumption

Chinese economic policies have favored investment at the expense of consumption for almost a decade. While China's leaders have paid lip service to promoting consumption for years (including

*Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.

setting it as one of the goals in two successive Five-Year Plans and offering subsidies or rebates for major purchases), Chinese household consumption steadily declined as a share of GDP for decades, and the situation has not improved much following the financial crisis. According to World Bank data, household consumption remained stagnant as a share of China's GDP in 2010 and 2011, at 34.6 percent and 34.4 percent, respectively.* Fixed asset investment also remained steady at 48.2 percent and 48.4 percent over that period. The economy showed little overall rebalancing compared to the previous investment binge, which had vaulted the investment-to-GDP ratio from 44 percent to 48.2 percent in 2008–2009 (see figure 2, below).

Figure 2: Composition of China's GDP, 2000–2011 (as share of GDP; in percent)



Source: World Bank China data (Washington, DC: 2012). <http://data.worldbank.org/country/china>.

The first half of 2012 showed a moderate rebalancing trend. Consumption contributed 57.7 percent of GDP growth in the first half of 2012, while investment contributed 49.4 percent (with net exports making no contribution).⁵² Official retail sales as a proportion of output hit 43 percent in the first half, the highest level over this period for more than five years.⁵³

However, it remains to be seen if these most recent developments indicate a fundamental restructuring trend or another consequence of the current economic slowdown. First, China's consumption-to-GDP ratio remains far too low. Yu Yongding, a former senior official at the People's Bank of China, argued in August that the con-

*By comparison, in 2010 (the latest year available for comprehensive statistics), household consumption was 70.9 percent in the United States, 59.2 percent in Japan, 57.5 percent in Germany, and 58 percent in France. China's household consumption as a share of GDP is very low even by developing country standards: In 2010, the share was 59.6 percent in Brazil, 56.5 percent in India, and 56.9 percent in Indonesia. World Bank DataBank (Washington, DC: 2012). <http://databank.worldbank.org/Data/Home.aspx>.

sumption rate must increase much further.⁵⁴ Second, consumption made a greater contribution to GDP largely because of the slowdown in the export sector. Year-on-year growth in retail sales actually declined compared to 2010 and 2011. Moreover, China's household savings rate remains incredibly high by international standards, reflecting a policy of financial repression* as well as a need for precautionary savings.

Changes in China's Investment Regime

China has long relied on a set of measures, including investment catalogues and tax policy, to guide FDI inflows in accordance with development priorities set by the party. In 2012, a spate of changes were introduced that seek to implement new policy directions outlined in the 12th Five-Year Plan, such as shifting to higher value-added manufacturing, conserving energy, and cleaning up the environment.

Often China will remove a prohibition or restriction on investment in certain sectors but use limitations or minimums on ownership and capitalization to maintain control over foreign investments in that area. These shifts in category are typically a very accurate signal of the areas in which China intends to push for dominance or those it feels are over- or underdeveloped. The changes made this year partially embody China's plan for fulfilling the goals set in the 12th Five-Year Plan.

China's "Foreign Investment Industry Guidance Catalogue" provides incentives for inbound investment.[†] China released a revision to this catalogue on December 24, 2011, which came into effect January 30, 2012.⁵⁵ Latest amendments to the catalogue intend to support China's goals of improving the quality of inbound investment in order to develop sectors in which China will push for dominance, including higher-technology industries; encourage innovation; and promote sustainability (see table 3, below).⁵⁶

*"Financial repression" is the implicit tax imposed on Chinese households, in the form of low or negative real return on deposits, which suppresses their purchasing power and consumption. State-owned and state-influenced companies are the major beneficiary of financial repression, as they can borrow money at little to no cost. For more, see Nicholas Lardy, "Financial Repression in China" (Washington, DC: Peterson Institute for International Economics, *Policy Brief PB08-8*, September 2008).

[†]The Foreign Investment Industry Guidance Catalogue classifies foreign direct investments in the various Chinese industry sectors as "encouraged," "restricted," "permitted," or "prohibited" and sets out specific industries in which foreign investment is either "encouraged," "restricted," or "prohibited." Activities not listed are, in the absence of other rules to the contrary, considered to be "permitted" for foreign investments. Foreign investment in "encouraged" industries may enjoy certain tax benefits and is often subject to less strict administrative requirements from approval authorities. The "restricted" category includes industries into which foreign investment is subject to a higher level of scrutiny, stricter administrative requirements, and may be denied at the discretion of the approval authorities. Foreign investment is not permitted in industries categorized as "prohibited." Vinson & Elkins Practice Update, "China Amends Foreign Investment Policy: New Foreign Investment Industry Guidance Catalogue" (Austin, TX: January 13, 2012).

Table 3: Select Major Amendments in the Revised “Foreign Investment Industries Guidance Catalogue”

(effective January 30, 2012)

Prohibited	Encouraged	Permitted
certain rare earths and radioactive elements	environmentally friendly and high-tech manufacturing	health care *
luxury real estate projects	venture capital firms	leasing companies *
securities firms and banks (except financial leasing companies)	vehicle charging stations	business management companies *
	intellectual property protection services	franchising enterprises *
	shale gas (through joint venture only)	financial leasing companies *
		manufacturing of complete automobiles (foreign investment remains capped at 50 percent)**

* = formerly restricted

** = formerly encouraged

China also modified its regulations for qualified foreign institutional investors and qualified domestic institutional investors. In April 2012, China increased the cap on qualified foreign institutional investors investments from \$30 billion to \$80 billion, and in June, the China Securities Regulatory Commission released a proposal for further reform of regulations—mainly in the form of offering more investment opportunities and lowering requirements for involvement—in order to boost investor confidence and participation in the A-share* market. When the new regulations came into effect in July, they also raised the amount of combined investment that qualified foreign institutional investors can have in Chinese companies from 20 percent to 30 percent. The United States has no such restrictions.

U.S.-China Bilateral Engagement

The U.S.-China Joint Commission on Commerce and Trade (JCCT): The 22nd session of the JCCT took place in Chengdu, China, on November 20–21, 2011. Secretary of Commerce John Bryson and U.S. Trade Representative Ron Kirk for the United States and Vice Premier Wang Qishan for China co-chaired the session.⁵⁷ China’s policies on intellectual property rights, investment, and innovation, as well as a range of sector-specific industrial policies were on the agenda. The JCCT meeting did not achieve any breakthroughs. China reiterated its previous commitments.

* A-shares are specialized shares of the RMB that are purchased and traded on the Shanghai and Shenzhen stock exchanges. This is in contrast to RMB B-shares, which are owned by foreigners who cannot purchase A-shares due to Chinese government restrictions.

The Strategic and Economic Dialogue (S&ED): The Fourth S&ED was held on May 3–4, 2012, in Beijing. Secretary of State Hillary Clinton and State Councilor Dai Bingguo led the strategic track, while Treasury Secretary Timothy Geithner and Vice Premier Wang Qishan led the economic track. The outcomes largely restated the commitments made in the previous years.⁵⁸

For the fourth year in a row, the parties discussed providing non-discriminatory treatment to all enterprises, including SOEs,^{*} and China agreed to increase the number of SOEs that pay dividends. In addition, for the fourth consecutive dialogue, China committed to opening up further to foreign investment, and the nations reaffirmed their commitment to the ongoing bilateral investment treaty negotiations. For a second straight year, China agreed to extend promotion of the use of only legally licensed software by government agencies and ensured increased enforcement thereof.[†] China made a commitment to submit a revised comprehensive offer to join the WTO's Government Procurement Agreement (GPA). China's 2011 pledge to build on the Special Campaign⁵⁹ was bolstered by an agreement to treat intellectual property owned or developed in other countries the same as intellectual property owned or developed in China. Finally, whereas in 2011 China "increasingly acknowledg[ed]" the importance of currency appreciation and committed to the goal of further internationalizing the RMB, in 2012 China committed itself to enhancing exchange rate flexibility.

China also agreed to discussions on the implementation of its technology transfer policy. Following its commitment from last year's S&ED, China issued measures stating that Chinese rules and regulations will be posted online for a minimum of 30 days to give all parties an opportunity to comment on and comply with said regulations in a reasonable period of time. This measure intends to facilitate transparency and clarity in foreign companies' understanding of the legal regulations to which they are or will be subject.⁶⁰

The U.S.-China Relationship in the WTO

Since the Commission's last Report, the United States has brought three cases at the WTO: against China's restrictions on rare-earth elements export, tariffs on U.S. cars and sport utility vehicles (SUVs), and subsidies to auto and auto parts manufacturers.

The *Rare Earths* case was initiated in July 2012 by the United States, the European Union, and Japan in response to China's imposition of restrictions on the export of rare earths, tungsten, and molybdenum.⁶¹ Tensions between the nations have increased since China announced plans to limit its export quota in 2009, claiming to justify such action on environmental protection grounds, as it did in an earlier case on export restraints on raw materials (see below). Rare earths are crucial to many developing U.S. industries, especially clean energy. The restrictions in question are both pub-

^{*} For more on Chinese state-owned and state-controlled enterprises, see chapter 1, section 2, of this Report.

[†] Despite previous commitments, software piracy remains rampant in China, including at government agencies and enterprises. For example, in September 2012, Microsoft Corp. filed a complaint over use of the pirated version of its Windows and Office software against China National Petroleum Corp., China Post Group, China Railway Construction Corp., and Travelsky Technology Ltd., all of which are state owned. Steven Yang and Edmond Lococo, "Microsoft Said to Ask China to Stop Piracy at Four Firms," Bloomberg, September 20, 2012.

lished and unpublished and consist primarily of export restrictions in the forms of duties, quotas, minimum price requirements, and licensing that are alleged to be in violation of China's obligations under its Protocol of Accession as well as broader WTO principles.

The United States and other plaintiffs argue that these restrictions are part of industrial policy aimed at providing substantial competitive advantages for Chinese manufacturers at the expense of foreign manufacturers. Specifically, because of China's position as a leading global producer of these materials, its export restraint measures give China the ability significantly to affect global supply and pricing. These measures can provide important advantages to China's downstream producers, to the detriment of their U.S. and other foreign counterparts. These measures also can create substantial pressure on foreign producers to move their operations, jobs, and technologies to China.⁶² In an apparent response to the WTO challenge, in August 2012, China's MOFCOM announced that it would permit exports of rare earths to rise by 2.7 percent, the first such increase since restrictions were first imposed in 2005.⁶³ (For more on China's policy concerning rare earths, see chap. 4, sec. 2, of this Report).

In July, the U.S. Trade Representative filed a case against Chinese tariffs applied to certain cars and SUVs from the United States.⁶⁴ Within days of President Obama's decision in September 2009 to impose a safeguard measure against Chinese tire imports, MOFCOM announced that it would initiate antidumping and countervailing duty investigations of imports of American-made cars and SUVs. In May 2011, MOFCOM issued final determinations in which it found that imports of American-made automobiles had been sold at less than fair value (i.e., "dumped") into the Chinese market and had also benefited from subsidies. Subsequently, in December 2011, China began imposing both antidumping and countervailing duties on imports of American-produced automobiles. The specific products affected by the duties are American-produced cars and SUVs with an engine capacity of 2.5 liters or larger.⁶⁵

In filing the case, the U.S. Trade Representative said that China had insufficient evidence upon which to make the determination to impose duties, that China used improper definitions in making such determinations, that China did not use all relevant evidence to make the determinations, and that China violated the non-attribution requirement.*

In August 2012, China said it would ask the WTO to adjudicate a dispute over U.S. punitive import duties on 22 Chinese exports, including solar panels and steel products. China first raised the complaint in May by asking the United States for formal consultations † to explain the duties, which Washington says are intended to offset illegal subsidies that give Chinese goods an unfair price

*The "non-attribution requirement" of WTO's Article 3.5 of the *Anti-Dumping Agreement* and Article 15.5 of the *Subsidies and Countervailing Measures Agreement* refers to the requirement that the authorities, investigating alleged dumping, ensure that the injurious effects of the other known factors are not "attributed" to dumped imports (in other words, if injury to the domestic industry is caused by factors other than dumping or other factors in addition to dumping).

† Under WTO dispute settlement proceedings, a request for consultations is the first step in launching a case. The request for consultation formally initiates a dispute in the WTO. Consultations give the parties an opportunity to discuss the matter and to find a satisfactory solution without proceeding further with litigation. After 60 days, if consultations have failed to resolve the dispute, the complainant may request adjudication by a panel.

advantage.⁶⁶ The filing also requests consultations with respect to the “rebuttable presumption” applied by the U.S. Department of Commerce under which an enterprise majority owned by the government is considered a “public body” within the terms of the Agreement on Subsidies and Countervailing Measures.⁶⁷ A panel has been established for this case.

On September 17, 2012, the United States and China filed dueling complaints at the WTO. The United States has requested dispute settlement consultations concerning China’s auto and auto parts “export base” subsidy program. Under the program, China provides extensive subsidies to auto and auto parts producers located in designated regions, known as “export bases,” that meet export performance requirements. Based on publicly available documents, “export bases” made at least \$1 billion in subsidies available to auto and auto-parts exporters in China during the years 2009 through 2011.⁶⁸

In its own filing, the Chinese government requested consultations with the United States on U.S. countervailing and anti-dumping measures applied to a wide range of products exported by China, as well as a new piece of U.S. legislation (Public Law 112–99)* that explicitly allows for the application of countervailing measures to non-market economy countries.⁶⁹

The status of new and pending WTO cases between the United States and China is summarized in tables 4 and 5, below.

Table 4: Active WTO Cases Brought by the United States against China, 2009–2012

Date Brought	Title	Number	Status
September 17, 2012	<i>China—Automobile and Automobile-Parts Industries</i>	DS450	Request for consultations received
July 23, 2012	<i>China—Rare Earths</i>	DS431	Panel established
July 5, 2012	<i>China—Autos</i>	DS440	Panel established
September 20, 2011	<i>China—Broiler Products</i>	DS427	Panel formed
September 15, 2010	<i>China—Grain-Oriented Flat-rolled Electrical Steel</i>	DS414	Appellate Body found in favor of the United States
September 15, 2010	<i>China—Electronic Payment Services</i>	DS413	Panel found in favor of the United States
June 23, 2009	<i>China—Raw Materials</i>	DS394	Appellate Body found in favor of the United States
April 10, 2007	<i>China—Publications and Audiovisual Products</i>	DS363	Appellate Body found in favor of the United States; implementation notified by China in May 2012 ⁷⁰

Source: World Trade Organization Dispute Settlement Gateway. www.wto.org.

*An Act to Apply the Countervailing Duty Provisions of the Tariff Act of 1930 to Nonmarket Economy Countries, and for Other Purposes, Public Law 112–99, 112th Cong., 2nd sess., March 13, 2012. <http://www.gpo.gov/fdsys/pkg/PLAW-112publ99/pdf/PLAW-112publ99.pdf>.

Table 5: Active WTO Cases Brought by China against the United States, 2009–2012

Date Brought	Title	Number	Status
September 17, 2012	<i>United States—Counter-vailing and Anti-dumping Measures</i>	DS449	Request for consultations received
May 25, 2012	<i>United States—Counter-vailing Duties</i>	DS437	Panel established
February 28, 2011	<i>United States—Shrimp and Sawblades</i>	DS422	Panel found in favor of China; Panel report adopted
September 14, 2009	<i>United States—Tires</i>	DS399	Appellate Body found in favor of the United States; Appellate Body report adopted

Source: World Trade Organization Dispute Settlement Gateway. www.wto.org.

In addition to the newly filed cases, the *Chicken Broiler Products* complaint filed by the United States against China last fall recently saw the formation of a dispute settlement panel at the request of the United States.⁷¹

This year the Dispute Settlement Board handed down several decisions on previously filed cases. The first was a case filed by China regarding increased tariffs on certain tires exported from China.⁷² In September 2009, President Obama imposed duties on tires from China for a period of three years, based on the determination by the U.S. International Trade Commission that these imports have injured U.S. producers. This safeguard measure was imposed in response to a petition filed by the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union under Section 421* of the Trade Act of 1974. China claimed that the Section 421 tariffs violate U.S. obligations to accord Chinese tires equal tariff treatment and not to exceed negotiated tariff rates, that the United States imposed tariffs under the protocol safeguard mechanism without first attempting to justify them under WTO safeguard provisions, and that Section 421 and its application in this case violate U.S. obligations under China's Protocol of Accession. The WTO panel had rejected all of China's claims against the United States, finding that the United States acted consistently with its WTO obligations in im-

*Section 421, which was enacted as one element of an October 2000 statute addressing various issues involving the accession of China to the WTO, authorizes the president to impose safeguards—that is, temporary measures such as import surcharges or quotas—on Chinese products in the event that the U.S. International Trade Commission finds that these imports have resulted in market disruption in the United States. Market disruption occurs under Section 421 if an import surge of a Chinese product is a significant cause of material injury or threat of material injury to the domestic industry producing the like or a directly competitive product. China's WTO Accession Protocol permits WTO members to impose safeguards to remedy domestic market disruption caused by imports of Chinese goods until December 2013. This provision is separate from article XIX of the General Agreement on Tariffs and Trade 1994 (GATT 1994) and the WTO Agreement on Safeguards, which allow WTO members to respond to injurious import surges generally but on a stricter basis than provided for under China's Accession Protocol. For further details, see Jeanne J. Grimmer, *Chinese Tire Imports: Section 421 Safeguards and the World Trade Organization (WTO)* (Washington, DC: Congressional Research Service, July 12, 2011).

posing the additional duties. The panel upheld such determinations on appeal.⁷³

The second decision this year was the final Appellate Body report on the *Raw Materials* case.⁷⁴ A request for consultations by the United States, joined by the European Union and Mexico, to review a number of China's export restraints on raw materials formed the basis of the complaint. These restraints come in the form of export quotas and export duties, as well as related minimum export price, export licensing, and export quota administration requirements. In a July 2011 report, the dispute settlement panel found most of China's export duties, quotas, and licensing regime were in violation of the General Agreement on Tariffs and Trade and China's Protocol of Accession. China appealed certain aspects of the panel's report, but the Appellate Body affirmed the WTO dispute settlement panel's findings, rejecting China's arguments that its export restraints were conservation or environmental protection measures or measures taken to manage critical shortages of supply.

The third decision was from the *Shrimp and Sawblades* case filed by China last year.⁷⁵ China alleged that the U.S. Department of Commerce's use of zeroing* in the original dumping investigation of warmwater shrimp (and added similar claims with regard to diamond sawblades) from China was in violation of the U.S. obligations under the General Agreement on Tariffs and Trade. The panel agreed with China and found the U.S. practice of zeroing to be in violation of its WTO obligations.

A week later, the WTO Dispute Settlement Body released a decision in favor of the United States in the *Grain-Oriented Flat-rolled Electrical Steel (GOES)* case.⁷⁶ In September 2010, the United States requested consultation with China concerning its imposition of duties on GOES from the United States. The United States alleged that China improperly initiated countervailing duty investigations involving several U.S. laws. The United States also challenged the manner in which China conducted its investigation, alleging that China violated numerous procedural and due process obligations, impairing the ability of the United States and U.S. companies to defend their interests. The United States also alleged that China's finding of injury to its domestic industry was unsupported by the evidence on the record. The panel ruled overwhelmingly for the United States and found 11 of China's countervailing duty investigations were unwarranted. Additionally, the panel found MOFCOM's investigations leading to the imposition of countervailing and antidumping duties were in violation of China's obligations under the General Agreement on Tariffs and Trade. The panel did find that China was not required to release the calculations used to determine the dumping margins, however. China appealed the ruling, but the Appellate Body found in favor of the United States.

In July, the panel report decision on the *China—Electronic Payment Services* was circulated.⁷⁷ The United States made the initial

* "Zeroing" refers to the U.S. Department of Commerce's method for calculating dumping margins in antidumping proceedings. Under the practice, the department calculates dumping margins by taking into account only sales below fair market value—generally the price in the exporting country—and assigns a zero value to sales at or above this price. Jeanne J. Grimmett, *World Trade Organization (WTO) Decisions and Their Effect in U.S. Law* (Washington, DC: Congressional Research Service, February 4, 2011).

request for consultations in 2010, challenging China's discrimination against U.S. suppliers of electronic payment services. In particular, Chinese measures that provide a Chinese domestic entity, China UnionPay, with a monopoly over the handling of domestic currency payment card transactions in China while excluding other potential suppliers, as well as other requirements and restrictions that favored China UnionPay over foreign suppliers. The United States alleged that China created a "national champion" in allowing only China UnionPay to provide payment transactions in RMB.

The panel found China had violated its commitments under the General Agreement on Trade in Services to provide national treatment to permit the supply of electronic payment systems on a cross-border basis, because China UnionPay was maintained as a monopoly supplier for clearing certain types of payment card transactions denominated in RMB.⁷⁸ The panel further found that some of China's requirements related to usage and compatibility with China UnionPay modify the conditions of competition in favor of that company and, therefore, unfairly disadvantage other electronic payment services suppliers based in other member states, in violation of China's obligations under the General Agreement on Trade in Services. In a sign of the Chinese government's loosening of restrictions, in August 2012, Citigroup became the first western bank to issue credit cards in China without co-branding from a local financial institution.⁷⁹ However, China UnionPay will still be processing all RMB-denominated payments, while MasterCard and Visa will handle cards internationally. China chose not to appeal the decision.

The Interagency Trade Enforcement Center

Created by an executive order in February 2012, the Interagency Trade Enforcement Center is intended to change the way the United States addresses unfair trade practices around the world, including China. The president established the agency to exist within the Office of the United States Trade Representative as a group to "serve as the primary forum within the Federal Government for ... agencies to coordinate enforcement of U.S. trade rights under international trade agreements and enforcement of domestic trade laws."⁸⁰ The Interagency Trade Enforcement Center will be supported by the departments of the Treasury, Commerce, Agriculture, Homeland Security, Justice, and State, and the intelligence community.⁸¹ The hope is that by "increasing the resources devoted exclusively to trade enforcement, as well as leveraging existing resources," the Interagency Trade Enforcement Center will significantly enhance U.S. capabilities to challenge unfair trade practices around the world.⁸²

The Interagency Trade Enforcement Center—Continued

In comments at the Center for Strategic and International Studies, U.S. Trade Representative General Counsel Tim Reif argued that Interagency Trade Enforcement Center has bolstered the administration's ability to develop potential trade cases against China and other nations. In addition to providing a new channel for stakeholders to report problems, the Interagency Trade Enforcement Center will be charged with analyzing the list of problems identified in a specific country. In particular, the agency "will institutionalize" the Office of the U.S. Trade Representative's practice of the past several years of "enlisting the help and subject-matter expertise of staff in other U.S. government agencies," because now such analysis can be handled by the Interagency Trade Enforcement Center staff "under one roof."⁸³

In a statement at the WTO's Trade Policy Review of China, Deputy U.S. Trade Representative Michael Punke noted the U.S. government's "deep concerns" over China's recent tendency to "reflexively [resort] to domestic trade remedy actions in response to legitimate actions taken by the United States or other trading partners under their trade remedies laws," which is "at odds with fundamental WTO principles."⁸⁴ Analysts agree that such retaliatory conduct, "which is specifically provided for under Chinese law," has been evident, most recently, in Chinese antidumping duties on U.S. poultry products and SUVs that the United States is challenging at the WTO.⁸⁵ Mr. Reif also stressed that the United States has engaged China regarding this practice of using antidumping and countervailing duty cases to retaliate "both through litigation as well as conversation" to emphasize the importance of China adhering to WTO rules in the trade remedy area.⁸⁶ Although China has a history of retaliating against its trade partners,⁸⁷ the United States has won most of the cases it brought against China, including those challenging China's tit-for-tat actions.

Implications for the United States

The slowdown, and possible deferral, of China's rebalancing reforms can have negative repercussions not only for the prospects of China's future growth but also for the continued economic health of its trade partners. The U.S. trade deficit with China, already the world's largest bilateral deficit, has continued to increase, despite global economic weakness, with negative consequences for American businesses. China's reliance on investment-driven growth and policies that support SOEs at the expense of the private sector and foreign competitors, and suppression of household consumption through excessive investment promotion, have resulted in an economy that is at overcapacity and must rely on exports to maintain growth and employment.

Had China's economy been more balanced between exports and domestic demand, the current tepid recovery in the United States and the eurozone would not have resulted in such a dramatic drop

in China's growth. As it is, while the pause in restructuring and reform may be temporary, the Chinese government's policy response is only shoring up problems for the future.

At the WTO, China continues to frustrate U.S. efforts to create a level playing field for U.S. companies, both through intransigence in adopting adverse WTO dispute settlement decisions and through its affinity for using trade remedies as a retaliatory tool. China's retaliatory practices violate the spirit of global rule-of-law-based trade relations and affect all WTO members who trade with China.

Conclusions

- In 2011, the U.S. deficit with China reached \$295.4 billion, up 8 percent from the previous year. For the first eight months of 2012, the United States exported \$69.9 billion worth of goods to China and imported \$273.1 billion from China, for a deficit of \$203.1 billion.
- Chinese growth in the first half of 2012 slowed significantly from the double-digit averages of the previous decade. Export growth has also slackened dramatically, mostly as a consequence of weak demand for Chinese goods from its two main trade partners, the United States and Europe.
- As a consequence of domestic economic weakness, Chinese rebalancing policies appear to have been put on hold. As originally intended, rebalancing would have entailed restructuring domestic growth from export- to consumption-driven, reducing investment, and allowing the RMB to appreciate.
- Instead, fearful of a protracted slowdown, the Chinese government has introduced a set of growth-boosting policies, such as encouraging banks to lend and rolling out new infrastructure projects. These policies, though much more moderate in scope, echo the massive stimulus undertaken by the Chinese government in 2008–2009 in the wake of the global financial crisis, which at the time shored up Chinese growth but exacerbated the economy's imbalances.
- China's adherence to the WTO principles and its Protocol of Accession remains spotty. Most recently, the U.S. Trade Representative has engaged China over its practice of using investigations and trade remedy actions in retaliation for challenges brought by the United States and not based on actual evidence.

SECTION 2: CHINESE STATE-OWNED AND STATE-CONTROLLED ENTERPRISES

Introduction

Despite three decades of economic reform, state-owned and state-controlled enterprises still account for as much as half of the Chinese economy. In contrast to earlier efforts to privatize the state-run economy, the recent trend has been in the opposite direction. The political influence within China of the state-owned and -controlled sector and China's ability to compete on a global scale are both on the rise. In practice, China's industrial policy envisions an ever larger role for the state sector, particularly in support of China's exports and overseas investments.

China's industrial policy assigns the state sector a dual role. Government corporations provide the means for the central government to designate and control critically important segments of the economy, such as steelmaking, information technology, aerospace, and finance. At the same time, the government employs its corporations to advance its foreign policy objectives and international commercial interests. China's global resource acquisition strategy, for example, is largely managed by Chinese state-owned oil and mining companies, aided by its growing fleet of oil tankers and container ships, built and operated by state-owned companies. Pipelines bringing oil and gas to China are being built by state-owned construction companies. Through its state-owned banking sector, the government is able to finance and subsidize these projects. These related activities result from China's commitment to maintaining a large state sector directed to carry out the government's industrial policy, a system often characterized as "state capitalism" or "capitalism with Chinese characteristics."⁸⁸

In response to the 2008 global financial crisis and its aftermath, Beijing has increased its reliance on central economic planning and on the state-owned sector.⁸⁹ "China's tighter embrace of state capitalism now runs directly counter to the economic reform goals that originally drove its pursuit of World Trade Organization (WTO) membership, goals that had offered real leadership and real promise for China's future economic growth," said Michael Punke, the U.S. ambassador to the World Trade Organization in June.⁹⁰ "We confront a special set of strategic challenges from the growing wealth in state hands today," said Secretary of State Hillary Clinton in a 2011 speech about China. "Governments are entering markets directly through their cash reserves, natural resources, and businesses they own and control and they are shaping these markets not just for profits, but to build and exercise power on behalf of the state."⁹¹ China's state sector will likely soon present a new

challenge to U.S. policymakers as Chinese state-owned enterprises (SOEs) increasingly seek to invest in the United States.

During the 2012 hearing cycle, the Commission built on previous research and hearings on state-owned enterprises, particularly work detailed in the Commission's 2011 Report to Congress.⁹² On February 15, 2012, the Commission held a hearing on "Chinese State-owned and State-controlled Enterprises" in order to explore the competitive challenges posed by China's brand of state capitalism and to consider policy options that Congress might undertake. This section will describe the challenges posed to the American economy by Chinese state-owned enterprises.

The Government, the Chinese Communist Party, and the State-owned Sector Are Aligned

The largest 121 nonfinancial companies owned by the central government are supervised by the State-owned Assets Supervision and Administration Commission (SASAC), an agency of the central government that reports directly to the State Council (see figure 1).⁹³ This makes SASAC the world's largest and most powerful holding company and concentrates the economic and political power of the government industries. In total, SASAC supervised state-owned corporations held assets worth 6.9 trillion in renminbi (RMB) in 2003 or more than \$1 trillion at today's exchange rate, according to the agency's website.⁹⁴ (See addendum 1 for a list of the companies under SASAC supervision.)

The central government-owned companies are among the largest in China and are grouped in strategic sectors, such as telecommunications, aviation, energy, and construction. Because SASAC answers directly to the State Council, which is comprised of senior members of the Chinese Communist Party (CCP), the state sector enjoys direct access to top party and government officials. The Central Organization Department of the CCP generally determines the membership of the boards of directors and the management of SOEs.^{95,96} This makes the Central Organization Department "without a doubt, the largest and most powerful human resources department in the world," says Richard McGregor, former Beijing bureau chief of the *Financial Times*. "Barely heard of outside China and rarely heard of inside the country itself, beyond official circles, its reach extends into every department of state."⁹⁷ Thus, the government-owned corporations, along with the government and the CCP, operate as a troika to advance their mutual interests.

Many, if not most, of the corporate officials chosen by the Central Organization Department are CCP members, and many of them become part of a revolving managerial class that cycles through the hierarchy of China's largest SOEs.* All the top 130 leaders of the largest state-owned companies in 2011 were CCP members.⁹⁸ In addition, 20 SOE executives served in 2010 on the CCP's Central Committee, which elects the ruling Politburo, controlling "not just the lifeblood of China's economy but a corporate patronage system that dispenses top-paying executive jobs to relatives of the party's leading lights."⁹⁹

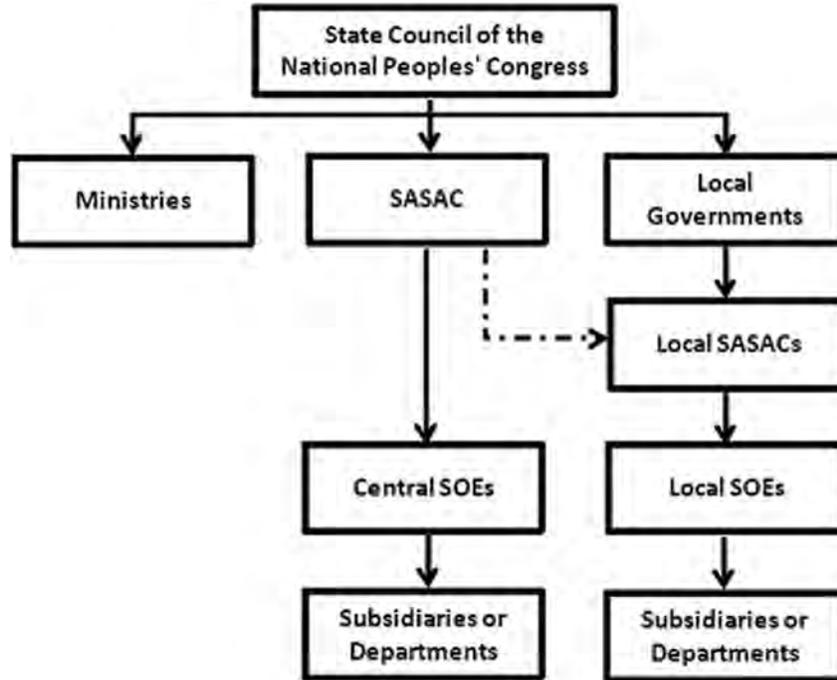
*The Communist Party claims more than 80 million members, or six in every 100 people. http://news.xinhuanet.com/english/china/2012-05/25/c_123187458.htm.

“There is often a revolving door between top leadership in business and key government economic positions,” noted Adam Hersh, an economist at the Center for American Progress who testified at the Commission’s hearing. “Communist Party infrastructure is expanding within private firms even as business leaders are expanding their reach within the Communist Party hierarchy.”¹⁰⁰

In a demonstration of how loyalty to the CCP is valued over loyalty to any particular company, the Central Organization Department in April 2011 reshuffled top executives of China’s three major national oil companies, China National Offshore Oil Corporation (CNOOC), China National Petroleum Corporation (CNPC) and China Petrochemical Corporation (Sinopec). Su Shulin, the former party secretary and general manager of Sinopec, became the deputy party secretary and acting governor of Fujian Province. Fu Chengyu, the former party secretary and general manager of CNOOC, became chairman and party secretary of Sinopec. The CCP also announced that Wang Yilin, a deputy general manager of (and the number three official at) CNPC would become chairman and party secretary of CNOOC.¹⁰¹ SOEs also get a break from their government owners on taxes and dividends owed. According to the Chinese think tank Unirule, during 2007 to 2009, the average tax burden of the 992 SOEs surveyed was 10 percent compared to 24 percent paid by private enterprises. Nor did SOEs pay much in dividends to the government—in 2009 only 6 percent of profits was paid in dividends, while the remainder was likely used for expansion despite large, chronic overcapacity in several sectors where SOEs dominate, such as steelmaking.¹⁰²

The 121 SOEs overseen by SASAC also have considerable influence among smaller companies. The larger SOEs typically have many subsidiaries. One study notes, for example, that the China State Construction Engineering Corporation has 116 subsidiaries in China, most of them in construction-related industries.¹⁰³ Identifying the subsidiaries of state-owned companies is very difficult because this information is generally not disclosed directly. There were an additional 114,500 companies owned by provincial and municipal governments, according to a 2011 World Bank estimate and SASAC figures.¹⁰⁴ (See figure 1.)

Figure 1: Structure of Relationships among SOEs, SASACs, and Central and Local Governments



Source: Deng Yongheng et al., "Monetary and Fiscal Stimuli, Ownership Structure, and China's Housing Market" (Cambridge, MA: National Bureau of Economic Research, *NBER Working Paper Series*, Working Paper No. 16871, March 2011).

There is also a group of enterprises that is partially owned but effectively controlled by the government. In these cases, the government may share ownership with private individuals and the corporate shares might be traded on all stock exchanges. However, the government retains up to two-thirds of the shares, according to some studies.¹⁰⁵ In approximately 70 percent of all listed Chinese nonfinancial firms, the state is the largest shareholder, with ownership exceeding 10 percent.¹⁰⁶ These companies may sometimes be referred to as state-invested enterprises (SIEs).

The number of Chinese government-owned enterprises in 2012 was little changed from the previous year. The majority of Chinese SOEs are affiliated with provincial and municipal governments down to the village level. Many of these companies are designated as town and village enterprises. These organizations evolved in part from the production brigades of the Mao-era farm collectives. In a relatively short period of time, town and village enterprises "transformed from economically backward, undercapitalized, low technology enterprises into highly efficient and globally competitive companies," said Dr. Hersh. By the mid-1990s, they accounted for 40 percent of all China's exports.¹⁰⁷

At the local level, distinctions between "private" and "government ownership" are irrelevant, Dr. Hersh testified. "The same in-

stitutions and strategies that allow local officials to develop successful companies can readily be directed at private companies or government-owned companies alike; there are often interlocking relationships between family members, friends, colleagues, or even the same individuals serving in key government and business posts.”¹⁰⁸

The locally owned government companies “created a virtuous cycle of incentives for officials: the more they worked to develop local industry and business, the more tax revenue they could collect from it, and then the more they could invest those revenues back into further developing industries,” said Dr. Hersh.¹⁰⁹

State-owned Banks Dominate the Financial Sector

Nearly three-quarters of China’s total bank assets were controlled in 2009 by state-owned banks. The China Development Bank, the Export-Import Bank of China, and the Agriculture Development Bank of China, known as “policy banks,” are entirely state owned and responsible for funding programs and projects chosen by the central government. The Industrial and Commercial Bank of China, China Construction Bank, Agricultural Bank of China, and Bank of China are state-owned commercial banks, known as the “Big Four.” All four rank among the world’s 20 largest banks in terms of assets.¹¹⁰ They have grown rapidly, despite the global recession (see tables 1 and 2).

Table 1: Ranking of World’s Top 20 Banks (Through March 2012)

Rank	Bank	Country	Total Assets (US\$bn)
1	Deutsche Bank	Germany	2,805.50
2	Mitsubishi UFJ Financial Group	Japan	2,641.22
3	HSBC Holdings	UK	2,637.22
4	Industrial & Commercial Bank of China	China	2,607.75
5	BNP Paribas	France	2,545.34
6	Credit Agricole Group	France	2,514.81
7	Barclays PLC	UK	2,430.74
8	Japan Post Bank	Japan	2,363.15
9	JPMorgan Chase & Co.	USA	2,320.33
10	Royal Bank of Scotland Group	UK	2,246.52
11	Bank of America	USA	2,181.45
12	China Construction Bank	China	2,107.21
13	Bank of China	China	2,046.37
14	Mizuho Financial Group	Japan	1,995.57
15	Agricultural Bank of China	China	1,993.25

**Table 1: Ranking of World's Top 20 Banks (Through March 2012)—
Continued**

Rank	Bank	Country	Total Assets (US\$bn)
16	Citigroup Inc	USA	1,944.52
17	Sumitomo Mitsui Financial Group	Japan	1,726.21
18	Banco Santander	Spain	1,712.05
19	ING Group	Netherlands	1,656.88
20	Société Générale	France	1,592.72

Source: Banks around the World. <http://www.relbanks.com/worlds-top-banks/assets>.

Table 2: Ranking of World's Top 20 Banks (Through December 2008)

Rank	Bank	Country	Total Assets (US\$bn)
1	Royal Bank of Scotland Group	UK	3,514.58
2	Barclays	UK	3,004.33
3	Deutsche Bank	Germany	2,895.50
4	BNP Paribas	France	2,729.23
5	HSBC	UK	2,527.47
6	JP Morgan Chase	US	2,175.05
7	Credit Agricole	France	2,173.89
8	Citigroup	US	1,938.47
9	Mitsubishi UFJ Financial	Japan	1,922.18
10	ING Group	Netherlands	1,858.31
11	Bank of America	US	1,817.94
12	UBS	Switzerland	1,740.27
13	Mizuho Financial	Japan	1,537.92
14	Société Générale	France	1,485.89
15	Banco Santander (1)	Spain	1,464.74
16	UniCredit	Italy	1,459.10
17	Industrial and Commercial Bank of China (ICBC)	China	1,425.72
18	Wells Fargo	US	1,309.64
19	China Construction Bank	China	1,104.01
20	Sumitomo Mitsui Financial	Japan	1,115.06

Source: Banks around the World. <http://www.relbanks.com/worlds-top-banks/assets-2008>.

The financial power of the state-owned banks is enhanced by the fact that China's bond and equity markets are relatively small and underdeveloped as a source of capital for Chinese corporations and entrepreneurs. Shares of state-owned banks are held by the Ministry of Finance and the Central Huijin Investment Ltd., which is a holding company owned by the China Investment Corporation and controlled by the State Council. The China Banking Regulatory Commission and the Ministry of Finance are the regulators.

State-owned Banks Favor Their State-owned Industrial Cousins

SOEs receive preferential access to capital from China's state-owned banks, borrowing at below-market rates and benefiting from liberal debt forgiveness.¹¹¹ Of the \$1.4 trillion in Chinese bank loans in 2009, 85 percent were granted to SOEs, while China's private sector was left to struggle for the remainder.^{112,113} Private firms' access to capital from state-owned banks remains quite limited despite indications that the private sector may be nearly twice as productive as the state-owned sector.¹¹⁴ Private sector borrowers have come to depend on a "shadow" or underground banking system that is unregulated by authorities and is subject to high interest rates.¹¹⁵ This results in a transfer of wealth from the private sector and from bank depositors to the state sector—a hidden tax with government and its closely held corporations as the beneficiary.

Because the government decides the interest rate at which bank depositors will be paid for the use of their money, the government is able to provide low-interest loans to borrowers by paying depositors less. Because the government favors state-owned corporations as a matter of national policy, Chinese entrepreneurs and privately held companies operate at a considerable financial disadvantage to their state-owned competitors.

The Chinese think tank Unirule calculated that the real interest rate paid by state-owned companies was 1.6 percent from 2001 to 2009, while the commercial rate for private companies was 4.68 percent. Considering all the subsidies and preferences enjoyed by the SOEs, they actually had a negative return on equity, according to Unirule.¹¹⁶ A study by the Hong Kong Institute for Monetary Research estimated that SOE profits would disappear if they were required to repay loans at a market rate.¹¹⁷

This system of financing has been dubbed "financial repression."¹¹⁸ The average Chinese citizen, with few other alternatives to banks for a safe investment, must endure low interest rates or even negative rates as inflation has decreased the real value of interest payments. Negative real lending rates subsidize investment in capital-intensive industries, particularly SOEs, "thus undermining the goal of restructuring the economy in favor of light industry and services," notes Nicolas Lardy, an economist at the Peterson Institute for International Economics.¹¹⁹ Since 2003, the average real return on deposits in Chinese state-owned banks has been negative, after adjusting for inflation. "As a result, the banks are able to provide their principal customers, the state-owned enterprises, with virtually free capital at the expense of deposit hold-

ers,” Georgetown University Law Professor Paul Saulski told the Commission at the hearing. “In effect, this control over interest rates serves as a tool for China’s industrial policy by channeling the implicit tax that’s collected from Chinese households, due to the negative real return on their rates on their savings, through the state-owned commercial banks to selected investment projects and selected state-owned enterprises.”¹²⁰

The favoritism shown SOEs by economic planners and the resulting limits on competition by the private sector redistribute wealth from Chinese citizens to the state sector in other ways as well. “Households pay more for inferior SOE goods and services, they pay more for land, and they receive lower returns on their savings so SOEs and state banks can both be subsidized,” testified Derek Scissors, a research fellow at the Heritage Foundation, during the hearing. “The State Council has embraced rebalancing consumption and investment since 2004, yet the opposite has occurred, because rebalancing would undermine SOEs.”¹²¹ This helps explain why China ranked 151 of 183 countries in the World Bank’s measure of the ease of starting a business, he noted.¹²²

State Firms Maintain Their Grip on the Economy

The share in the overall economy of China’s nonfarm and non-financial state-owned sector is in dispute, but most estimates now place it in the 40 percent to 50 percent range and slightly beyond. Including subnational SOEs, the state sector still comprised about a third to a half of the overall economy, according to a 2010 World Bank study¹²³ based on the Second National Economic Census in 2008.¹²⁴ According to research performed for the Commission in 2011 by Capital Trade, Inc., a Washington-based economic analysis company, China’s SOEs may account for up to half of non-agricultural gross domestic product (GDP).¹²⁵ (The Chinese government publishes no calculation on the size of the state-owned sector relative to the private sector, although general trends can be extrapolated.)

*The observable SOE sector under reasonable assumptions accounts for nearly 40 percent of China’s economy. Given additional information on the prevalence SOE ownership in China’s capital markets, anecdotal and observed data on the prevalence of SOE ownership among [limited liability corporations] and other ownership categories, the likely SOE role in round-tripped FDI [foreign direct investment], it is reasonable to conclude that by 2009, nearly half of China’s economic output could be attributable to either SOEs, [state-holding enterprises], and other types of enterprises controlled by the SOEs. If the output of urban collective enterprises and the government-run proportion of [town and village enterprises] are considered, the broadly defined state sector likely surpasses 50 percent.*¹²⁶

Central government SOEs are among the largest companies in China. In 2010, the capital, or combined assets of the 102 central-level SOEs that were allowed by the government to release financial figures, was \$3.6 trillion, equivalent to 61.4 percent of GDP.

Their earnings equaled 42.2 percent of GDP, according to SASAC.¹²⁷

A 2009 study found that SOEs constituted 50 percent of the 500 largest manufacturing companies in China and 61 percent of the top 500 service sector enterprises.¹²⁸ They are also prominent among companies that are publicly traded, despite their government ownership. State companies made up 80 percent of the value of the shares traded on Chinese stock exchanges in 2009.¹²⁹ Individual SOEs can be quite profitable as well. In 2009, just two companies, China Mobile and China National Petroleum Corporation, made more in profits (\$33 billion) than China's 500 most profitable private companies combined.¹³⁰ (See table 3 for the financial performance of SASAC firms.)

Such outsized profits should not be taken as evidence of the superiority of state capitalism, however. Some segments of the state-owned economy are highly monopolistic and tend to grow larger because the companies are able to charge high prices in the absence of competition. Other factors influencing the size and profitability of SOEs include the ease with which state-owned companies obtain financing for further expansion from the state-owned banking system. In addition, SOEs may not pay taxes at the same rate as their private sector competitors. They may also forgo paying dividends to their shareholders. All these factors would tend to increase the retained earnings of state-owned companies that would be available for further expansion.¹³¹

Table 3: Financial Performance of SASAC Firms, 2007–2010 (RMB trillion)

	2007	2008	2009	2010
Revenue	10.03	11.87	12.63	16.78
Year-on-year revenue growth		18.4%	6.4%	32.9%
Total assets of SASAC firms	14.93	17.63	21.06	24.43
Average return on total assets	8.6%	5.6%	5.3%	6.1%

Source: SASAC Financial Reports (Beijing, China).

Superlative profits may not even be the ultimate goal of state ownership. For example, the three major telecommunications companies, China Mobile, China Unicom, and China Telecom, constitute one of the industries that the government requires to be government owned and operated, as is typically the case with authoritarian governments that wish to keep track of political opposition by monitoring telecommunications. Noted Roselyn Hsueh, a political scientist at Temple University and a witness before the Commission: “With complete control of telecommunications infrastructure in government ownership and management of communications networks, top leadership can mandate blackouts of Internet and mobile communication in China proper and Tibet and Inner Mongolia when politically sensitive and socially destabilizing issues arise and events occur.”¹³²

During the global financial crisis, China's central government funneled 4 trillion (RMB) or about \$585 billion in stimulus spend-

ing through its state-owned banks to local governments and SOEs to build factories, roads, railways, bridges, and airports. The total represented about 12 percent of GDP over two years.¹³³ Lending from the state-owned banks doubled, from 14 percent of GDP to 29 percent. The construction was handled by China's state-owned or state-run construction sector. Meanwhile, other loans from the big, state-owned banks went into expanding production capacity in state-owned steel and auto assembly plants, "beyond their respective industry's expected demand for years to come."¹³⁴

This massive effort contributed to China's ability to escape the worst of the global recession and to allow it to maintain quarterly growth rates in excess of 8 percent even as many of its trading partners slipped into deep recessions. But the effort also increased the influence and the size of the state-owned sector in China's economy. "The idea of privileging and using state-sector firms to achieve policy goals has more legitimacy among Chinese policy-makers than it has had in years," says Barry Naughton, a University of San Diego economist. "Clearly, state firms have returned as major actors in the Chinese economy."¹³⁵

"In the past decade alone, Chinese SOEs have been responsible for building hundreds of thousands of miles of expressways, city streets, and rural highways; a record-breaking array of bullet trains, railways, and subway systems; and many dozens of ultra-modern seaports and expansive airports that are among the world's busiest," wrote James McGregor in a 2012 book about the growing power of SOEs. "At the same time, the government has invested hundreds of billions of dollars through SOEs to reconstruct more than a hundred of China's largest cities—including as much as \$50 billion a pop into the metropolises of Beijing, Shanghai, Guangzhou, and Chongqing."¹³⁶

In addition, the stimulus increased the importance of China's export sector and the role of fixed investment in the economy. "SOEs exploited the stimulus to acquire smaller private sector competitors, many of whom suffered in the global economic slowdown," said David F. Gordon, the head of research at Eurasia Group who testified before the Commission. "So what we had in China was a resulting reduction in competition and a restriction of the investment environment, both for foreign competitors to SOEs but also for private firms inside of China."¹³⁷

SOEs Serve an Important Policy Function

The central government has established a group of seven "strategic" and five "heavyweight" industries where the government is supposed to hold absolute or controlling interests. Those wholly owned strategic industries are armaments; power generation and distribution; oil and petrochemicals; telecommunications; coal; civil aviation; and shipping. The heavyweight industries are machinery; automobiles; information technology; construction; and iron and steel and nonferrous metals. Ownership of the heavyweights may be shared with some private investors, including minority ownership by affiliates of foreign-based corporations.

The development of these industries was established in China's earlier Five-Year Plans. The 10th Five-Year Plan (2001–2005)

called for the government to “hold a controlling stake in strategic enterprises that concern the national economy” and to “uphold the dominance of the public sector of the economy [and] let the state-owned sector play the leading role.” The 12th Five-Year Plan (2011–2015) also created “strategic emerging industries” such as green energy, biotechnology and nanotechnology, which will be advanced by “national champions” selected from among state-controlled companies and nurtured with government subsidies and preferences.¹³⁸

Among the subsidies provided to state-owned enterprises are lower tax rates, direct government grants, and protection from foreign competition (particularly in the financial services, automobile manufacturing, telecommunications, and energy sectors). China also provides its state-owned sector preferential access to raw materials and below-market-rate electricity. China reserves much of its government procurement market for Chinese companies, particularly SOEs, through favorable legislation, procurement catalogues of approved vendors and contractors, or import substitution policies designed to discourage purchases from foreign companies.* Because China has not joined the World Trade Organization’s Agreement on Government Procurement (GPA), the government is free to reserve its contracts for SOEs, which it does as a matter of policy.

Chinese companies were also very heavily favored in the government procurement catalogues issued by all levels of government as part of China’s Indigenous Innovation policy. SOEs received the dominant share of the benefit. Although those catalogues have been withdrawn, in theory, “local SOEs have a huge advantage over outside competitors from other countries, and even other provinces, because of the close relationships between local SOE management and local governments.”¹³⁹

Major Challenges Presented by Chinese SOEs

The persistence in China’s economy of government-owned and -run companies contradicts the WTO’s basic free trade goal in many ways. One witness before the Commission, Timothy Brightbill, a Washington attorney specializing in trade cases, warned that China, “more than any other country,” has created “massive state-owned and controlled national champions” that will compete unfairly with private enterprise. “The rise of state involvement in the global economic arena is a significant threat to our free market system and the free flow of private capital,” Mr. Brightbill said. “The influence of many of these state-supported enterprises is not declining in China; it is expanding.”¹⁴⁰

While the size of the state sector has been declining relative to the GDP over the past three decades, there is evidence that SOEs overall have indeed been expanding. The World Bank warned in a

* For example, construction projects in China, including surveying and prospecting, design, engineering, and supervision of such projects, as well as procurement of major equipment and materials related to the construction of such projects—in other words, all projects, massive in scope and value, that are of significant interest to foreign companies—are reserved for Chinese SOEs. See Gilbert Van Kerckhove, “Are Discussions around GPA [Agreement on Government Procurement] Missing the Real Issue?” August 28, 2010. <http://blog.strategy4china.com/wp-content/uploads/100828GPAcomments.pdf>.

2010 report that the global financial crisis considerably strengthened the role of SOEs in China because the government's \$585 billion stimulus went either directly to SOEs or to local governments employing SOEs for infrastructure work.¹⁴¹ This reversed the trend in which the state-owned sector was shrinking as a percentage of the economy.

Although other nations, including those within the European Union, own controlling shares of some of the corporations within their borders, China's situation is unique. Mr. Brightbill summed up the difference between China's state sector and those of other countries this way:

First is just the absolute lack of transparency (in China) and what's going on with these state-owned enterprises versus other ones, and similarly, the absolute lack of openness in China compared to SOEs located in other countries. Secondly, I think, is the operation not on market principles, but for other country objectives: to obtain intellectual property; to obtain access to raw materials; to start joint ventures in China where then the technology is taken away, . . . (due to) motivations other than market motivations; and last is just sort of the systemic violation of trade rules that happens with China and its SOEs. They don't notify their subsidies to the WTO; they provide export subsidies that are illegal. Those are kind of the pervasive things that make the Chinese SOEs different from others, in my view.¹⁴²

The Chinese state-owned and state-controlled enterprises present three distinct challenges to U.S. competitors. First, Chinese SOEs occupy a favored position within the Chinese market where U.S. companies and their China-based affiliates attempt to compete. Second, the heavily subsidized Chinese SOEs enjoy price and other advantages when selling into the U.S. market. And third, Chinese SOEs are formidable competitors in the global markets, particularly in the developing nations of Latin America and Africa where Chinese export financing at below-market rates can directly determine sales. (For more on Chinese export financing, see chap. 1, sec. 3, of this Report.)

Challenges for U.S. Companies Selling to China

Because SOEs are the preferred supplier for all levels of government in China, U.S. companies face a variety of discriminatory barriers to sales there. Such preferences essentially wall off the large government sector as the exclusive territory of either SOEs or Chinese firms. (For more on China's discriminatory policies, see the Commission's *2011 Report to Congress*, chap. 1, sec. 3, "Indigenous Innovation and Intellectual Property Rights").

The discrimination against foreign goods and services and the preference for indigenous products in China is a formidable barrier both to U.S. exports to China and sales by foreign affiliates of U.S.-based companies. "The long-standing and still most important problem with SOEs is loss of access to the Chinese market," said Dr. Scissors. "There is typically no market of 1.3 billion [people] for American exports and firms operating within China; there is what-

ever the SOEs leave behind . . . [And] if considered strategic, an entire sector can be closed [to imports].”¹⁴³

For example, Chinese planners have announced their intention to require that most or all of the renewable energy equipment installed in China be made in China, be based on Chinese-owned intellectual property, and embody Chinese-developed standards. The method is “a sweeping array of laws, regulations and other measures which establish local content requirements for renewable energy projects; equipment procurement preferences for Chinese-owned companies and Chinese-owned intellectual property; and domestic preferences with respect to subsidies, tax breaks, VAT [value-added tax] rebates and other incentives promoting renewable energy.”¹⁴⁴

Foreign companies find it difficult to compete with Chinese SOEs within China for a variety of other reasons. U.S. companies and Chinese affiliates of U.S. companies are far more scrupulous about the use of licensed software, for example. As much as 80 percent of the software typically used in Chinese government offices is unlicensed, and the percentage of pirated software at government-owned companies is likely as high or even higher.¹⁴⁵ In a recent survey of computer users in China by the Business Software Alliance, 77 percent of business executives and PC users admitted to using unlicensed software, representing a loss of nearly \$9 billion in annual sales and an equivalent subsidy to Chinese companies.¹⁴⁶ SOEs also enjoy a variety of other direct and indirect government subsidies, including the reduced cost of capital. Local SOEs in particular receive a subsidy through the sale of land at farmland prices rather than at the price that would account for the higher value use as a factory. State-owned companies may not be required by their government owners to pay taxes or dividends or even make a profit if the primary goal of the government owners is to provide employment. SOEs may also be exempt from a variety of labor standards and environmental regulations.¹⁴⁷

SOEs are also sometimes favored by government standards designed to capture royalties from foreigners. For example, foreign competitors of China’s three state-owned telecommunications companies have been required to adopt certain standards in China that are not in use anywhere else in the world, in part to ensure that foreign companies pay royalties to the Chinese companies that hold the related patents.¹⁴⁸

Challenges for U.S. Companies Competing with Chinese SOEs in the U.S. Market

The same subsidies and preferences enjoyed by the state sector in China when competing with foreign companies in China also make Chinese SOEs stronger competitors in the U.S. market. For example, after China declared solar power a national priority in 2005, the government stopped buying its polysilicon from the United States and developed an indigenous industry, owned by the Chinese government. China now exports 95 percent of its solar panel production at a substantial discount due to the government aid.¹⁴⁹ Government ownership of the polysilicon industry, combined with direct subsidies, allows sales abroad at below-market rates.

China's subsidies led seven American solar panel manufacturers to file an antidumping and countervailing duty case against Chinese manufacturers.¹⁵⁰ The U.S. Commerce Department ruled in March that China's solar panel industry has sold panels in the United States at prices up to 250 percent below their market price. European manufacturers have filed a similar case against the Chinese industry.¹⁵¹ Final action is pending.

As a result of the subsidies to Chinese manufacturers and the resulting fall in the global price of solar panels, installations are soaring in the United States. The United States is expected to install as much solar power this year as it did in the last decade: 2,500 megawatts or the equivalent of more than two nuclear power plants.¹⁵² But many of those panels will be made in China, which accounted for nearly half the world's production in 2011, up from 20 percent in 2008. The United States, which formerly dominated the industry, shipped just 3 percent of the solar panels used globally last year.¹⁵³ Of the five U.S. solar panel manufacturers that received loan guarantees as part of the 2009 stimulus package, two have filed for bankruptcy, one has put a factory on hold, and two have yet to draw down any loans.¹⁵⁴

Chinese government subsidies harm U.S. companies in several ways. Chinese SOEs in particular, which enjoy the largest subsidies thanks to their close association with the state-owned banking sector, have a lower cost of capital and can produce goods at a lower cost than market-driven companies. In addition, subsidies "also lead to overinvestment in capital intensive and export industries," as Mr. Saulski noted in his testimony. Overcapacity in many of China's state-owned sectors, such as steelmaking, has led to sales abroad at a price below the cost of production.

Anshan Iron and Steel Group, which is 100 percent owned by the central government, grew to be the fourth largest Chinese steel producer through a series of government-arranged mergers. In May 2010, Anshan announced it would build five new steel plants in the United States in a joint venture with Steel Development Co. of Amory, Mississippi.¹⁵⁵ Anshan said that it was part of its "sacred mission" to develop China's industry. But the Washington law firm Wiley Rein warned that:

*Anshan operates in an environment where basic market forces can be ignored to achieve government objectives. ... Because it receives massive government support, Anshan can obtain cash grants, subsidized financing and other support from the Chinese government, even in the worst economic conditions. ... As a result, Anshan has significantly less incentive to make production, pricing, or any other business decisions based on market principles.*¹⁵⁶

Challenges Created by Chinese SOEs in Third-country Markets

The effects of China's benefits to its government-owned and -operated companies are not limited to the domestic and American markets. China has deliberately fashioned a global strategy for the state sector. Commerce Secretary Chen Deming in August of 2011 called the SOEs "the backbone of China's going out strategy."¹⁵⁷

China's 11th and 12th Five-Year Plans direct the government to create "national champions" to compete globally with foreign multinationals. Larger companies with greater economies of scale are better able to compete on a global dimension, and Chinese SOEs tend to be among the largest companies both within China and worldwide. The national champions "are the vanguard of China's global business ambitions," notes author James McGregor, an authority on China's industrial policies.¹⁵⁸

China's ability to create national champions is illustrated by its investment in steelmaking. Several years after China became the world's largest steel importer, it became the world's largest steel producer and its third-largest exporter, thanks to massive government subsidies. In 2011, China's steel production of 684 million metric tons was double that of the next four largest producers combined: Japan, the United States, India, and Russia.¹⁵⁹ Its export of 24 million tons placed it slightly behind Japan and Russia.

Another example of a SOE national champion capturing a global market is China UnionPay, created in 2002 by China's central bank and granted a monopoly position within China to process all credit, debit, and prepaid transactions. From that protected base, China UnionPay quickly went global. The company boasts of partnerships with 400 financial institutions worldwide in nearly 100 countries and has issued 2.3 billion UnionPay cards.*¹⁶⁰

The U.S. trade representative filed a complaint with the WTO in 2011 alleging that China had unfairly created a government monopoly to exclude foreign credit cards and was joined by co-plaintiffs Japan, the European Union, Australia, India, South Korea, and Ecuador. The WTO ruled against China, which is expected to appeal. (For more on the WTO case against UnionPay, see chap. 1, sec. 1, of this Report.)

Risks of Foreign Direct Investment by Chinese SOEs in the United States

Governments everywhere tend to welcome foreign direct investment (FDI) to their shores, particularly when such investment involves the building of new production facilities, or "greenfield investment." By 2008, 28 states and U.S. cities operated economic development offices in China and in 2010, at least eight governors of states led trade and investment missions to China, according to the U.S. embassy there.¹⁶¹

Some of the money that flows to the United States comes from state-owned companies in China. From 2003 through the first half of 2011, 66 percent of the investment from China, or \$9.9 billion, came from government-controlled companies, and just 34 percent, or \$5.1 billion, came from private or publicly traded, nongovernment companies, according to the Rhodium Group.¹⁶²

The investments tended toward states with manufacturing, energy, and financial institutions. (See table 4.) (Note: The table includes investments by SOEs and private companies in China.)

* By contrast, the three most popular card companies in the United States, American Express, Visa, and MasterCard, had 1 billion credit and debit cards in circulation in the United States by the end of 2011, according to statistics from the card companies compiled by [creditcards.com](http://www.creditcards.com/credit-card-news/credit-card-industry-facts-personal-debt-statistics-1276.php#Card-ownership).

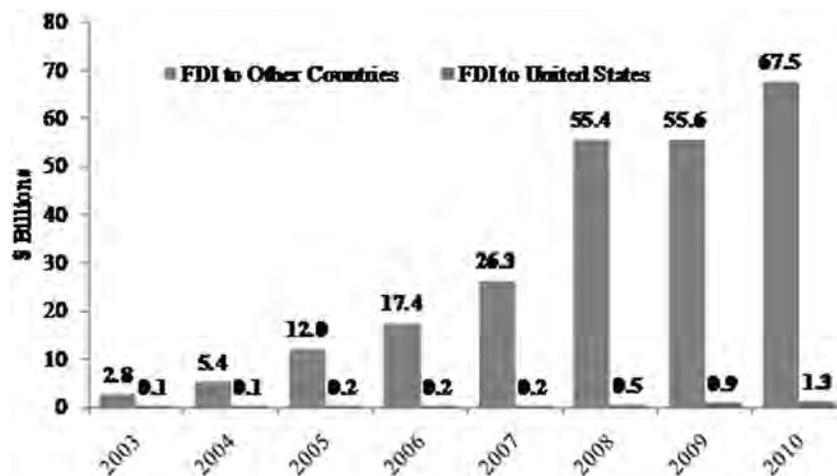
Table 4: Chinese FDI by U.S. State, 2003–2012, Q2

Rank	State	Number of Deals	Total Investments (USD m)
1	New York	47	3,216
2	Texas	44	2,690
3	Ohio	15	2,542
4	California	159	1,964
5	Illinois	36	1,954
6	Massachusetts	13	1,829
7	Virginia	14	1,795
8	Michigan	31	895
9	Colorado	3	614
10	Minnesota	6	602
11	Delaware	13	449
12	New Jersey	25	348
13	North Carolina	39	282
14	Washington	20	194
15	Indiana	8	152
16	Georgia	22	146
17	Missouri	5	135
18	South Carolina	10	133
19	Nevada	11	129
20	Florida	12	112

Source: Rhodium Group, “Tracking Chinese Direct Investment in the U.S.” (New York, NY: *China Investment Monitor*, July 25, 2012). <http://rhgroup.net/interactive/china-investment-monitor>.

The level of Chinese FDI in the United States is low. China has traditionally favored developing nations for its direct investment, as well as those developed nations, such as Canada and Australia, with abundant iron ore, oil, and natural gas. In 2010, only 2 percent of Chinese FDI went to the United States.¹⁶³ Nearly 90 percent of that was directed to the U.S. financial sector, while investment in U.S. manufacturing was negligible.¹⁶⁴ (See figure 2.)

Figure 2: China's Outward FDI Flows to the United States and Rest of World, 2003–2010



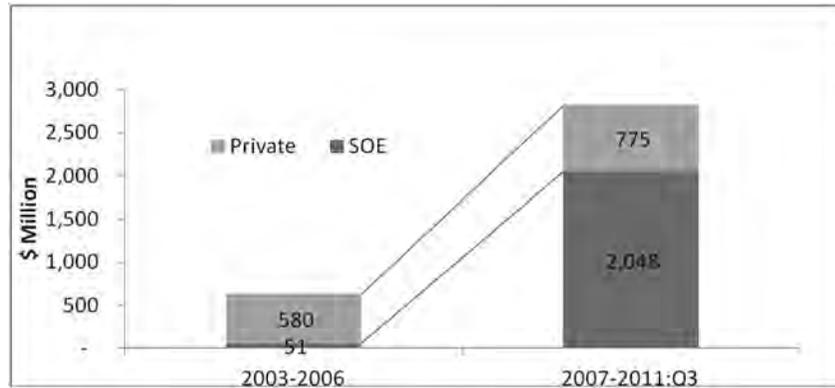
Source: People's Republic of China, *Statistical Bulletin of China's Outward Foreign Direct Investment* (Beijing, China: various issues).

China's direct investments in the United States have had only a "trivial" effect on the U.S. economy thus far, noted Dr. Scissors in his testimony. The total of Chinese foreign direct investment since 2005 is less than half a percent of a single year of GDP.¹⁶⁵ But that is likely to change. "The next frontier for China's SOEs is the U.S. market," said Dr. Gordon.¹⁶⁶ As China considers diversifying its dollar-denominated investments from U.S. bonds to direct investments in the United States, "U.S. policymakers will struggle to balance between national security and trade priorities on the one hand, and the promises of inbound investment and employment growth on the other," said Dr. Gordon.*¹⁶⁷

Although SOEs have made fewer direct investments abroad than private Chinese investors, the value of SOE investments is far larger in the aggregate. SOEs accounted for 73 percent of Chinese FDI from 2007 to the third quarter of 2011.¹⁶⁸ This is likely due to the size of Chinese SOEs and to their concentration in such capital intensive industries as mining and energy. (See figure 3.)

* In the first half of 2012, Chinese companies spent \$3.6 billion on 33 FDI projects in the United States, primarily in oil and gas deals. Thilo Hanemann, "Chinese FDI in the United States Update" (New York, NY: Rhodium Group, July 25, 2012). <http://rhgroup.net/notes/chinese-fdi-in-the-united-states-q1-and-q2-2012-update>.

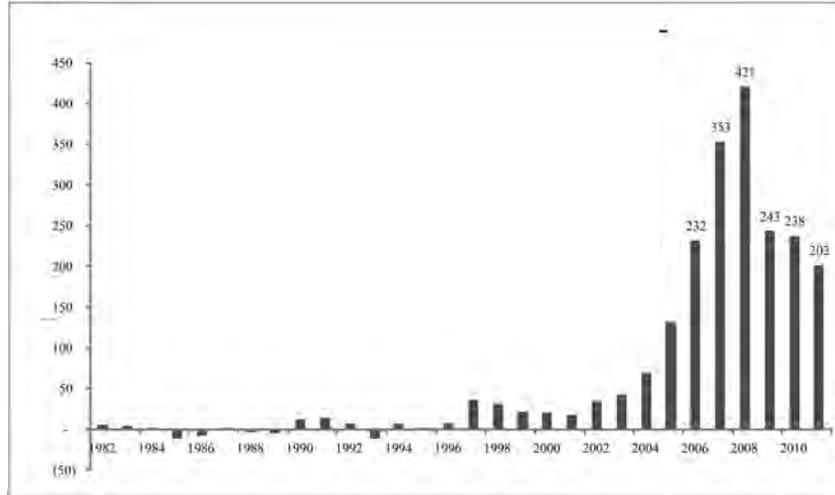
Figure 3: Average Annual Value of FDI Deals by SOEs and Non-SOEs in the United States



Source: Rhodium Group, *China Investment Monitor through 2011:Q3* (New York, NY: 2011).

China has the potential to both expand its global FDI and to shift its emphasis on acquiring and developing properties within the United States. China's industrial policy emphasizes its "going out" strategy, which calls for Chinese investment abroad to acquire raw materials and technology, marketing, and managerial expertise from targeted investments abroad. China is particularly anxious to develop "famous brands" that will be recognized globally and support a pricing premium. (Lenovo's purchase of the PC division of IBM is an example of China's efforts to develop its brands through direct investment abroad. Although Lenovo's stock is publicly traded, its ultimate controlling owner is the Chinese Academy of Sciences, part of the central government.)¹⁶⁹

China's FDI is likely to continue to grow substantially. China has the world's largest foreign currency reserves at \$3.24 trillion and is the largest holder of U.S. Treasury securities at \$1.2 trillion.¹⁷⁰ China also continues to run the world's largest current account surplus, much of which flows back to the Chinese state-owned manufacturing industries. (See figure 4.)

Figure 4: China's Current Account Balances, 1982–2010 (In \$ billions)

Source: China's National Bureau of Statistics, via Haver Analytics.

(Note: China's current account surplus fell markedly in 2009 in nominal terms and as a percentage of GDP because imports did not fall as rapidly as did exports. In 2010 and 2011, growth in imports outpaced growth in exports. Much of the change was due to the global financial crisis.)

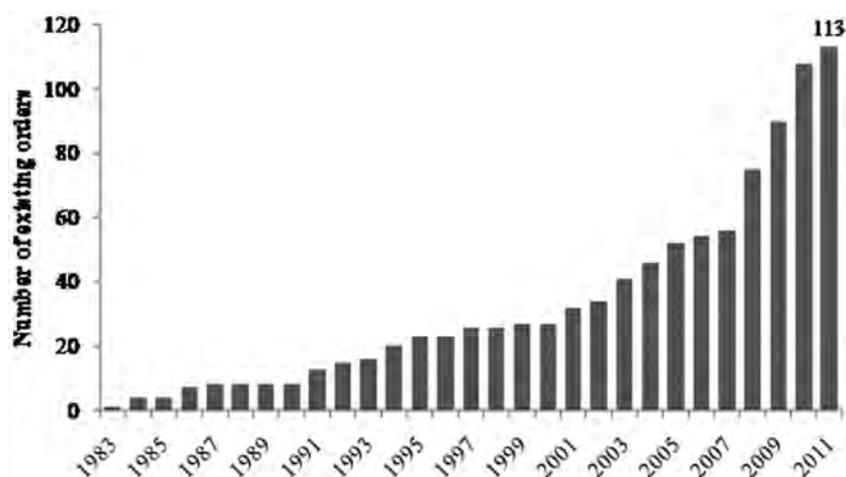
In addition to its cash reserves, the government and its wholly owned corporations can turn to the Export-Import Bank of China. The government bank offers concessionary loans, in some cases at 2 percentage points below-market-rate interest, "to assist Chinese companies with comparative advantages in their offshore contract projects and outbound investments," according to the bank's mission statement.¹⁷¹ Such a low interest rate falls outside Organization for Economic Cooperation and Development (OECD) norms. Other subsidies to support Chinese FDI include grants, debt forgiveness, equity infusions, and preferential access to key production inputs.¹⁷²

Such subsidies impose a burden on competitors in the United States. Notes Andrew Szamosszegi, co-author of a report on Chinese state-owned enterprises prepared for the Commission: "The U.S. economy would be harmed if state largesse allowed less efficient SOEs operating in the United States to muscle out more efficient domestic producers [or] if the Chinese investors promote exports from China at the expense of U.S. production or if the investors with government support shift production to China."¹⁷³

Many of the industrial policy goals of China's investment could harm segments of the most important U.S. industries—for example, China's emphasis on obtaining technology could damage domestic and foreign sales of U.S. information and communications and aerospace industries. Once invested in the United States, Chinese SOEs may continue to benefit from Chinese government subsidies that would allow the Chinese SOEs to sell their products and services at less than the cost of production. Once their U.S. competitors are driven out of the business, Chinese SOEs might domi-

nate the market and even raise prices. Government subsidized sales by Chinese companies to the U.S. market have led to increasing numbers of antidumping and countervailing duty penalties. (See figure 5.) Their operations in the United States would not be subject to these penalties. There is no existing federal remedy in such a case. Were Chinese SOEs to move their operations to the United States, they might circumvent protections in U.S. laws on unfair import practices. “China’s *modus operandi* has been to create production capacity well in excess of its ability to consume, and then to crash global prices by exporting the surplus,” according to the analysis by Capital Trade, Inc. “Aggressive, state-funded forays into emerging industries could short-circuit their development in the United States, harming not only near-term job creation, but also long-term economic performance.”¹⁷⁴

Figure 5: U.S. Antidumping and Countervailing Duty Orders in Effect against Chinese Firms, Cumulative Totals, 1983–2011



Source: U.S. International Trade Commission, *USITC Five-year Sunset Reviews* (Washington, DC). <http://pubapps2.usitc.gov/sunset/>.

According to the Capital Trade report, Chinese steel producer Tianjin Pipe announced in January 2009 the largest single Chinese investment in the United States following a case filed in Canada and in anticipation of a U.S. antidumping petition. (Imports of oil industry tubular steel from China expanded by more than 200 percent from 2006 to 2008.)¹⁷⁵ The planned U.S. investment by the government-owned Anshan Iron and Steel Group in several states was motivated by concerns about U.S. trade remedies, according to one report.¹⁷⁶ Avoiding unfair trade penalties also figured into the decision by a private corporation, Shandong Nanshan Aluminum Co. Ltd., to establish a production facility in Lafayette, Indiana.¹⁷⁷

In May 2010, Anshan said it would form a joint venture to build several new steel plants in the United States. China’s 2009 Revitalization Plan provides Anshan with government support to acquire strategic resources and establish overseas operations.¹⁷⁸ Anshan’s Chinese language material notes that the goal is to “demonstrate

China's iron and steel industry's capabilities in international deployment and operations, and their influences on the industry." 179 U.S. investors cannot undertake these same activities in China, where foreigners are limited to a minority interest in many key industries, such as steel.

Can Any of China's Corporations Truly Be Private?

With China's large, state-owned sector; elaborate, top-down economic planning; single-party, authoritarian rule; and a judiciary that is required to generally favor the party and the government, the independence of any one company or industry is doubtful. Some companies in China, such as Huawei, the telecommunication equipment giant, prefer to be considered neither owned nor controlled by the government. Huawei insists that it is privately held by the employees of the company, but ownership and level of control can be difficult to determine, since the government itself and the CCP may wish to avoid the issue. Some Chinese SOEs are actively traded on public stock exchanges, in China and abroad, leading some investors to assume that they have been privatized. But this is often not the case. China Mobile, for example, is traded on the Hong Kong and New York exchanges and yet is owned by the central government and managed by SASAC. In some cases, the government may appear to be only a minority shareholder, and yet the Communist Party may be in charge of picking the directors and the top management.

As Richard McGregor notes in his book, *The Party, The Secret World of China's Communist Rulers*:

*The Party has been careful, too, to minimize its profile in international business, systemically playing down its presence in the large state enterprises that have been listed offshore in New York, Hong Kong, London and elsewhere. The bulging prospectuses used to sell Chinese state companies ahead of their offshore public listings are crammed with information from every conceivable angle about their commercial activities and board roles, but the Party's myriad functions, especially control over top personnel, have been airbrushed out altogether.*¹⁸⁰

The claim of private ownership may be a distinction without a difference when it comes to the influence that the government maintains over the operation of any particular company. "Private entities operate in policy, regulatory and financial environments in which the state wields enormous clout and influence," according to Mr. Szamoszegi. "As such, even private entities are influenced strongly by state goals and must respond accordingly. . . . The web of state control does not prevent private firms from responding freely to market forces, but it does create an environment that encourages fealty to government development plans."

Meeting the Challenge from Chinese State-Owned Enterprise

An essay in the *Economist* magazine recently opined that "state capitalism is the most formidable foe that liberal capitalism has faced so far. Across much of the world, the state is trumping the

market and autocracy is triumphing over democracy.”¹⁸¹ For a publication that has considered free market capitalism so superior to government-planned economies that the invisible hand will prevail every time, this was particularly noteworthy. And yet U.S.-based companies that compete with Chinese SOEs have been increasingly concerned over the past three years. In a 2010 survey of its members by the U.S.-China Business Council, three quarters of respondents said their companies compete directly with Chinese SOEs for business opportunities. Of those companies, 96 percent said their state-owned competitors enjoy “tangible benefits or subsidies from the government.”¹⁸²

Witnesses at the Commission hearing offered specific actions that the U. S. government might undertake to counter China’s support for state capitalism. Mr. Brightbill noted that China maintains restrictions on foreign investment in state-owned and state-controlled enterprises. For example, foreign companies are prohibited by Chinese law to have a controlling share of Chinese steel producers. Foreign investors need to be approved by the Ministry of Commerce, the State Development and Reform Commission, SASAC, and the China Securities Regulatory Commission, among other authorities.¹⁸³ As a result, foreign steel producers have been effectively excluded from investing in Chinese steel production, and the sector remains dominated by the government. By 2009, more than 95 percent of the production of the top 20 steel groups in China was subject to some government ownership, and 16 of the top 20 steel groups were 100 percent owned and controlled by the government.¹⁸⁴ In the view of several witnesses, including Mr. Brightbill, a policy of reciprocal treatment—denying Chinese steel companies the right to partner with U.S. companies—might persuade the Chinese government to open its market to foreign investors.

Mr. Brightbill also suggested that legislation creating the Committee on Foreign Investment in the United States (CFIUS) could be amended to add a test of “economic benefit” of a Chinese investment in the United States.¹⁸⁵ Elizabeth J. Drake, a partner and international trade expert at Stewart and Stewart, suggested at the Commission’s hearing that CFIUS be required to review SOE investments “from a competitive neutrality standpoint,” requiring disclosure of government support and pricing practices.¹⁸⁶

There are at least 11 countries that have a screening test for foreign investment. Several, including China, Australia, and Canada, go beyond considering national security and take into account the economic effect of foreign investment. China’s screening test was revised in 2006 to introduce a “national economic security” requirement for foreign investment. This process “considers whether the investment has or may have an influence on state security, whether it would cause the transfer of an actual right from a domestic enterprise owning a famous trademark or having a ‘name of long history,’ or whether the merger or acquisition does or may cause serious influence on Chinese economic security,” according to an analysis by the law firm of Wiley Rein.¹⁸⁷ Investments by foreign companies that are 15 percent or more owned by a foreign government are required to undergo review by Australia’s Foreign Investment Review Board to determine whether or not they are “contrary

to national interest.” (For an explanation of the investment review procedures of the ten countries, see addendum 3.)

There are several other legal tools within U.S. law that could be used to monitor and address harmful activities of Chinese SOEs seeking to invest in the United States. For example, notes Ms. Drake, the Securities and Exchange Commission’s regulations on disclosure of material (or legally relevant) information by companies listing on U.S. stock exchanges could be clarified in the case of SOEs. The companies could be required to disclose the degree of government ownership, influence, and supervision, as well as the government’s role in choosing directors and company management and supplying such subsidies as below-market-rate financing and tax preferences. Such information would allow investors to gauge the risk of countervailing duty liability or antitrust actions.¹⁸⁸

The U.S. government could also increase enforcement against illegal subsidies to SOEs by bringing cases against obvious violations of China’s WTO commitments. For example, WTO rules prohibit government subsidies conditioned on exports and provided at below-market rates. Such subsidies are used by Chinese “national champions” that have been encouraged to export as a matter of national policy.*

The administration could also step up enforcement of antisubsidy laws by bringing countervailing duty complaints.† In cases in which the U.S. plaintiffs “are too fragmented, under-resourced, or intimidated by threats of retaliation to invoke their legal rights and petition for relief,” the Commerce Department could initiate the complaint, noted Ms. Drake.¹⁸⁹

Finally, because China is not a signatory to the WTO’s GPA, the United States is under no obligation to provide China with the same national treatment protections as those countries that are signatories.¹⁹⁰

China promised in 2001, to sign the GPA “as soon as possible” but made little progress toward joining in the interim. China’s second revised offer for acceding to the GPA was sent in December 2011. However, beyond limited subcentral and services additions,‡ China’s newest offer did not include other substantive improvements previously requested by GPA parties. The United States, the European Union, and other major GPA signatories had pressed for China to cover SOEs in its offer. Instead, China has refused to agree to include SOEs under the procurement agreement, even in the cases in which an SOE is fulfilling a government purpose, such as building a dam or an airport. Similarly, current negotiations between the United States and China over a Bilateral Investment Treaty could provide a platform for an agreement between the two

*On September 17, 2012, the United States requested consultations with China at the WTO concerning China’s “export base” subsidy program to auto and auto parts companies in China. The subsidies in question include, among others, grants, loans, and the provision of goods and services, contingent upon export performance. See Office of the U.S. Trade Representative, “Obama Administration Challenges China’s Export Subsidies To Auto and Auto Parts Manufacturers in China” (Washington, DC: September 17, 2012). <http://www.ustr.gov/about-us/press-office/press-releases/2012/september/obama-administration-challenges-china-auto-subsidies>.

† Countervailing duty complaints, or CVDs, seek from the federal government a tax levied on an imported good whose price is based on a government subsidy.

‡ The new offer includes coverage of subcentral entities in three major municipalities and two provinces and covers two new service sectors. Matthew Schewel, “New China GPA Offer Covers Some Sub-Central Entities, Gives Few Other Concessions,” *Inside US-China Trade*, December 7, 2011.

governments to regulate the behavior of SOEs. The two sets of talks are “a high priority” for addressing state capitalism, said Deborah A. McCarthy, principal deputy assistant secretary of State for economic and business affairs.

*State capitalism takes advantage of open free markets while protecting key aspects of domestic production. It mobilizes resources of the state, forces joint ventures between foreign and local companies to transfer knowledge. It exerts control over key enterprises and subsidizes their expansion and growth overseas. . . . This is the direct threat to U.S. jobs, profits, and competitiveness. It is essential for the health of our economy to make it a high priority for our trade and investment policies.*¹⁹¹

The Obama Administration’s approach to China’s state sector has been to adopt the Organization for Economic Cooperation and Development’s principle of “competitive neutrality.” This is generally understood to mean that SOEs “should be required to operate as if they were a commercial enterprise and that SOEs do not receive subsidies or other benefits from their governments that unfairly advantage them with respect to an investment abroad.”¹⁹² Such language may be added to the Trans Pacific Partnership Agreement, currently being negotiated among 11 Pacific Rim countries, in the expectation that China may eventually join. While China is not a participant, the Obama Administration plans to invite China to join, providing that Beijing is willing to comply with the terms of the Trans-Pacific Partnership Agreement. The agreement might be structured to limit the extent of government assistance to SOEs and to require members to submit annual notifications listing all SOEs that operate internationally. The notification could include details of all government support and the terms of public procurement contracts.¹⁹³

As detailed in the Commission’s *2011 Annual Report to Congress*, such an approach has been tried unsuccessfully in the past, as when China agreed to abide by the rules of the WTO when it joined the Geneva-based organization in 2001. China has complied with many of the requirements of its accession agreement—lowering tariffs and dropping quotas, for example. But China has lagged in other ways, such as enforcing intellectual property rights. The U.S. Trade Representative has issued ten annual reports on China’s repeated failures to comply with its WTO commitments.* (For example, in its WTO accession agreement, the government of China pledged that it “would not influence, directly or indirectly, commercial decisions on the part of state-owned enterprises.”)†

Implications for the United States

The Chinese system of state capitalism or “capitalism with Chinese characteristics” has blocked many of the potential benefits of a free market, not only in China, but among China’s trading part-

* See Office of the U.S. Trade Representative, *2011 Report to Congress on China’s WTO Compliance* (Washington, DC: 2012). http://www.ustr.gov/webfm_send/3189.

† See U.S.-China Economic and Security Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011). http://www.uscc.gov/annual_report/2011/11_annual_report.php.

ners. The state-owned sector in China can undercut prices charged by privately held competitors globally due to a variety of subsidies granted by the Chinese government: low-interest-rate loans; below-market-rate land, fuel, and electricity; special exemptions from environmental and labor regulations; tax abatements and preferences.

China's large state sector harms American companies hoping to invest in or export to China. U.S. companies are excluded from sectors reserved for government monopolies, such as telecommunications services and oil and natural gas. U.S. companies are limited to minority participation in partnerships or joint ventures in many areas dominated by state-owned companies, including automobiles and financial services. U.S. companies operating in the global market must compete with Chinese state-owned enterprises for customers and clients while enjoying none of the subsidies afforded their government-owned competitors.

The result is lower revenues for American companies exporting from the United States or located abroad. Lower revenues also translate into fewer jobs for those companies that must compete with Chinese state-owned firms.

Conclusions

- State-owned and state-controlled companies in China provide the opportunity for the central government to implement its industrial policy, create global competitors, and develop monopoly industries for the benefit of the government. The government does so at the expense of foreign competitors.
- Beijing reversed a 30-year process of economic reform of state-owned enterprises during the 2008 global financial crisis. A massive, \$585 billion economic stimulus was directed by the government through state-owned banks to many state-owned companies, particularly in the metals, mining, and construction industries. As a result of the financial infusion, the state sector grew and became more influential within China. A resurgent Chinese state sector, armed with extensive government subsidies, competes unfairly with domestic Chinese firms and with China-based affiliates of American companies.
- The largest Chinese state-owned enterprises are generally managed by the Chinese central government through a holding company that answers directly to the State Council. The top leaders of 121 centrally owned nonfinancial SOEs are chosen by a branch of the Chinese Communist Party and are typically party members. In turn, the SOEs influence government and party decisions on the economy. In addition to SOEs owned by the central government, there were 114,500 SOEs owned by provincial or local governments, according to a 2011 estimate by the World Bank.
- The banking system in China is almost entirely state owned and is dominated by five banks that account for nearly all lending. SOEs are the principal borrowers, while entrepreneurs and private companies find it hard to obtain loans even at higher rates. The country has an underdeveloped bond and equity market,

putting private Chinese companies and foreign affiliates of U.S. companies at a further disadvantage. The rate of interest payments to depositors is set by the government at an artificially low rate, allowing the government to provide low loan rates to its favored clients in the state sector. This system of “financial repression” represents a transfer of wealth from the private sector to the state sector.

- Even those companies that are majority privately held are likely to be influenced or controlled by the government. Private Chinese companies are expected to follow the guidelines of the government, which are spelled out in Five-Year Plans and other official planning documents issued by the State Councils and implemented by various ministries.
- U.S. companies face unfair competition from Chinese SOEs within China, within the United States, and in third-country markets. Governments at all levels in China favor Chinese SOEs in procurement contracts. Chinese affiliates operating abroad do so with preferential financing from the government in China.
- Governments at all levels in the United States seek investment from China. But investment from Chinese SOEs carries a number of risks to U.S.-based competitors due to the preferential financing that Chinese governments provide. U.S. laws and regulations are inadequate to address the advantages given to Chinese SOEs operating in America. Although Chinese investment into the United States is low, China has large dollar holdings that could be converted into direct investment in the United States.
- When China joined the WTO in 2001, the government committed to economic reforms that included diminishing the role that the state plays in the economy. China has not complied with many of these explicit obligations. The United States has a variety of remedies to use to counter China’s failures to comply. They include bringing WTO complaints and antidumping and countervailing duty cases against the Chinese government and against Chinese industries. The Securities and Exchange Commission could issue regulations calling for enhanced disclosure by Chinese state-owned companies listed on U.S. exchanges of the subsidies given to the Chinese SOEs. The U.S. government could demand reciprocal treatment for foreign investment in China to match the treatment afforded by Chinese companies in America. Many U.S. firms are restricted to minority ownership of joint ventures in China or excluded entirely from some business sectors, while no such restrictions on Chinese companies exist in the United States. In some cases, reciprocal treatment is called for. The U.S. government could also exclude Chinese products and services from U.S. and state government services contracts and government construction projects until China opens its own government and SOE contracts to competitive bidding from American companies.

Addendum 1: SASAC Companies, Large State-owned Banks, and Insurance Companies (2011)¹⁹⁴

	Company name	Abbreviation
1	China National Nuclear Corporation	CNNC
2	China Nuclear Engineering & Construction Corporation	CNECC
3	China Aerospace Science & Technology Corporation	CASC
4	China Aerospace Science & Industry Corporation	CASIC
5	Aviation Industry Corporation of China	AVIC
6	China State Shipbuilding Corporation	CSSC
7	China Shipbuilding Industry Corporation	CSIC
8	China North Industries Group Corporation	CNIGC
9	China South Industries Group Corporation	CSGC
10	China Electronics Technology Group Corporation	CETC
11	China National Petroleum Corporation	CNPC
12	China Petrochemical Corporation	Sinopec
13	China National Offshore Oil Corporation	CNOOC
14	State Grid Corporation of China	SGCC
15	China Southern Power Grid Company, Limited	CSG
16	China Huaneng Group	CHNG
17	China Datang Corporation	CDT
18	China Huadian Corporation	CHD
19	China Guodian Corporation	CGDC
20	China Power Investment Corporation	CPI
21	China Three Gorges (Project) Corporation	CTGPC
22	Shenhua Group Corporation Limited	Shenhua
23	China Telecommunications Corporation	China Telecom
24	China United Network Communications Group Company	China Unicom
25	China Mobile Group	China Mobile
26	China Electronics Corporation	CEC
27	China FAW Group Corporation	FAW
28	Dongfeng Motor Corporation	DFMC
29	China First Heavy Industries	CFHI
30	China National Erzhong Group Corporation	Erzhong
31	Harbin Electric Corporation	HPEC

Addendum 1: SASAC Companies, Large State-owned Banks, and Insurance Companies (2011)—Continued

	Company name	Abbreviation
32	Dongfang Electric Corporation	DEC
33	Anshan Iron and Steel Group Corporation	Ansteel
34	Baosteel Group Corporation	Baosteel
35	Wuhan Iron and Steel (Group) Corporation	WISCO
36	Aluminum Corporation of China	Chalco
37	China Ocean Shipping (Group) Company	COSCO
38	China Shipping Group	China Shipping
39	China National Aviation Holding Company	AirChina
40	China Eastern Aviation Holding Company	China Eastern
41	China Southern Air Holding Company	China Southern
42	Sinochem Group	Sinochem
43	COFCO Corporation	COFCO
44	China Minmetals Corporation	Minmetals
45	China General Technology (Group) Holding, Limited	Genertec
46	China State Construction Engineering Corp.	CSCEC
47	China Grain Reserves Corporation	Sinograin
48	State Development & Investment Corporation	SDIC
49	China Merchants Group	CMHK
50	China Resources (Holdings) Company, Limited	CRC
51	The China Travel Service (HK) Group Corporation	HKCTS
52	State Nuclear Power Technology Corporation	SNPTC
53	Commercial Aircraft Corporation of China, Limited	COMAC
54	China Energy Conservation Investment Corporation	CECIC
55	China Gaoxin Investment Group Corporation	Gaoxin Group
56	China International Engineering Consulting Corporation	CIECC
57	Zhongnan Commercial (Group) Company, Limited	Zhongnan
58	China Huafu Trade & Development Group Corporation	HFJT
59	China Chengtong Group	CCT
60	China Huaxing Group	Huaxing
61	China National Coal Group Corporation	ChinaCoal
62	China Coal Technology & Engineering Group Corporation	CCTEG

Addendum 1: SASAC Companies, Large State-owned Banks, and Insurance Companies (2011)—Continued

	Company name	Abbreviation
63	China National Machinery Industry Corporation	SINOMACH
64	China Academy of Machinery Science & Technology	CAM
65	Sinosteel Corporation	Sinosteel
66	China Metallurgical Group Corporation	MCC
67	China Iron & Steel Research Institute Group	CISRI
68	China National Chemical Corporation	ChemChina
69	China National Chemical Engineering Group Corp.	CNCEC
70	Sinolight Corporation	Sinolight
71	China National Arts & Crafts (Group) Corporation	CNACGC
72	China National Salt Industry Corporation	CNSIC
73	China Hengtian Group Company, Limited	CHTGC
74	China National Materials Group Corporation Limited	SINOMA
75	China National Building Materials Group Corp.	CNBM
76	China Nonferrous Metal Mining (Group) Company	CNMC
79	China International Intellectech Corporation	CIIC
80	China Academy of Building Research	CABR
81	China CNR Corporation Limited	CNR
82	China CSR Corporation Limited	CSR
83	China Railway Signal & Communication Corporation	CRSC
84	China Railway Group Limited	China Railway
85	China Railway Construction Corporation Limited	CRCC
86	China Communications Construction Company Limited	CCCC
87	China Potevio Company, Limited	China Potevio
88	Datang Telecom Technology & Industry Group	Datang
89	China National Agricultural Development Group Company	CNADC
90	Chinatex Corporation	Chinatex
91	China National Foreign Trade Transportation Corp.	SINOTRANS
92	China National Silk Import & Export Corporation	Chinasilk
93	China Forestry Group Corporation	CFGC
94	China National Pharmaceutical Group Corporation	SINOPHARM
95	CITS Group Corporation	CITS

Addendum 1: SASAC Companies, Large State-owned Banks, and Insurance Companies (2011)—Continued

	Company name	Abbreviation
96	China Poly Group Corporation	POLY
97	Zhuhai Zhen Rong Company	Zhzrgs
98	China Architecture Design & Research Group	CAG
99	China Metallurgical Geology Bureau	CMGB
100	China National Administration of Coal Geology	CNACG
101	Xinxing Cathay International Group Company, Limited	XXPGroup
102	China Travelsky Holding Company	Travelsky
103	China Aviation Fuel Group Corporation	CNAF
104	China National Aviation Supplies Holding Company	CASC
105	China Power Engineering Consulting Group Corporation	CPECC
106	HydroChina Corporation	HYDROCHINA
107	Sinohydro Corporation	Sinohydro
108	China National Gold Group Corporation	CNGC
109	China National Cotton Reserves Corporation	CNCRC
110	China Printing (Group) Corporation	CPGC
111	China Lucky Film Corporation	Luckyfilm
112	China Guangdong Nuclear Power Holding Corporation	CGNPC
113	China Hualu Group Company, Limited	Hualu
114	Alcatel-Lucent Shanghai Bell Company Limited	Alcatel-sbell
115	IRICO Group Corporation	IRICO
116	FiberHome Technologies	WRI
117	OCT Enterprises Company	OTC
118	Nam Kwong (group) Company, Limited	Namkwong
119	China XD Group	XD Company
120	China Gezhouba Group Corporation	CGGC
121	China Railway Materials Commercial Corporation	CRM
122	Industrial & Commercial Bank of China	ICBC
123	China Life Insurance Group	China Life
124	China Construction Bank	CCD
125	Bank of China	BOC
126	Agriculture Bank of China	ABC

Addendum 1: SASAC Companies, Large State-owned Banks, and Insurance Companies (2011)—Continued

	Company name	Abbreviation
127	China Taiping Insurance Group Company	China Taiping
128	Bank of Communications	BOCOM
129	China Development Bank	CDB
130	People's Insurance Company of China	PICC

Note: The first 121 companies are listed in the order provided by SASAC.

Source: Data derived from <http://www.sasac.gov.cn/n1180/n1226/n2425/index.html>, <http://www.ceda.org.cn/china-500/> and individual companies' websites.

Addendum 2: Chinese Companies in the Fortune 500 and Their Membership in SASAC¹⁹⁵

China Rank	Name	Global 500 Rank	Revenue (US\$ mn)	In SASAC
1	Sinopec Group	5	375,214	Yes
2	China National Petroleum	6	352,338	Yes
3	State Grid	7	259,142	Yes
4	Industrial & Commercial Bank of China	54	109,040	No
5	China Construction Bank	77	89,648	No
6	China Mobile Communications	81	87,544	Yes
7	Agricultural Bank of China	84	84,803	No
8	Noble Group	91	80,732	No
9	Bank of China	93	80,230	No
10	China State Construction Engineering	100	76,024	Yes
11	China National Offshore Oil	101	75,514	Yes
12	China Railway Construction	111	71,443	Yes
13	China Railway Group	112	71,263	Yes
14	Sinochem Group	113	70,990	Yes
15	China Life Insurance	129	67,274	No
16	SAIC Motor	130	67,255	No
17	Dongfeng Motor Group	142	62,911	Yes
18	China Southern Power Grid	152	60,538	Yes
19	China FAW Group	165	57,003	Yes
20	China Minmetals	169	54,509	Yes
21	CITIC Group	194	49,339	No

**Addendum 2: Chinese Companies in the Fortune 500 and Their
Membership in SASAC—Continued**

China Rank	Name	Global 500 Rank	Revenue (US\$ mn)	In SASAC
22	Baosteel Group	197	48,916	Yes
23	China North Industries Group	205	48,154	Yes
24	China Communications Construction	216	45,959	Yes
25	China Telecommunications	221	45,170	Yes
26	China Resources National	233	43,440	Yes
27	Shenhua Group	234	43,356	Yes
28	China South Industries Group	238	43,160	No
29	Ping An Insurance	242	42,110	No
30	China Huaneng Group	246	41,481	Yes
31	Aviation Industry Corp. of China	250	40,835	Yes
32	China Post Group	258	40,023	No
33	HeBei Iron & Steel Group	269	38,722	No
34	Jardine Matheson	275	37,967	No
35	China Metallurgical Group	280	37,613	Yes
36	People's Insurance Co. of China	292	36,549	No
37	Shougang Group	295	36,117	No
38	Aluminum Corp. of China	298	35,839	Yes
39	China National Aviation Fuel Group	318	34,352	Yes
40	Wuhan Iron & Steel	321	34,260	Yes
41	Bank of Communications	326	33,872	No
42	Jizhong Energy Group	330	33,661	No
43	China United Network Communications	333	33,336	Yes
44	China Guodian	341	32,580	Yes
45	Jiangsu Shagang Group	346	32,097	No
46	China Railway Materials	349	31,991	Yes
47	Huawei Investment & Holding	351	31,543	No
48	Hutchison Whampoa	362	30,023	No
49	China National Building Materials Group	365	30,022	Yes
50	Sinomach	367	29,846	Yes

**Addendum 2: Chinese Companies in the Fortune 500 and Their
Membership in SASAC—Continued**

China Rank	Name	Global 500 Rank	Revenue (US\$ mn)	In SASAC
51	China Datang	369	29,603	Yes
52	Lenovo Group	370	29,574	No
53	China Ocean Shipping	384	28,797	Yes
54	Power China	390	28,289	Yes
55	COFCO	393	28,190	Yes
56	Henan Coal & Chemical	397	27,919	No
57	ChemChina	402	27,707	Yes
58	Tewoo Group	416	26,411	No
59	China Electronics	425	26,023	Yes
60	Zhejiang Materials Industry Group	426	25,833	No
61	China Huadian	433	25,270	Yes
62	China Shipbuilding Industry	434	25,145	Yes
63	Shandong Weiqiao Pioneering Group	440	24,906	No
64	Shanxi Coal Transportation & Sales Group	447	24,533	No
65	China Pacific Insurance (Group)	450	24,429	No
66	China Power Investment	451	24,400	Yes
67	Shandong Energy Group	460	24,131	No
68	Ansteel Group	462	24,089	Yes
69	Zhejiang Geely Holding Group	475	23,356	No
70	Greenland Holding Group	483	22,873	No
71	Xinxing Cathay International Group	484	22,832	No
72	Kailuan Group	490	22,519	No
73	China Merchants Bank	498	22,094	No

Source: Fortune Magazine 2012.

Addendum 3: Investment Review Frameworks Utilized by Other Countries¹⁹⁶

Australia: Australia's Foreign Investment Review Board is required to review foreign investments to determine whether or not they are "contrary to national interest," including security interests. Investments in Australia by foreign governments, or by companies that are 15 percent or more owned by a foreign government, are required to be notified to the board for review.

Canada: Under the Investment Canada Act, Canada has two foreign review procedures: (1) a "net benefit" test and (2) an "injurious to national security" test.

Net Benefit: Canada reviews transactions in order to ensure that they are likely to be of "net benefit" to Canada. All non-Canadians must file a notification when they begin a new business or acquire an existing Canadian business. However, only transactions whose asset value reaches certain monetary thresholds require a formal review. Canada updated its law in 2005 to include reviews of SOEs to ensure that the governance and commercial orientation of SOEs are considered in determining whether reviewable acquisitions by a foreign SOE are of net benefit to Canada. Canada's "net benefit" review focuses on whether the SOE will adhere to Canadian standards of corporate governance and whether the Canadian business to be invested in or acquired can continue to operate on a commercial basis post-investment, including with regard to destination of any exports, place of processing, and the participation of Canadians in the business.

National Security: For national security reviews, the law enforcement and intelligence service agencies provide necessary information and analysis, and 19 qualified government bodies participate in the review. An investment is reviewable if certain ministers consider that the investment could be injurious to national security. There is no monetary threshold for national security reviews.

China: China has a multifaceted process for reviewing all foreign mergers and acquisitions. The process is broadly administered by their Commerce ministry (MOFCOM). The standards that China uses to conduct reviews of foreign investment are vague and have resulted in a system that is not fully transparent. The Chinese political-legal system exerts a wide range of controls over foreign direct investment and can restrict or prohibit foreign investment broadly and particularly in targeted industries via an ad hoc and opaque system of laws, regulations, and policies, including via a *Catalogue for the Guidance of Foreign Investment Industries*. In 2006, China revised its foreign investment regulations to introduce a new, "national economic security" screening requirement. This mechanism considers whether the investment has or may have an influence on state security, whether it would cause the transfer of an actual right from a domestic enterprise owning a famous trademark or having a "name of long history," or whether the merger or acquisition does or may exert a serious influence on Chinese economic security.

France: There are 11 sectors of the French economy (including gambling) that require the prior approval of the French Ministry

of Economy when foreign investors seek to obtain a controlling share or a specified portion of a French company. The ministry conducts investment reviews when a non-European Community investor intends to acquire 33 percent or more, or a European Community investor intends to acquire 50 percent or more, of voting rights, shares, or de facto control in a French company. The French review considers whether the investment would be contrary to public order, public security, and/or national defense interests.

Germany: Germany reviews and restricts foreign investment in order to guarantee its “essential security” interests. The German Ministry of Economic Affairs reviews foreign investments that would result in control of more than 25 percent of a German business by an entity with 25 percent or more shares owned by a non-European Union (EU) investor. Under German law, the German government has the burden of gathering information in the first phase of the review procedure to decide whether a company should be subjected to a more in-depth, security-related investigation.

Japan: Japan’s foreign investment review, conducted by the Minister of Finance and other ministries responsible for relevant sectors, considers whether the foreign investment would impair national security, disturb the maintenance of public order, or hinder the protection of public safety in Japan.

Korea: Korea’s foreign investment review studies whether the investment would threaten the maintenance of national security and public order in Korea, have harmful effects on public hygiene or environmental preservation, or be contrary to Korean morals and customs.

Mexico: Under Mexico’s Foreign Investment Law, the National Commission on Investment conducts a review of transactions involving the acquisition of more than 49 percent of controlling rights or shares of a Mexican company by a foreign entity. The commission reviews whether the investment would be contrary to Mexican national security.

New Zealand: New Zealand’s Overseas Investment Office reviews whether a proposed investment would likely assist in maintaining New Zealand control of strategically important assets or land for transactions involving potential foreign acquisition of 25 percent, or augmentation of an already existing 25 percent, in a New Zealand asset.

Russia: In 2008, Russia passed the Federal Law on the Procedure for Facilitating Foreign Investment in Legal Entities Having Strategic Importance for National Defense and State Security, establishing the Government Commission on Monitoring Foreign Investment, headed by the prime minister, to review proposed foreign investments in “strategic companies.” Prior commission consent is required for any transaction that will result in a foreign government investor having 5 percent or more of the voting shares in a strategic company that is a subsoil user, or over 25 percent of the voting shares or other blocking rights of a strategic company that is not a subsoil user.

SECTION 3: THE EVOLVING U.S.-CHINA TRADE AND INVESTMENT RELATIONSHIP

Introduction

Despite ongoing efforts, the United States continues to face a host of challenges in its economic relationship with China, including the ever-widening bilateral trade deficit. The year 2011 marked the 28th straight year in which the United States has held a trade deficit with China. The deficit in trade in goods reached \$295.4 billion, setting an annual record and exceeding the U.S. deficit with any other nation while accounting for nearly half of the total 2011 U.S. trade deficit in goods with all global trading partners (\$737.1 billion).^{197,198} The U.S. trade deficit in goods with China now stands at more than triple what it was when China joined the World Trade Organization (WTO) in late 2001 (\$83 billion).¹⁹⁹

The U.S.-China economic relationship is affected by a variety of Chinese institutions and practices, including China's state-directed financial system and export-promoting industrial policies. China's overall economic strategy includes subsidies for certain domestic industries; market barriers to various U.S. exports; export restraints on global industrial inputs such as rare earth minerals; the undervaluation of China's currency; discriminatory industrial policies that favor Chinese companies over foreign exporters and investors; a cavalier attitude toward intellectual property protection of foreign goods; inadequate enforcement of the rule of law generally; and a foot-dragging approach to upholding its WTO commitments.

Such unfair Chinese practices sometimes impact U.S. interests within the Chinese market, while others extend beyond China's borders, harming U.S. commerce and innovation at home and in third countries. Speaking at the World Economic Forum in Davos, Switzerland, on January 27, Secretary of the Treasury Timothy Geithner noted that ten years after China's admission to the WTO, its practices continue "damaging" its trade partners.²⁰⁰ Indeed, unfair Chinese trade policies increasingly attract the attention of the Office of the United States Trade Representative, the Commerce Department, the Justice Department, and a number of other major U.S. federal agencies. U.S. business representatives at the Commission's June 14 hearing testified to the kinds of challenges that such Chinese practices pose for their commercial success.

Building on a discussion of challenges faced by U.S. companies, a second panel of Commission witnesses addressed bilateral investment issues, specifically the prospects and drawbacks associated with Chinese investment in the United States. They debated the potential for Chinese investment in the United States to reduce the U.S.-China trade deficit and improve Chinese adherence to global, rules-based trade and investment regimes. While some experts be-

lieve “the unfolding Chinese investment boom has the potential to spur U.S. economic growth, jobs and innovation,” the benefits of Chinese investment in the United States are in no way guaranteed.²⁰¹ For one, even as Chinese companies are increasingly investing abroad, their rate of investment in the United States lags behind their investment in other destinations. What worries prospective Chinese investors is actually the legitimate concern of U.S. policymakers over the difficulties that Chinese state-owned enterprises (SOEs) may pose for U.S. workers and businesses.²⁰² Chinese investment presents both risks and opportunities for U.S. economic interests, and U.S. policymakers face unique challenges in maximizing the benefits and guarding against the risks.

Though the trade deficit numbers underscore the relationship’s undeniable challenges, there is a growing consensus among economists and trade experts that long-standing methods of measuring bilateral trade relations do not fully account for the contemporary realities of global production chains. In practice, initial economic studies using this alternate approach suggest that the U.S. trade deficit with China may be significantly overestimated by the traditional standard measurements. These measurements, which calculate the gross values of goods flowing between two countries, may be obscuring key details. Economists who testified before the Commission on June 14 recommended the use of value-added measurements of trade but acknowledged that proper implementation and effective utilization of such new trade measurements would take time. The Commission has not endorsed any one set of methodologies but has examined value-added measurements of trade as part of the debate on how to understand and manage bilateral trade in the context of globalization. Improved understanding of the U.S.-China bilateral trade balance and the forces that shape it could be beneficial to policymakers faced with managing the relationship.

However, it is important to note that many of the intractable trade disputes affecting the U.S.-China relationship are attributable to Chinese trade practices that violate international rules and norms and China’s own commitments to reform. No amount of accounting changes or improvements in the collection and analysis of trade data will compensate for China’s mercantilist industrial policies.

Case Studies in Challenges in the U.S.-China Trade Relationship

China’s Indigenous Innovation and the Challenges of Competing with Strategic National Champions

As detailed in the Commission’s 2011 Report, a key goal of China’s 12th Five-Year Plan (2011–2015) is to shift the economy into higher value-added manufacturing, particularly within seven strategic emerging industries (SEIs): New-generation information technology, high-end equipment manufacturing, advanced materials, alternative-fuel cars, energy conservation and environmental protection, alternative energy, and biotechnology.^{203,204} The Chinese government is reportedly investing \$1.5 trillion in these industries over the next five years.²⁰⁵ Industry experts estimate that China will have to spend between \$600 billion and \$2.1 trillion over the

next five years in order to achieve the SEI goals that it has articulated.²⁰⁶ “China has designated its telecom sector as a strategic industry and has spent significant resources to promote national champions with the aim of growing this industry by 35 percent per year between now and 2015.”^{207,208} As next-generation information technology is a “strategic and emerging industry” prioritized for government support, major Chinese companies in this sector benefit from a range of subsidies, tax breaks, special development funds, increased credit support, and other assistance not enjoyed by their foreign competitors.²⁰⁹

Infinera Corporation is a publicly traded U.S. optical network provider based in Sunnyvale, California, with manufacturing operations in Pennsylvania and Maryland. It provides cutting-edge optical network architecture for top telecommunications companies worldwide. Michael McCarthy, chief legal counsel for Infinera, testified to the Commission about the competitive challenges that government-backed Chinese companies like Huawei and ZTE increasingly pose for his company, not only in China but within the United States and in third-country markets.

Infinera has repeatedly faced serious, unfair competitive challenges from its Chinese rivals. China’s indigenous innovation policies to promote the development of strategic industries and national champion corporations ensure that Chinese optical network companies like Huawei and ZTE receive a host of subsidies, tax breaks, and preferential treatment to help them compete and grow at home and abroad, squeezing out even truly innovative companies like Infinera. This government backing threatens Infinera and other U.S. high-tech companies, a problem for which there are no ready, market-based solutions.

Examples of Chinese unfair competitive challenges to Infinera include a 2009 Huawei takeover of a lucrative Infinera vendor relationship with Level 3 Communications. Level 3 is a Colorado-based international communications company, ranked as one of the world’s most connected Internet Service Providers, connecting North America, Europe, Latin America, the Middle East, and Asia.²¹⁰ Business with Level 3 made up 24 percent of Infinera’s revenue in 2008.²¹¹ Though industry analysts noted that Infinera offered the clearly superior technology, they concluded that Huawei won the deal because it offered very low pricing based on a variety of preferential loans and subsidies to the state-influenced Huawei.²¹² (For more information on Chinese government subsidies, see the Commission’s *2011 Annual Report to Congress*, chap. 1, sec. 3, “Indigenous Innovation and Intellectual Property Rights.” For more information on Chinese export assistance, see the textbox “Export Assistance and the China Challenge” in this chapter.) The takeover cost Infinera an estimated \$50 million-\$75 million in annual revenue and jeopardized its continued viability, chilling its future outlook for many months.²¹³ One technology industry analyst noted at the time, “The implications for Infinera are broader than just losing out to a key rival at one of its main accounts. Infinera is regarded as having a technology advantage over its long-haul optical competitors because of its unique photonic integrated circuits (PICs): If it loses out to Huawei in this deal, that perceived advantage could be undermined.”²¹⁴

As part of these policies, the Chinese government has also effectively “closed China to non-Chinese optical vendors” like Infinera.²¹⁵ While Chinese state-owned telecom operators China Mobile, China Telecom, and China Unicom are not officially bound by the domestic preferences of China’s government procurement law, the U.S. Trade Representative reports that they are unofficially required or encouraged to purchase domestic equipment wherever possible and, in practice, that is often what they do.²¹⁶ Unofficial or not, Chinese optical vendors enjoy a monopoly on the massive procurement purchases of China’s state-owned telecom operators as a result of these high-level directives.

China includes a variety of optical network telecommunications products in its *2006 Catalogue of Chinese High-Tech Products*, its *2006 Catalogue of Chinese High-Tech Products for Export*, and on its list of encouraged projects in the *2011 Directory Catalogue on Readjustment of Industrial Structure*.²¹⁷ Mr. McCarthy noted in his testimony that “inclusion on these lists comes with a number of benefits for firms that manufacture the items, including preferential tax rates” and “low-interest loans from state-owned banks.”²¹⁸ The U.S. Trade Representative noted in its *2012 National Trade Estimate Report on Foreign Trade Barriers* that China’s Ministry of Industry and Information Technology “reportedly has still not rescinded an internal circular issued in 1998 instructing telecommunications companies to buy components and equipment from domestic sources.”²¹⁹ In 2009, the Chinese government also made a variety of optical network systems and equipment in a list of products eligible for accreditation as indigenous innovation products, and although the central government does not have a catalogue of indigenous innovation products, provincial and municipal governments have developed such catalogues for procurement and have listed optical network equipment in their catalogues.^{220,221}

Companies like Huawei and ZTE also receive direct government support in their overseas expansion efforts via the provision of low-cost financing from the Chinese government, including subsidized export credits and export credit insurance. The volume of Chinese government financing easily outstrips the capacity of other export creditors around the world. A recent report by the Information Technology and Innovation Foundation showcases a \$30 billion export buyers’ credit line extended to Chinese telecommunications giant Huawei by the government-owned China Development Bank as an example of “the sheer amount of resources China has poured into export credit financing.”²²² By contrast, the U.S. Export-Import Bank approved just \$32.7 billion in newly issued export assistance in all of fiscal year 2011 to benefit U.S. exporters. That amount was a record high for the bank.²²³

The credit line to Huawei functioned as an export buyer’s credit—“financing available to Huawei’s overseas customers to finance their purchases of equipment” from the company.^{224,225} The terms of this kind of Chinese financing are reportedly extremely favorable. For example, one European industry source reported, “Huawei arranges for a seven-year loan from China Development Bank for equipment, where for the first three years operators make no upfront payment, but the company gets paid by the bank imme-

diately.”²²⁶ Non-Chinese companies like Infinera simply cannot compete with this kind of government financing. In a June 15, 2011, speech at the Center for American Progress, Export-Import Bank Chief Executive Officer and Chairman Fred Hochberg said of Huawei:

*One of the central reasons their growth is so strong is they're backed by a \$30 billion credit line from the Chinese Development Bank. This allows Huawei to have a far lower reduced cost of capital and, importantly, offer financing to their buyers at rates and terms that are better than all their competitors around the globe. This financial model not only affects the bottom line of companies trying to compete, but also affects the bottom line of our economy. ... None of the G-7 countries provide levels of financing anywhere near those of the Chinese Development Bank.*²²⁷

Such trade distortions are undermining competition in the optical network industry and other high-tech industries globally and may also pose serious threats to innovation. Mr. McCarthy noted in his testimony to the Commission that “Huawei and ZTE are consistently rated by global telecom service providers as superior to their competitors in the optical network equipment industry in one important respect: price.”²²⁸ Yet neither firm gets top marks for other important industry metrics like technology, service and support, management tools, or research and development.²²⁹ As Mr. McCarthy put it, “The fact that the number one and number four vendors in the industry fall behind in each of these categories, and yet are able to prevail largely on price, indicates that their aggressive pricing behavior is thwarting the ability of the industry to innovate.”²³⁰

Export Assistance and the China Challenge

Export credit financing is one tool that governments use to aid domestic exporters. This financing is typically extended to exporters or to overseas customers via an export credit agency, which may be a government or a private or quasigovernment entity. Financing can take a number of forms, including direct loans at low interest rates and repayment guarantees for loans made by private banks. Financing varies according to the export credit agency. The Export-Import Bank of the United States (Ex-Im Bank) is America’s official government export credit agency, charged with “financing and promoting exports of U.S. manufactured goods and services, with the objective of contributing to the employment of U.S. workers.”²³¹ Like other major export credit agencies, the Ex-Im Bank is intended to act as an export finance gap filler. It enables “transactions that might not otherwise occur and keep[s] the U.S. competitive in world markets” by financing exports in circumstances where limited or no private financing is available.²³² The Ex-Im Bank’s financing is extended to developing country purchasers of U.S. exports and to U.S. small- and-medium-sized enterprises (SMEs) that are unable to access commercial bank funding.

Export Assistance and the China Challenge—Continued

In addition, the Ex-Im Bank uses export financing to level the playing field where foreign exporters might otherwise enjoy an unfair advantage, such as when a foreign government-controlled company is the competitor. But checking unfair advantage is no easy matter where Chinese government-controlled companies are concerned, because Chinese export credit agencies are extending financing on an order of magnitude that outstrips the lending abilities of other nations' export credit agencies. Chinese export credit financing and insurance is channeled through three organizations: the China Development Bank, China's Eximbank, and Sinosure. The Information Technology and Innovation Foundation characterizes the government of China as conducting "the most aggressive export credit financing campaign in history," noting that between 2006 and 2010, China's government issued more than \$203 billion in new export credit financing, several times more than was invested by the United States.²³³

Estimates of annual Chinese export financing dwarf the average of roughly \$20 billion that the Ex-Im Bank extended annually over the last five years. Indeed, according to the Ex-Im's *2010 Report to Congress on Export Credit Competition*, "China seems to have a team of financial institutions doing vast amounts of short-term and medium- and long-term export finance" which "in aggregate ... could well total over \$100 billion a year."²³⁴ The Ex-Im Bank concludes that "from the top down, the size, scope, and focus of [Chinese institutions providing export finance] is simply incomparable to anything within the OECD [Organization for Economic Cooperation and Development]/G-7."²³⁵

In February 2012, the United States and China agreed to "establish an international working group of major providers of export financing to make concrete progress towards a set of international guidelines ... with the goal of concluding an agreement by 2014."²³⁶ In June, Ex-Im Bank Chairman Fred Hochberg said meetings have already gotten underway and have been expanded from the initial U.S.-China bilateral discussions to include members of the current OECD agreement.²³⁷ Chairman Hochberg said the agreement is aimed at "negotiating new international rules on export credit," so that "U.S. companies are not disadvantaged when competing for sales overseas against Chinese companies backed by generous government financing."²³⁸ Asked what China's incentive is to sign up to rules that would restrict its export financing, Chairman Hochberg cited increased international pressure from the G-20 countries. But he also argued that "China is beginning to understand that it is in its own interest to adhere to such a deal, because it is financially unsustainable to continue to offer cut-rate financing."²³⁹

Joint Ventures, Intellectual Property Theft, and the Overarching Problem: China's Inadequate Rule of Law

Fellowes Inc. is a fourth-generation family business headquartered in Itasca, Illinois, and with manufacturing facilities in the

United States and abroad. It specializes in the manufacture and sale of a variety of office products. James Fellowes, chief executive officer of Fellowes Inc., testified at the Commission's June 14 hearing about his company's conflict with its former Chinese joint venture partner. Fellowes Inc. began manufacturing paper shredders in China in 1998 to serve its global customers. In 2006, it entered into a 50/50 joint venture with Shinri Machinery Company in Changzhou, China. The contract stipulated that Fellowes retained 100 percent ownership of the tools and forms and the patents necessary to the manufacturing of the shredders. According to Fellowes, in 2009, Shinri underwent a management change and, soon afterward, the new management began demanding shared ownership of Fellowes Inc.'s intellectual property as well as large price hikes. James Fellowes testified to the Commission that when Fellowes Inc. refused Shinri's demands, the Chinese joint venture partner began obstructing shipments of paper shredders in August 2010, forcing the joint venture to stop production, ultimately resulting in the joint venture's insolvency. According to Mr. Fellowes, Shinri placed security guards and trucks at the gates of the joint venture facility to prevent the entrance of Fellowes' employees, shipment of goods, or transfer of Fellowes-owned assets; "expelled Fellowes-appointed management personnel from the facility," and "illegally detained Fellowes' injection molding tools."²⁴⁰ Mr. Fellowes testified that he traveled to Changzhou immediately after the forced factory closure and met with local officials. "They sympathized with [Fellowes'] plight, but were either unable or unwilling to force [Fellowes'] Chinese partner to open the factory or facilitate Fellowes purchasing the JV [joint venture]."²⁴¹ Mr. Fellowes went on to say:

Fellowes [Inc.] objected to Shinri's physical control of the tools and finished goods in the Changzhou courts and also with local government officials and with the United States government. Fellowes offered to pay for the removal and storage of these tools and finished goods and to put them into a secure third-party location. The Changzhou court refused to take any action other than imposing a preservation order on the assets. Though Fellowes filed a suit at the Changzhou Intermediate Court to recover its tools in the fall of 2010, the first hearing was not held until a year later in the fall of 2011. ... The court indicated that there would be a second hearing a few weeks later. But nothing has occurred since. All appearances indicate that this case is being slowed down by forces external to the judicial system. Nearly two years after the illegal takeover of our joint venture facility, Fellowes' tools remain in the physical control of Zhou Licheng, the former joint venture partner who attempted to hijack our business and now competes with us. ... In summary, Fellowes has suffered damages in excess of \$100 million from the extortive criminal shutdown of its factory in Changzhou, China. Government officials did not act to protect Fellowes' property, nor its contractual rights. In the 22 months since the shutdown, Fellowes has been unable to secure the return of its 100 percent owned tools, which it needs to rebuild its business. The court has

*also permitted the sale of Fellowes' finished goods inventory to the former Chinese partner who is now our competitor. This is a clear violation of Fellowes' contractual rights and intellectual property rights.*²⁴²

Fellowes' difficulties in obtaining justice within the Chinese court system are not unique. While "China is making strides in its efforts to create a business-supportive environment characterized by predictable legal enforcement of contract rights," "effective contract enforcement remains a high concern for businesses," according to one observer of Chinese legal practices.²⁴³ A 2005 study by the Foundation for Law, Justice and Society concluded that the legal environment for doing business in China is characterized by "arbitrary and inconsistent enforcement of laws, rules and regulations [that] can be a major obstacle."²⁴⁴ The reliability of enforcement varies from one jurisdiction to the next, and "the effectiveness of the judiciary is hindered by a lack of qualified judges and other relevant professionals."²⁴⁵

These conditions remain largely the same today. Commenting on Chinese jailing of Rio Tinto executives in 2010, a *Wall Street Journal* op-ed noted, "Everyone doing business in China should be clear by now on the rules—there is no rule of law."²⁴⁶ In December 2011, the *Financial Times* noted that China has recently been developing laws "in an astonishing array of areas covering economic relations" and "at a rate that would be unthinkable in any other country" but emphasized that China's enforcement of its laws still does not keep pace with its promulgation of them.²⁴⁷ "Laws are only as good as people who obey or evade them: and evasion has long been the preferred practice in China," the article noted.²⁴⁸ In a 2012 *New York Times* op-ed, Chinese dissident lawyer Chen Guangcheng summed up, "China does not lack laws, but the rule of law."²⁴⁹ In commenting on the Chinese government's recent seizure of \$182 million in counterfeit pharmaceuticals during a crackdown on fake food and drugs, Stanley Lubman, a Chinese law expert who blogs for the *Wall Street Journal*, noted that "the persistence and extent of fraud in China, despite a near constant string of crackdowns and arrests, raises fundamental questions about cultural forces in Chinese society that limit the reach of law."²⁵⁰ Though China has promulgated more than "240 laws, 706 administrative regulations and over 8600 local regulations since August 2011," media coverage of Chinese stories spanning the gamut of civil and criminal legal issues demonstrate that instances of poor enforcement or absent enforcement of these laws are endemic, Mr. Lubman notes.²⁵¹

Cybertheft of Intellectual Property Increasing

Inadequate Chinese enforcement of intellectual property rights is a constant issue in the U.S.-China trade relationship. In some instances, the intellectual property is physically stolen, as happened to Fellowes with the loss of its manufacturing tools. Increasingly, however, the theft is accomplished electronically. The mobile application ("app") industry provides prime examples of the challenges presented by China's cybertheft. China recently surpassed the United States to become the world's largest smart phone market,

and Chinese mobile users currently comprise the world's second-largest download market, but U.S. mobile app companies are struggling to capture even a small fraction of this growing market because of rampant counterfeit problems, along with market entry barriers. Ahmed Siddiqui, a technology entrepreneur and founder of mobile application company *Go Go Mongo!*, which developed and markets an iPhone game with the same name, testified about his troubles with the Chinese app market in the Commission's June 14 hearing.

The game of *Go Go Mongo!* is an iPhone app for children that encourages them to make healthy food choices by helping a chubby monster named Mongo to "reach for cauliflower and beyond."²⁵² The app sells on iPhone's app market for 99 cents per download and has sold over 40,000 copies to date in the United States. Mr. Siddiqui explained that "the emergence of the app marketplace is a radical departure from the long-standing barriers to entry [in the software development industry], like marketing costs and publisher delays."²⁵³ The U.S. app market has grown to a \$20 billion industry since its inception in 2008 and is expected to become a \$100 billion industry in the next four years, with big implications for U.S. job creation. A recent study by the University of Maryland found that the Facebook platform for app developers alone "has created more than 182,000 jobs and generated over \$12 billion in wages and benefits," and there are numerous other app platforms in the U.S. industry. According to Mr. Siddiqui, another study identified roughly 500,000 jobs created by the app economy, and the Association for Competitive Technology, which represents 5,000 small and mid-size Internet technology firms, estimates that "the current mobile apps economy has created, saved or supplemented more than 600,000 jobs nationwide."²⁵⁴

China's mobile application market is now and will increasingly be a market of preeminent importance to mobile app makers. The Chinese app market is estimated to be worth approximately \$35 billion and has been growing by more than 800 percent annually for the last two years.²⁵⁵ But Chinese Internet piracy and counterfeiting are threatening to curtail the existing opportunities and enormous potential that this new marketplace offers to independent U.S. software developers like Mr. Siddiqui. Mr. Siddiqui described being contacted by a Chinese app marketing site that believed his game would sell well in China because it was already quite popular there. They told him that there was an entire online Chinese forum dedicated to his character, Mongo. Upon further investigation, Mr. Siddiqui discovered Chinese websites containing "hundreds of posts raving about the game, about the Mongo character, discussing game tactics, and even talking about how much they were looking forward to the next app."²⁵⁶ Unfortunately for Mr. Siddiqui, only one legal copy of his app had been sold in China. The "hundreds or maybe thousands of *Go Go Mongo!* players in [China] were almost entirely using pirated copies of the app," copies for which he earned nothing.²⁵⁷

The mobile app industry is the kind of high-end service industry that economists routinely recommend as a primary American employer, but while the growing Chinese mobile app market has the potential to create jobs for American workers skilled in this field,

Chinese intellectual property infringement and market access barriers threaten to stifle U.S. opportunities. As the Commission noted in its 2011 report, the International Intellectual Property Alliance has concluded that lax Chinese enforcement of intellectual property protections coupled with limited market access “suggest a conscious policy seeking to drive Chinese competitiveness while permitting free access to foreign content through unapproved pirate channels.”^{258,259} All members of the WTO are required to provide minimum levels of protection to the intellectual property of fellow WTO members.²⁶⁰ Though China agreed to enforce these widely recognized rules and regulations when it joined the WTO in 2001, 11 years later, it remains one of the world’s largest sources of counterfeit and pirated goods. China remains on the Office of the United States Trade Representative’s 2012 “priority watch list” of the worst enforcers of intellectual property rights. The U.S. Trade Representative notes in its 2012 report that “a wide spectrum of U.S. rights holders reports serious obstacles to effective protection and enforcement of all forms of IPR [intellectual property rights] in China, including patents, trademarks, copyrights, trade secrets, and protection of pharmaceutical test data.”²⁶¹

A 2011 International Trade Commission report, “China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy,” found that China’s intellectual property theft cost the U.S. economy \$48 billion in 2009 alone.²⁶² According to the International Trade Commission’s report, “U.S. firms in the IP [intellectual property]-intensive economy reported that an improvement in China’s IPR protection and enforcement to levels comparable to the United States’ would likely increase employment in their U.S. operations by approximately 923,000 jobs.”²⁶³ Chinese failures to crack down on intellectual property violations persist despite the government’s repeated assurances that it is getting tougher on intellectual property crime and despite a host of high-profile crackdowns in various sectors. As was noted in the Commission’s 2011 Report, this failure is not the result of a lack of regulations or laws prohibiting intellectual property theft. The laws are on the books, and periodic enforcement campaigns round up violators, but violations persist because of inconsistent enforcement, systemic corruption, and a fundamental disconnect between the laws on paper and the laws in practice. It is clear that intellectual property enforcement is not a priority for China’s leadership. Instead, the authorities treat the theft of IP as an economic development tool.

Outbound Chinese Investment

Chinese outbound foreign direct investment has grown exponentially in the last decade from a very low base.* In 2006, China’s total outbound foreign direct investment was valued at \$6 billion. By the end of 2011, total Chinese outbound foreign direct investment had reached \$365 billion.²⁶⁴ While the vast majority of China’s outbound investment is directed to developing countries, Chinese investment in developed countries including the United States

* Foreign direct investment refers to purchases of land, fixed assets, such as factories, and the controlling shares of existing companies. It does not refer to portfolio investments in bonds and equities.

has picked up since 2008. In explaining the uptick in Chinese investment abroad, Daniel Rosen and Thilo Hanemann, who study Chinese outward investments at the New York-based Rhodium Group, point to China's increasing interest in obtaining raw materials and mining operations and the need to build up trade-related infrastructure abroad, such as sales and distribution offices. In the past, Chinese firms were primarily focused on growing their businesses at home so that they could export more of their products abroad. As China's economy continues to develop and as dampened consumer demand abroad persists, Chinese firms find themselves under increasing pressure to "upgrade their technology, pursue higher levels of the value chain previously conceded to foreign firms, and augment managerial skills and staffing to remain globally competitive."²⁶⁵ Top destinations for Chinese outbound FDI stock and flows in 2010 are listed in figures 1 and 2, below. "FDI *stock* refers to the value of capital and reserves plus net indebtedness, whereas FDI *flow* refers to capital provided by or received from a foreign direct investor to an FDI enterprise."²⁶⁶

Figure 1: Top Destinations for Chinese Outbound Direct Investment, 2010

(flow; U.S. \$ millions)

	Destination	Amount
1	Hong Kong	\$38,505.21
2	British Virgin Islands	\$6,119.76
3	Cayman Islands	\$3,496.13
4	Luxembourg	\$3,207.19
5	Australia	\$1,701.70
6	Sweden	\$1,367.23
7	Canada	\$1,142.29
8	United States	\$1,308.29
9	Singapore	\$1,118.50
10	Myanmar	\$875.61
11	Thailand	\$699.87
11	Russia	\$567.72
12	Iran	\$511.00
13	Brazil	\$487.46
14	Cambodia	\$466.51
15	Turkmenistan	\$450.51
16	Germany	\$412.35

Figure 1: Top Destinations for Chinese Outbound Direct Investment, 2010—Continued

(flow; U.S. \$ millions)

	Destination	Amount
17	South Africa	\$411.17
17	Hungary	\$370.10
18	Japan	\$337.99
19	Pakistan	\$331.35
20	United Kingdom	\$330.33
	Other	\$4,593.04
	World Total	\$68,811.31

Source: MOFCOM [China's Ministry of Commerce], 2010 *Statistical Bulletin of China's Outward Foreign Direct Investment* (Beijing, China: 2011).

Figure 2: Top Destinations for Chinese Outbound Direct Investment, 2010

(stock; U.S. \$ millions)

	Destination	Amount
1	Hong Kong	\$199,055.57
2	British Virgin Islands	\$23,242.76
3	Cayman Islands	\$17,256.27
5	Australia	\$7,867.75
6	Singapore	\$6,069.10
7	Luxembourg	\$5,786.75
8	United States	\$4,873.99
9	South Africa	\$4,152.98
10	Russia	\$2,787.56
11	Canada	\$2,602.60
12	Macau	\$2,229.29
13	Pakistan	\$1,828.01
14	Kazakhstan	\$1,590.54
15	Germany	\$1,502.29
16	Sweden	\$1,479.12
17	Nigeria	\$1,210.85
18	Indonesia	\$1,150.44
19	Japan	\$1,105.63

Figure 2: Top Destinations for Chinese Outbound Direct Investment, 2010—Continued

(stock; U.S. \$ millions)

	Destination	Amount
20	Thailand	\$1,080.00
	Other	\$34,492.07
	World Total	\$317,210.59

Source: MOFCOM, *2010 Statistical Bulletin of China's Outward Foreign Direct Investment* (Beijing, China: 2011).

It should be noted that the FDI shown in both charts going to the British Virgin Islands, Cayman Islands, and Luxembourg likely moved quickly to other countries, including the United States. It is further likely that a significant but unknown amount of FDI to Hong Kong also did not ultimately remain there.

Developed countries are attractive investment destinations because they allow Chinese companies to operate close to the customers they are working harder to attract, and they “offer the assets, regulatory environment, and workforce that Chinese multinationals are looking for.”²⁶⁷ Mr. Rosen and Mr. Hanemann believe Chinese investment in developed economies will continue to grow rapidly and will represent an increasing share of Chinese outbound investment overall, which is expected to total \$1 trillion-\$2 trillion in the next decade.²⁶⁸

The Commission heard testimony from David Fagan, a partner at Covington & Burling LLP, and Nova Daly, a public policy consultant at Wiley Rein, on the near-term outlook for inbound Chinese investment in the United States and the opportunities and challenges it presents. Each witness interpreted the potential for Chinese FDI in a different way. Mr. Fagan saw Chinese investment as a positive force to create wealth and jobs in the United States. Mr. Daly was more circumspect, warning that Chinese FDI brings with it several dangers: notably, the presence of state-owned enterprises, including the Chinese military, which will compete unfairly with U.S.-based companies due to a variety of Chinese government subsidies and supports.

Mr. Fagan emphasized the benefits that increased Chinese investment offers the struggling U.S. economy, stressing that “FDI has received long-standing, bi-partisan policy backing,” because “there is an unambiguous record of FDI contributing to a stronger manufacturing base, creating higher-paying jobs, promoting investment in domestic research and development, and generating greater tax revenues.”²⁶⁹ Illustrating the direct economic benefits of foreign direct investment, Mr. Fagan cited statistics from a 2011 report by the President’s Council of Economic Advisors that highlights an array of significant benefits that FDI imparts to the U.S. economy. According to the data in the White House report, among other positive impacts, “majority-owned U.S. affiliates of foreign corporations . . . employed 5.7 million U.S. workers, accounting for 5 percent of the U.S. private workforce and 13 percent of the U.S.

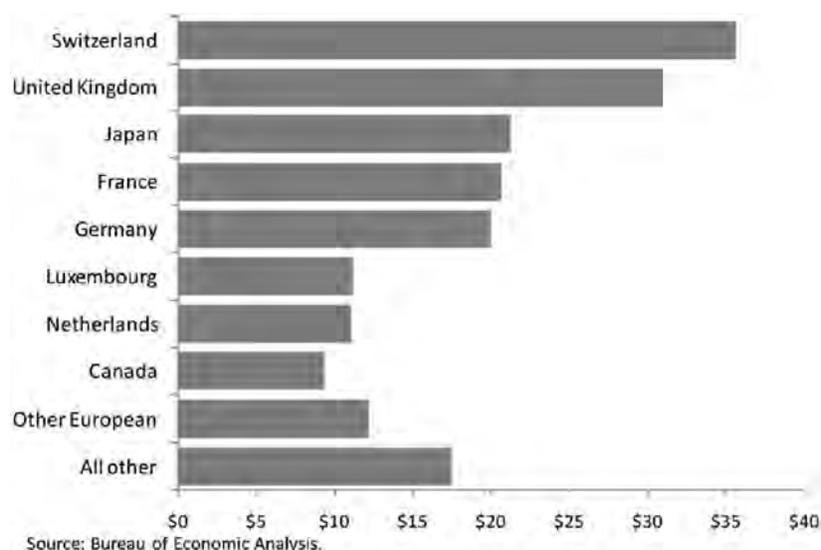
manufacturing sector and were responsible for more than 18 percent of U.S. merchandise exports.”^{270,271} In addition, Mr. Fagan stressed the ancillary benefits of FDI in the United States, citing a recent Organization for International Investment study, which claims that these investments also indirectly spurred the creation of 15.8 million jobs “in the related supply chain or associated with the spending of the employees’ paychecks.”^{272,273}

To date, however, the benefits of FDI that Mr. Fagan detailed are not significantly attributable to Chinese investment. In 2011, total FDI inflows into the United States were \$226.9 billion, of which only \$4.5 billion was attributable to China, according to the most generous estimates.²⁷⁴ Though Chinese direct investment in the United States is projected to top \$8 billion in 2012, the figure remains a small fraction of total inbound investment in the United States and is lower than 2011 figures for Europe, “where Chinese investment surged to a new record high of almost \$10 billion” in 2011.^{275,276} For Mr. Fagan, given the many documented benefits of FDI, this represents a missed opportunity that should be rectified quickly. In his June 14 testimony, Mr. Fagan detailed reasons why Chinese investment in the United States is not more significant and recommended that the United States capitalize on the growth trend in Chinese FDI to attract a larger percentage of it in the coming years. He argued that there are “immediate benefits from FDI, which the U.S. simply is not capturing in proportion to its status as the world’s largest economy and the most popular economy for investment.”²⁷⁷ With China on a path to be the source of \$1 trillion-\$2 trillion in FDI in the next decade, he said, “it is important for the U.S. economy and the relative balance of U.S.-China economic relations that the U.S. capture a larger share of the forthcoming outbound FDI from China.”²⁷⁸

Mr. Daly, however, expressed less certainty that Chinese investment will necessarily bring the same benefits that are generally associated with FDI and recommended a more measured approach over an indiscriminate welcome mat. Mr. Daly underscored growing worries expressed by U.S. industries, lawmakers, and government officials about the “potential economic distortions and national security concerns arising from [China’s] system of state-supported and state-led economic growth.”²⁷⁹ Economic concerns center on the possibility that state-backed Chinese companies choose to invest “based on strategic rather than market-based considerations,” and are free from the constraints of market forces because of generous state subsidies, such that they “may have a nearly unlimited capacity to compete.”²⁸⁰ National security concerns include U.S. government and private sector vulnerability to cyber security threats that affect “critical infrastructure and technology, commercial markets and supply chains, as well as governmental programs involving economic, military, and foreign policy objectives.”²⁸¹ The Committee on Foreign Investment in the United States (CFIUS) addresses some of these concerns as they relate to state-backed investments, by investigating questions such as whether or not the prospective investor is government controlled and whether or not it would take actions based on government policies, goals, and ob-

jectives rather than commercial considerations.* However, CFIUS's jurisdiction does not extend to "greenfield" investments, and "there are few, if any, mechanisms other than CFIUS that can address national security concerns arising from foreign investment."[†]²⁸² (For more information on cybersecurity issues, see chap. 2, sec. 2 of this Report, "China's Cyber Activities." Economic trends and issues arising from China's state-led economic model and the international activities of its state-owned enterprises are addressed in greater detail in chap. 1, sec. 2, of this Report and in the Commission's 2011 report.)²⁸³ Concerns over China's state-directed economy and the practices of its state-owned and state-controlled firms are undermining support in the United States and elsewhere for "global and domestic open investment policies," according to Mr. Daly.²⁸⁴ Figure 3 shows foreign investment into the United States by country in 2010.

Figure 3: Foreign Direct Investment into the United States by Country, 2010 (\$ in billions, historical cost basis)



Source: Bureau of Economic analysis data presented by David Payne and Fenwick Yu, *Foreign Direct Investment in the United States* (Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, Office of the Chief Economist, June 2011), p. 4.

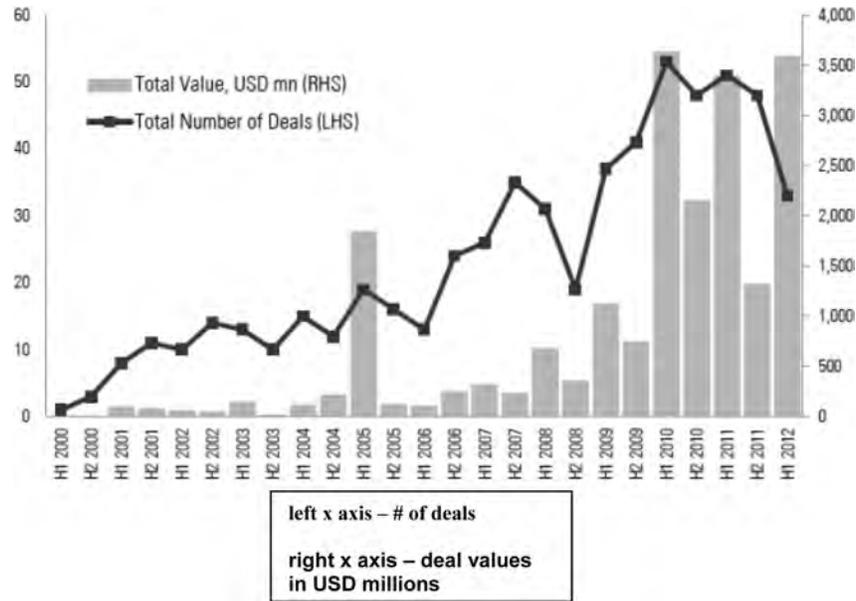
China was the fastest-growing source of FDI in the United States from 2005 to 2010.^{285,286} Chinese investment in the United States was valued at less than \$1 billion annually in 2008 but rose significantly in 2009 and 2010 and, after a slight dip in 2011, is on course to break those previous annual records in 2012. Total Chinese FDI

* CFIUS is an interagency committee that serves the President in overseeing the national security implications of foreign investment in the United States. For more information, see James K. Jackson, "The Committee on Foreign Investment in the United States (CFIUS)" (Washington, DC: Congressional Research Service, September 26, 2012).

[†] Greenfield investments involve the creation of a new company, factory, or business entity rather than the acquisition of an existing company or factory.

in the United States for the first two quarters of 2012 totaled \$3.6 billion.^{287,288} Figure 4 displays the value of Chinese investment in the United States from 2000 through 2012.

Figure 4: Chinese Direct Investment in the United States, 2000-2012, Half-year Figures



Source: Thilo Hanemann, "Chinese FDI in the United States: Q1 and Q2 2012 Update" (New York, NY: The Rhodium Group, *China Investment Monitor*, July 25, 2012). <http://rhgroup.net/notes/chinese-fdi-in-the-united-states-q1-and-q2-2012-update>.

Chinese Perceptions of the U.S. Investment Climate vs. Realities

One commonly cited theory of why the United States has failed to capture a larger share of Chinese FDI to date is Chinese fears of political discrimination, coupled with an intimidation factor posed by the allegedly complex U.S. regulatory regime.²⁸⁹ The root of these fears was political resistance to China National Offshore Oil Company's (CNOOC) failed 2005 bid for Unocal. CFIUS, which screens investments for national security risks, "has cleared the vast majority of Chinese proposals, among them acquisitions in sensitive sectors, such as power generation, shale gas development and aviation."²⁹⁰ A handful of high-profile cases have fueled People's Republic of China (PRC) claims that the United States discriminates against Chinese investors. Just last year, Beijing accused Washington of playing politics following a failed bid by Huawei Technologies Inc. to acquire U.S. technology assets of Santa Clara-based 3Leaf Systems. A Chinese Ministry of Commerce [MOFCOM] spokesperson told a press briefing that, "[a]s far as the investment activities of Chinese enterprises in the United States, it's clear that there are many cases where the U.S. is using

a security review to refuse investment by Chinese companies.”²⁹¹ More recent U.S. government actions will undoubtedly heighten such rhetoric. On September 28, President Obama issued an executive order requiring Chinese-owned Ralls Corporation to abandon a wind farm project near a military base in Oregon and divest all related assets. On October 9, a bipartisan report by the House Intelligence Committee urged U.S. companies not to use products manufactured by Chinese telecom giants Huawei Technologies Inc. and ZTE Inc., citing significant but unspecified cyber security concerns.²⁹²

In truth, despite the persistence of such negative Chinese perceptions, President Obama’s executive order marked the first time in 22 years that a president has blocked an investment on national security grounds, and to date CFIUS has blocked only a very small percentage of international investments. Fewer than 7 percent of foreign acquisitions each year go through the CFIUS examination process, and blocked acquisitions are extremely rare. From 2008 to 2010, CFIUS conducted only 313 national security reviews and sent none of those cases to the president with a recommendation to block an investment.²⁹³ In addition, as Baker Hostetler partner John Burke noted in the firm’s China-U.S. Trade Law blog, “The United States has no restrictions on Greenfield investment by foreigners, except for some state (nonfederal) laws that limit the ability of foreign persons to purchase farmland. Thus, foreigners may create new U.S. businesses on the same basis as Americans.” Mr. Burke also noted several recent examples of Chinese greenfield investment in the United States, including Tianjin Pipe’s steel pipe mill in Texas, Suntech Power’s solar panel assembly plant in Arizona, and American Yuncheng’s gravure cylinder plant in South Carolina.²⁹⁴ Indeed, even as Chinese officials decry a discriminatory U.S. investment climate, a majority of U.S. states now actively recruit Chinese investments, which are increasingly prolific and widespread. Chinese companies have made nearly 400 Greenfield investments in at least 32 states in the last 12 years and approximately 200 acquisitions in 35 states during that same time period.²⁹⁵

Even as the United States continues to maintain an open investment regime, policymakers in Washington are “struggling with legitimate questions related to Chinese investment, such as how to treat investment in telecom networks and other critical infrastructure, and the potential impact of investment by China’s state-owned enterprises on U.S. domestic competition and markets given the distorted nature of their cost structures back home.”²⁹⁶ An additional concern is China’s lack of reciprocity in terms of the market access it affords to U.S. investors. China’s *Regulations on Guiding the Direction of Foreign Investment* and its *Foreign Investment Guidance Catalogue* clearly delineate large swaths of industries in which foreign investment is either restricted or prohibited altogether. In response to Chinese complaints over CNOOC’s 2005 failed bid to acquire Unocal, one U.S. commentator noted that a U.S. company would never be permitted to purchase CNOOC. (For additional detail on some of the concerns facing U.S. policymakers, please see chap. 1, sec. 2, of this Report, “Chinese State-owned and

State-controlled Enterprise,” as well as chap. 2, sec. 2, of this Report, “China’s Cyber Activities.”)

Chinese Wind Farm Project Blocked

President Barack Obama blocked by executive order a wind farm project in Oregon by Ralls Corp., citing “credible evidence” that Ralls, and its affiliates and executives “might take action that threatens to impair the national security of the United States.”²⁹⁷ The Delaware-registered Ralls is owned by the executives of China-based Sany Group Co., parent company of Sany Heavy Industry Co., China’s largest machinery maker.²⁹⁸

Ralls was seeking to place Sany-made wind turbines in Oregon after purchasing land and other rights, but the navy objected to where the wind turbines would be built (the four locations are near or within restricted Naval Weapons Systems Training Facility airspace where the U.S. government tests drones [unmanned aerial vehicles] for use in warfare).²⁹⁹ Ralls bought the wind farm assets in March 2012 without reporting the transaction to CFIUS, but in June CFIUS contacted Ralls and asked the firm to file a voluntary petition to have its acquisition retroactively reviewed.

Upon review, CFIUS recommended that Ralls stop operations. In an unusual move Ralls chose to challenge the CFIUS determination. Because CFIUS does not have the authority to order final divestment, it made the recommendation that the President, who has final authority, issue the order.³⁰⁰ The September 28, 2012, executive order instructs Ralls to remove all property and installations from its sites within two weeks and divest all its interests in the wind farm projects within 90 days.³⁰¹

Ralls filed a lawsuit against CFIUS on September 12, 2012, for ordering it to stop all construction and operations at its projects. After the executive order was issued, Ralls added President Obama to the suit, alleging that the president was acting unconstitutionally.³⁰²

Bilateral Investment Treaty Prospects

Given the significant potential for state-backed Chinese investors to pose unique competitive challenges, Mr. Daly recommended that the United States consider preparing its market to manage Chinese investments by implementing new policies designed to address foreseeable concerns. He also suggested that the United States seek to build “stronger rules-based investment platforms” with China, particularly through negotiation of a bilateral investment treaty.³⁰³ On balance, Mr. Fagan agreed with Mr. Daly that a U.S.-China bilateral investment treaty (BIT) is an important goal for improving the bilateral trade and investment relationship, in part because it would help to increase the flow of Chinese FDI to the United States.³⁰⁴ However, Mr. Fagan expressed less concern over the potential for Chinese enterprises invested in the U.S. market to engage in anticompetitive behaviors.

The U.S. domestic regulatory regime has only begun to be tested by Chinese investments, and it remains somewhat unclear exactly what economic and regulatory challenges increased Chinese investment in the United States will raise, especially those made by Chinese state-owned and state-directed firms.

Among the policy issues that need to be examined vis-à-vis these investments is what impact a U.S.-China BIT might have. A properly constructed BIT might be a useful tool for managing these unknowns, since it could provide greater clarity for both U.S. and Chinese companies regarding how their investments are to be treated within each other's markets, and what protections they should expect, perhaps thereby helping to prevent investment disputes. A BIT could also provide a more direct means for U.S. and Chinese companies to resolve outstanding trade and investment issues through an investor-state dispute resolution mechanism.

Former National Security Council Senior Director for East Asian Affairs Jeff Bader recently noted that the model bilateral investment treaty is "probably a starting point" for talks with China, but that "the administration should look to go beyond that model in talks with China because China is such a 'special case' and requires special rules." "I think China is so sui generis that whatever is in the model is not going to be sufficient," Mr. Bader said.³⁰⁵ In adding disciplines, it would be particularly prudent for the United States to insist upon specific disciplines for SOEs in any U.S.-China bilateral investment treaty negotiation.³⁰⁶ It is also unlikely that the Chinese would agree to anything approaching the model BIT; so the issue for the U.S. administration as well as those in the business community who support a BIT negotiation is how much less than that would be an acceptable outcome. Add to that China's history of noncompliance with WTO requirements and there are significant questions about the balance of benefits that may result from a BIT. The United States has a long history of abiding by its international commitments, but there are concerns as to whether investments in the Chinese market would suffer from lax enforcement of any reciprocal commitments China may make as part of such an agreement. As of July 11, the Obama Administration had not yet decided whether to approach negotiations for a U.S.-China bilateral investment treaty by advocating for the new U.S. model bilateral investment treaty or by pressing China for additional rules aimed at regulating the investment-related behavior of its state-owned enterprises.³⁰⁷

Challenges of Value-added Measurements of Trade

Production and supply chains now routinely extend through more than one country, particularly in the manufacture of electronics, automobiles, and other complex goods requiring many components and final assembly. But traditional measurements of trade account only for the gross value of finished goods traded between two countries. A vehicle whose parts originate in seven countries and is assembled in an eighth will appear in traditional trade statistics to have originated entirely from the eighth country of final assembly. Many economists and international trade experts argue that such simplistic measurements inadequately explain and sometimes even

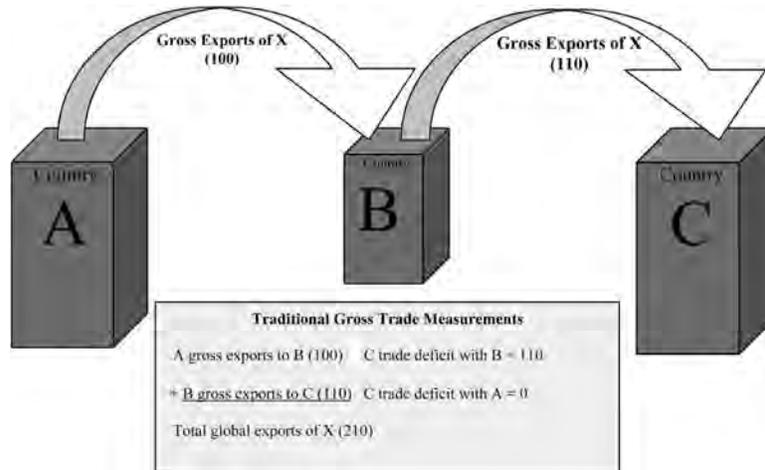
obscure critical aspects of bilateral trade relationships, including that of the United States and China. For example, a 2010 conference of the WTO noted that “[s]ince trade with input goods (components, raw materials, semi-finished goods, etc.) and input services (business services) [is] becoming increasingly important,” the “country of origin” recordings of customs authorities, which attribute the total commercial value of a product to the country in which it last underwent processing, no longer provide accurate data for assessing and understanding bilateral trade relationships.^{308,309}

Experts do not assert that traditional measurements of trade have lost their usefulness. But the WTO and the Organization for Economic Cooperation and Development (OECD) jointly warned in March 2012 that “it can be misleading . . . when one crudely relates gross flows of exports, say, with domestic value-added and national income, or its components such as profits or wages.”³¹⁰ Their contention, in other words, is that traditional measurements that attribute the total value of a good to its “country of origin” are no longer sufficient tools for measuring bilateral trade, because there often is no single country of origin in the modern production process.³¹¹ Existing approaches underlie today’s trade rules, and any changes in methodological approaches may have to be accompanied by changes in trade laws to address predatory, protectionist and illegal trade practices.

Value-added measurements of trade attribute to each country only the incremental value that each country adds to a good’s value as it moves within that country’s borders. Proponents of value-added measurements tout the exactitude of information it could provide to policymakers in their efforts to maximize economic gains and resolve problems in bilateral trade relationships. As Brandeis University economist Judith Dean explained to the Commission, value-added trade measures could “reveal how much of the value of a good originates in a particular country [and] is then exported to the next country in a chain . . . so that we have an accurate account of where that value is coming from.”³¹² (See figures 5 and 6, below).

It is important to recognize, however, that work using this analytical approach is still in its early stages. Indeed, at the Commission’s hearing, panelists provided differing estimates as to the value-added contribution of China with regard to a particular product. Comprehensive work is needed to ensure that there is a common methodology that can be applied to guide policymakers in calculating the value-added contribution of each component that is part of the supply chain for a final product.

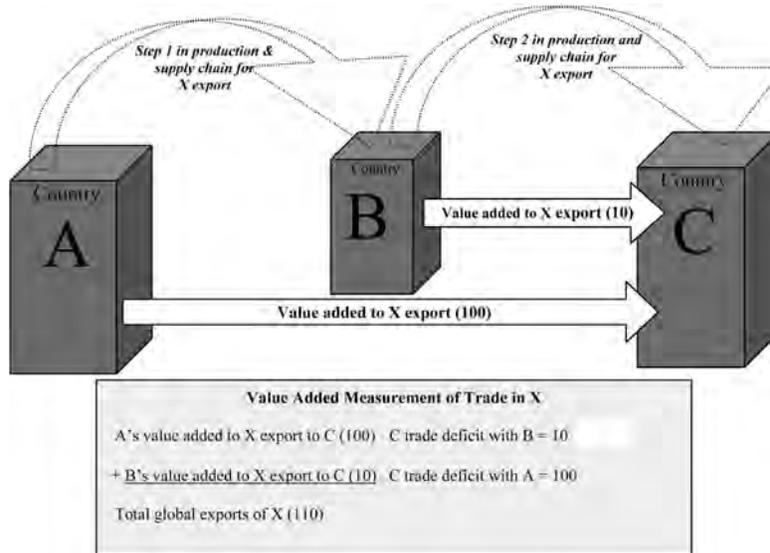
Figure 5: Traditional Gross Measurements of Trade



Country A exports goods, produced entirely within A, worth 100 to country B that further processes them before exporting them to C, where they are consumed. B adds value of 10 to the goods and so exports 110 to C. Conventional measures also show that C has a trade deficit of 110 with B and no trade at all with A, despite the fact that A is the chief beneficiary of C's consumption.

Source: OECD, "Measuring Trade in Value Added: An OECD-WTO Joint Initiative: What is Trade in Value Added?" (Paris, France: Organization for Economic Cooperation and Development, March 15, 2012). www.oecd.org/trade/valueadded.

Figure 6: Value-added Measurements of Trade



If instead we track flows in value added, C's trade deficit with B reduces to 10, and it now runs a deficit of 100 with A.

Source: OECD, "Measuring Trade in Value Added: An OECD-WTO Joint Initiative: What is Trade in Value Added?" (Paris, France: Organization for Economic Cooperation and Development, March 15, 2012). www.oecd.org/trade/valueadded.

In March 2012, in recognition of the potential benefits of value-added measurements, the OECD and the WTO “signed a letter of understanding to jointly develop statistics on trade in value added” and announced plans to “produce a publicly-available database of trade flows estimated in value-added terms.”³¹³ In April, the WTO launched the World Input Output Database, which “reveals the value-added embodied in ... goods and services as they are traded internationally.”³¹⁴ The WTO called the findings of the World Input Output Database “significant,” because “they change the perception of the competitiveness of certain sectors in some countries.”³¹⁵

Potential Implications of Value-added Measurements for Assessing and Managing the U.S.-China Trade Relationship

In a speech to a European Commission audience earlier this year, WTO Deputy Director General Alejandro Jara explained how traditional trade measurements can be deceptive:

*Gross trade statistics can ... give the impression that a Nokia smart phone imported from China is made in China, suggesting that all the jobs necessary to produce this good are Chinese jobs. But this is hugely misleading. ... Only 2 per cent of the final price refers to assembly costs, while 33 per cent of the cost relates to intermediate goods and 31 per cent are Nokia’s own value-added. Many other countries, in Europe, the United States, Japan and Korea will have added value and created jobs through design, component production, branding, marketing and a range of other services that go into the product. This reality has enormous implications for the way we think of trade impacts; from an economy-wide perspective, it is wrong to think uni-dimensionally of imports sucking jobs out of the economy and exports creating them. The picture is far more complicated than that.*³¹⁶

Various case studies of Apple iPhone and iPad products also reflect the Nokia example. When an American customer orders an iPhone from Apple’s online store, it will be shipped from a Taiwanese-owned Foxconn factory located in China.* In official U.S. trade data, the transaction will be recorded as a \$150 to \$200 Chinese export to the United States, based on its customs value rather than the retail U.S. price. While the final assembly of the iPhone takes place in a factory in China, the product is designed in Cupertino, California, and its components come from Japan, Korea, and elsewhere.³¹⁷ As services trade expert Sherry Stephenson explained in a recent paper for the World Economic Forum, “by the traditional measure of the value of the final product, the U.S. trade balance in iPhones shows a deficit of \$1.9 billion with China in 2009. But when the value-added components are taken into account, all but \$73.5 million of the trade balance in iPhones is represented by other countries in the value chain.”^{318,319}

* Foxconn, or Hon Hai Precision Industry, is a Taiwanese multinational that manufactures electronics and has significant operations in mainland China.

China's share of U.S. imports of advanced technology products (ATP) like those in the Nokia and Apple examples has "more than tripled over the past decade, up from 10 percent in 2002 to 34 percent in 2011," creating China's \$109.4 billion trade surplus in these goods.³²⁰ This has led some economists, such as Robert Scott of the Economic Policy Institute, to extrapolate that "China is moving rapidly upstream into computers and other advanced technology products, which threatens core, high-tech manufacturing industries that still remain in the United States."³²¹ However, Yingying Xu, an economist at the Manufacturer's Alliance for Productivity and Innovation, testified to the Commission that the use of value-added data indicates this trend may be less dramatic than it seems:

On the surface, it appears to suggest that the skill content of China's exports is rising and China's export structure increasingly resembles that from industrial countries. . . . The increase in the sophistication of China's exports over the past two decades largely represents foreign-invested enterprises bringing more capital- and skill-intensive processing imports into China which are then assembled for exports. Even though the final product is classified as skill-intensive when it shows up at the customs, Chinese producers could still specialize in the labor-intensive and low value-added stages in the production process, [and] therefore would not compete directly with producers in developed countries.³²²

Dr. Xu testified that China's role in global production chains usually involves the intensive but relatively unskilled labor of intermediate processing or final assembly that accounts for only half or less than half of the total value of a product. "The share of domestic content in China's overall manufactured exports is estimated to be around 50 percent," Dr. Xu said.³²³ Since traditional measurements of the U.S.-China trade balance are based on the entire value of the goods and services exchanged, China sometimes gets credited as the source of far more value than it actually adds to many exports, Dr. Xu said. "Value-added methodologies reveal that these exports frequently consist of imports that are subsequently reexported and intermediates [unfinished products] that are modestly reprocessed."³²⁴ In addition, value-added measures will sometimes show that Chinese goods contain the products of U.S. labor.

As Dr. Shang-Jin Wei testified to the Commission, the United States "tends to specialize in the upstream part of global production chains," and imports from developing countries like China tend to contain the U.S.'s own value added.³²⁵ A study that Dr. Wei conducted concludes that approximately 8 percent of U.S. recorded imports are actually U.S. value-added, meaning that increasing certain U.S. trade barriers could harm America's domestic upstream firms. Employing value-added measurements of trade might help the United States to avoid enforcement actions that inadvertently harm domestic producers.³²⁶ U.S. International Trade Commission Chief Economist and Director of the commission's Office of Economics Robert Koopman has explained that value-added measurements of trade could provide the United States with a better understanding of a host of issues, including:

*Trade's net contribution to economic growth; the impact of exchange rate revaluation on trade flows; employment impacts of trade and value chains; global effects/linkages of economic shocks; the full range of interested parties in trade disputes—including unexpected third country interests, or downstream domestic concerns in Anti Dumping/Countervailing Duty cases; the distribution of environmental impact/Green House Gas emissions resulting from trade; the true sources of sophistication in a country's exports; [and] the real size/impact of tariffs and Non Tariff Measures on trade.*³²⁷

The applications of value-added methodologies in the Nokia and Apple iPhone cases illustrate how this alternative approach would account for the contribution made by different entities in the supply chains. According to Dr. Xu, China's estimated share of domestic content is particularly low for products that are high skill-intensive, such as computers, telecom equipment, and electronic devices. The value that China adds to the high-tech manufactured goods it exports is estimated to be no more than 30 percent of the total value of those goods.³²⁸ That is 20 percent lower than the typical value that China adds to a low-tech good.

The WTO's top leadership has concluded that value-added accounting gives a more accurate picture of the U.S.-China economic relationship. Pascal Lamy, the director general of the WTO, has theorized, for example, that if trade statistics reflected true domestic content, America's trade deficit with China might be more than halved.³²⁹ But this is necessarily a very rough estimate. Extrapolations from specific case studies do not necessarily apply across all industry products and services. Witnesses at the Commission's hearing also noted the extreme difficulty of matching value-added import and export data across multiple countries and product lines in addition to other factors that make value-added accounting far from exact.

Attempted today, value-added analysis relies on imperfect data and requires certain assumptions.³³⁰ The work to develop and agree upon cost-effective data collection and methodologies for measuring value-added production costs is still in its infancy. WTO Deputy Director General Jara concedes that "[a]s often happens with statistics, new data answer old questions, but also raise new questions. We are forced to work with aggregates that conceal much detail—details that can only be appreciated by looking at product-specific supply chains."³³¹ Applying value-added measurements will also require nations to agree on thousands of categories of product lines and the methods that nations will use to collect and share data. As Dr. Wei noted in his testimony, "It won't happen overnight."³³²

A further problem in implementing value-added accounting will arise when nations attempt to adapt the new methodologies to existing rules on international trade. For example, standards for determining when producers are dumping exported goods on foreign markets—or selling at below the cost of production—are based on current trade accounting methods. Utilizing this new approach may not be consistent with the bilateral focus of existing trade laws, which focus on trade flows between the final exporter and the im-

porter of that product rather than on allowing for remedies to be applied across the supply chain to address any injury that may have occurred. For example, a review of our existing antidumping and countervailing duty laws would be required to determine whether an injured party in the United States could potentially seek a remedy against a producer in a country other than the final exporter to address an input in a final product that was sold to the exporter at a dumped price and may have caused injury. In addition, other issues, such as the massive accumulation of foreign currency reserves by China, are a function of bilateral trade flows, not dispersed supply chains. Analysis of this critical area may not be enhanced by utilizing the new methodological framework. These are all questions that merit the attention of policymakers as this debate continues.

Implications for the United States

Given the long-standing and growing significance of the Chinese trade and investment relationship for the health of the U.S. economy, the United States has an interest in gaining a more precise and detailed understanding of the trade balance and the global and domestic forces at work in shaping it. Incorporating new methodologies for collecting and measuring trade data could give policymakers a new analytical tool to examine global production chains vis-à-vis China. This could help U.S. policymakers to craft more effective policies and tools for managing the bilateral economic relationship, to the benefit of U.S. businesses and workers.

There are many factors contributing to negative trends in the bilateral relationship with China. Many of these trends are rooted in China's macroeconomic policies and its lack of progress in developing, implementing, and adhering to sound and effective rule of law. Though China continues to claim progress in developing a national legal regime, passing new laws is not meaningful without greater enforcement of existing laws. As long as Chinese enforcement efforts remain inconsistent, fair treatment for foreign businesses seeking to export to or operate in China will suffer. Intellectual property theft, contract violations, and other problems that regularly and seriously disrupt and inflict harm upon U.S. companies, U.S. workers, and the health of the U.S. economy will continue.

In addition to improved enforcement, there remains a need for China to harmonize subnational laws with central government decisions so that the People's Republic of China's commitments to the United States in meetings of the Strategic and Economic Dialogue and the Joint Commission on Commerce and Trade are honored in transactions, disputes, proceedings, and investigations on the ground.

The rise of Chinese state capitalism has been a focus of economic study, with experts differing over whether it might supplant the free market model. Most often, the discussion turns on the possibility of other developing nations perceiving China's model as more suited to their development goals, adopting China's model, and gravitating away from the market-based rules and principles represented by the WTO. Ironically, the favoritism that China pro-

vides its outbound companies may ultimately pose the greatest threat to their success in the United States and elsewhere. Because China will not play by the rules of the market system, China's state capitalism is endangering the very rules that facilitate the global investments it wants its companies to make.

The evolution of the Chinese economy to a more free market system would benefit businesses and citizens in both economies. Chinese investment in the United States may help create opportunities, but there remains ample reason for U.S. policymakers to exercise due caution in welcoming Chinese state-backed investment. It is still too early to know how the positive potential of inbound Chinese investment will stack up against challenges that that investment may pose and whether or not U.S. investment screening mechanisms and regulatory regimes are sufficient for dealing with these challenges.

Conclusions

- China's indigenous innovation policies and additional attention to certain strategic sectors identified in its 12th Five-Year Plan ensure that it will continue to provide support to national champions. For the foreseeable future, such companies will continue to be favored over foreign firms for government and state-owned enterprise procurement contracts and will continue to benefit from a range of subsidies, tax breaks, special development funds, increased credit support, and other assistance not enjoyed by their foreign competitors. These advantages continue to make Chinese national champions formidable competitors in China and in other markets globally, undermining U.S. industry innovation and success.
- Inconsistencies in central and subnational laws, practices, and enforcement efforts, particularly in the realm of intellectual property rights, continue to damage the U.S. economy as American businesses in the United States and China lose sales and jobs to competitors who do not play by the same rules and whom we have no means of persuading to address the problem.
- Foreign firms doing business in China risk the loss of their intellectual property and inventory to Chinese joint venture partners because of the lax enforcement of intellectual property rights and business contracts in China. U.S. technology companies in particular are increasingly vulnerable to Chinese intellectual property theft and resulting lost profits and market share.
- Growing Chinese investment may offer an important new source for U.S. job creation and economic growth, but it is too early to know whether the benefits will outweigh whatever longer-term economic costs Chinese state-owned and state-directed investments may bring.
- Any U.S.-China bilateral investment treaty agreement can be expected to involve a lengthy negotiation process and therefore should not be viewed as a potential near-term solution for any of the many bilateral trade and investment challenges, but the potential of such an agreement should nevertheless make it an important consideration for U.S. policymakers.

- The use of various emerging methodologies for measuring trade in value added may, in time, prove helpful to U.S. policymakers for crafting trade and economic policies that better exploit the U.S.'s strategic advantages, leveraging the U.S.-China trade relationship to the greater advantage of U.S. workers and businesses.

RECOMMENDATIONS

Chinese State-owned and State-controlled Enterprises

The Commission recommends that:

- Congress examine foreign direct investment from China to the United States and assess whether there is a need to amend the underlying statute (50 U.S.C. app 2170) for the Committee on Foreign Investment in the United States (CFIUS) to (1) require a mandatory review of all controlling transactions by Chinese state-owned and state-controlled companies investing in the United States; (2) add a net economic benefit test to the existing national security test that CFIUS administers; and (3) prohibit investment in a U.S. industry by a foreign company whose government prohibits foreign investment in that same industry.
- Congress direct the U.S. Securities and Exchange Commission (SEC) to revise its protocols for reviewing filings by foreign entities listed on or seeking to be listed on the U.S. stock exchanges. The SEC should develop country-specific data to address unique country risks to assure that U.S. investors have sufficient information to make investment decisions. The SEC should focus, in particular, on state-owned and -affiliated companies, and subsidies and pricing mechanisms that may have material bearing on the investment.
- Congress examine the access of small- and medium-sized enterprises to the remedies contained in the U.S. antidumping and countervailing duty laws. As part of this examination, Congress should consider whether to (1) grant enhanced authority to initiate antidumping and countervailing duty cases to the Senate and House Committees most responsible for international trade; and (2) include state and local governments as interested parties under the U.S. trade laws.
- Congress adopt legislation that would provide a private right of action for domestic producers who suffer injury from antidumping and countervailing duty violations from the operations of Chinese state-owned or -affiliated firms operating in the U.S. market.

The Evolving U.S.-China Trade and Investment Relationship

The Commission recommends that:

- Congress assess the ability of the Office of the United States Trade Representative to adequately investigate, develop, resolve and/or adjudicate trade complaints. As part of this assessment, Congress should evaluate the availability of, and access to, infor-

mation necessary to address unfair trade complaints; whether it is advisable to provide USTR with subpoena authority; and, if so, the nature of such authority.

- Congress direct the U.S. Department of Commerce to report annually on Chinese investment in the United States including, among other things, data on investment in the United States by Chinese SOEs and other state-affiliated entities.
- Congress direct that, in undertaking any bilateral investment treaty negotiation with China, the U.S. administration should insist upon terms that ensure reciprocity and explicitly address the unfair challenges posed by China's SOEs in all markets.
- Congress monitor efforts to measure trade in value-added, such as the OECD-WTO joint initiative, and identify the potential impacts of value added measurements on U.S. trade law.

ENDNOTES FOR CHAPTER 1

1. Aileen Wang and Nick Edwards, "China H2 Trade Outlook Severe, Inward Investment Slows," Reuters, August 16, 2012.
2. Simon Rabinovitch, "China's Growth Engine Begins to Slow," *Financial Times*, August 10, 2012.
3. Nick Edwards, "Analysis: Politics the Priority for China as Economy Slows," Reuters, August 27, 2012.
4. U.S. Department of the Treasury, *Remarks by Under Secretary on China at the Center for American Progress* (Washington, DC: U.S. Department of the Treasury Documents, July 18, 2012). <http://www.treasury.gov/press-center/press-releases/Pages/tg1643.aspx>.
5. Jamil Anderlini, "Economists Weigh a Chinese 'Hard Landing,'" *Financial Times*, August 19, 2012.
6. U.S. Census Bureau, *U.S. Trade in Goods (Imports, Exports and Balance) by Country* (Washington, DC: U.S. Department of Commerce, Foreign Trade Division, August 2012). <http://www.census.gov/foreign-trade/balance/index.html>.
7. Office of the United States Trade Representative, *China Factsheet* (Washington, DC). <http://www.ustr.gov/countries-regions/china>.
8. Based on HS (Harmonized System) classifications. International Trade Administration, *TradeStats Express* (Washington, DC: U.S. Department of Commerce). <http://tse.export.gov/TSE/TSEhome.aspx>.
9. U.S. Census Bureau, *U.S. Trade with China in Advanced Technology Products—Monthly and Cumulative Data* (Washington, DC: U.S. Department of Commerce, Foreign Trade Division, December 2011). <http://www.census.gov/foreign-trade/statistics/product/atp/2011/12/ctryatp/atp5700.html>.
10. Thilo Hanemann, "Chinese FDI in the United States: Q1 and Q2 2012 Update" (New York: Rhodium Group *China Investment Monitor*, July 25, 2012); Thilo Hanemann, "Chinese FDI in the United States: Q4 2011 Update" (New York: Rhodium Group *China Investment Monitor*, April 4, 2012).
11. U.S. Department of the Treasury, "Major Foreign Holders of Treasury Securities" (Washington, DC: October 16, 2012). <http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/mfh.txt>.
12. Wayne M. Morrison, *China-U.S. Trade Issues* (Washington, DC: Congressional Research Service, May 21, 2012).
13. Paul J. Davies, "Chinese Acquisitions in U.S. Near Record," *Financial Times*, August 22, 2012; Thilo Hanemann, "Chinese FDI in the United States: Q1 and Q2 2012 Update" (New York: Rhodium Group *China Investment Monitor*, July 25, 2012).
14. Stephen Green, "China's Rebalancing Stuck on Hold," *Wall Street Journal*, December 14, 2011.
15. *Economist Intelligence Unit*, "China Economy: Bottoming Out," July 13, 2012.
16. *Economist*, "China's Economy: The Retreat of the Monster Surplus," May 26, 2012.
17. *Economist*, "BoP Until You Drop," August 4, 2012.
18. Aileen Wang and Nick Edwards, "China H2 Trade Outlook Severe, Inward Investment Slows," Reuters, August 16, 2012.
19. Aileen Wang and Nick Edwards, "China H2 Trade Outlook Severe, Inward Investment Slows," Reuters, August 16, 2012.
20. Bettina Wassener, "Chinese Export Growth Tumbles," *New York Times*, August 10, 2012.
21. *Market News International*, "China PBOC [People's Bank of China] Sees Stable Domestic Growth, Growing Global Risks," August 2, 2012.
22. Aileen Wang and Nick Edwards, "China H2 Trade Outlook Severe, Inward Investment Slows," Reuters, August 16, 2012.
23. Ashvin Ahuja et al., *An End to China's Imbalances?* (Washington, DC: International Monetary Fund Working Paper, April 2012).
24. Nick Edwards, "Analysis: Politics the Priority for China as Economy Slows," Reuters, August 27, 2012.
25. Henny Sender, "China Struggles to Adopt New Growth Model," *Financial Times*, August 28, 2012.
26. Simon Rabinovitch, "China's Growth Engine Begins to Slow," *Financial Times*, August 10, 2012.
27. Simon Rabinovitch, "China Approves RMB1tn Infrastructure Spend," *Financial Times*, September 7, 2012.
28. Simon Rabinovitch, "China Approves RMB1tn Infrastructure Spend," *Financial Times*, September 7, 2012.

29. Jamil Anderlini, "Doubts Raised over China's Stimulus Plans," *Financial Times*, August 23, 2012.
30. Liyan Qi, "China Spends to Boost Economy," *Wall Street Journal*, August 21, 2012.
31. Liyan Qi, "China Spends to Boost Economy," *Wall Street Journal*, August 21, 2012.
32. Jamil Anderlini, "Doubts Raised over China's Stimulus Plans," *Financial Times*, August 23, 2012; Nick Edwards, "Analysis: Politics the Priority for China as Economy Slows," Reuters, August 27, 2012.
33. Nick Edwards and Xiaoyi Shao, "China Data Signals Economy May Need Urgent Policy Action," Reuters, August 10, 2012.
34. Barry Eichengreen, "The Meaning of China's Economic Slowdown," *Diplomat* (Tokyo), July 31, 2012.
35. Anna Tucker, "Exports Assistance and the China Challenge" (Washington, DC: U.S.-China Economic and Security Review Commission Staff Report, May 7, 2012).
36. International Monetary Fund, "IV. Is China Rebalancing? Implications for Asia," in *Regional Economic Outlook: Asia and Pacific* (Washington, DC: April 2012), p. 36.
37. Reuters, "Coal, Iron Ore, Steel Prices Ominous Indicators," August 1, 2012; *Wall Street Journal*, "China's 2012 Steel Output May Fall; 1st Time in 31 Years," August 6, 2012.
38. *Economist*, "BoP Until You Drop," August 4, 2012.
39. Michael Pettis, "The Economic Rebound Is Likely to Be Short," *China Financial Markets* newsletter, August 6, 2012.
40. Alex Grangos, Tom Orlik, and Lingling Wei, "In Reversal, Cash Leaks Out of China," *Wall Street Journal*, October 15, 2012.
41. Derek Scissors, "How the Party Says China's Economy Is Doing" (Washington, DC: The Heritage Foundation, July 13, 2012).
42. *Economist*, "BoP Until You Drop," August 4, 2012.
43. *Economist*, "China's Economy: The Retreat of the Monster Surplus," May 26, 2012.
44. U.S. Department of the Treasury, *Remarks by Under Secretary on China at the Center for American Progress* (Washington, DC: U.S. Department of the Treasury Documents, July 18, 2012).
45. International Monetary Fund, *People's Republic of China; 2012 Article IV Consultation* (Washington, DC: July 2012).
46. U.S. Department of the Treasury, *Report to Congress on International Economic and Exchange Rate Policies* (Washington, DC: Office of International Affairs, May 25, 2012), p. 3.
47. Lingling Wei, "Yuan Rally Erases Year of Weakness against Dollar," *Wall Street Journal*, September 20, 2012.
48. U.S. Department of the Treasury, *Remarks by Under Secretary Lael Brainard on China at the Center for American Progress* (Washington, DC: U.S. Department of the Treasury Documents, July 18, 2012). <http://www.treasury.gov/press-center/press-releases/Pages/tg1643.aspx>.
49. William R. Cline and John Williamson, "Estimates of Fundamental Equilibrium Exchange Rates" (Washington, DC: Peterson Institute for International Economics, May 2011), p. 8. <http://www.iie.com/publications/pb/pb11-05.pdf>.
50. Daniel Inman, "Yuan is Luring Bets of a Drop," *Wall Street Journal*, August 27, 2012.
51. *Wall Street Journal*, "Expect Yuan Depreciation by Year-End," August 14, 2012.
52. Tom Orlik and Bob Davis, "China's Economic Growth Slows amid Global Turmoil," *Wall Street Journal*, July 13, 2012. <http://online.wsj.com/article/SB10001424052702303740704577523202849328184.html>.
53. *Financial Times*, "Lex Column: Rebalancing Dynasty," July 14, 2012.
54. Yu Yongding, "China Can Stay the Course—For Now," *Today* (Singapore), August 7, 2012.
55. Central People's Government website, "Waishang Touzi Chanye Zhidao Mulu" (2011 revision) [in Chinese], (Catalog of Industries for Guiding Foreign Investment) (Beijing, China: December 29, 2011). The catalog was revised in response to the Central People's Government website "Guo Fa" [2010] No. 9 [in Chinese], (Certain Opinions of the State Council on Further Facilitation of the Utilization of Foreign Investment) (Beijing, China: April 6, 2010), "Guo Fa" [2010] No. 9 [in Chinese], suggesting the promulgation of an updated catalog to optimize investment structures and enlarge the open market.

56. Vinson & Elkins Practice Update, “China Amends Foreign Investment Policy: New Foreign Investment Industry Guidance Catalogue” (Austin, TX: January 13, 2012).

57. Office of the U.S. Trade Representative, “2011 U.S.-China Joint Commission on Commerce and Trade” (Washington, DC: November 2011). <http://www.ustr.gov/about-us/press-office/fact-sheets/2011/november/2011-us-china-joint-commission-commerce-and-trade-ou>.

58. U.S. Department of the Treasury, “Joint U.S.-China Economic Track Fact Sheet—Fourth Meeting of the U.S. China Strategic and Economic Dialogue (S&ED)” (Washington, DC: May 4, 2012). <http://www.treasury.gov/press-center/press-releases/Pages/tg1567.aspx>.

59. For more information on China’s “Special Campaign to Strike IPR [intellectual property rights] Infringements and Counterfeit and Shoddy Goods,” see U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 70–87.

60. U.S. Department of the Treasury, “U.S. Fact Sheet—Economic Track of the Fourth Meeting of the U.S.-China Strategic and Economic Dialogue (S&ED)” (Washington, DC: May 4, 2012). <http://www.treasury.gov/press-center/press-releases/Pages/tg1568.aspx>.

61. World Trade Organization Dispute Settlement Body, *China—Measures Related to the Exportation of Rare Earths, Tungsten and Molybdenum*, WT/DS431/1, Request for Consultations Received March 13, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds431_e.htm.

62. Office of the U.S. Trade Representative, “United States Seeks to Eliminate China’s Unfair Export Restraints on Rare Earths” (Washington, DC: June 27, 2012).

63. James T. Areddy and Chuin-wei Yap, “China Raises Rare-Earth Export Quota,” *Wall Street Journal*, August 22, 2012.

64. World Trade Organization Dispute Settlement Body, *China—Anti-Dumping and Countervailing Duties on Certain Automobiles from the United States*, WT/DS440/1, Request for Consultations Received July 5, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds440_e.htm.

65. Office of the U.S. Trade Representative, “Obama Administration Challenges China’s Unfair Imposition of Duties on American-Made Automobiles” (Washington, DC: July 5, 2012). <http://www.ustr.gov/about-us/press-office/press-releases/2012/july/obama-administration-challenges-chinas-unfair-duties-american-made-cars>.

66. World Trade Organization Dispute Settlement Body, *United States—Countervailing Duty Measures on Certain Products from China*, WT/DS437/1, Request for Consultations Received May 25, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds437_e.htm.

67. Federal Register, *Notice by the United States Trade Representative* (Washington, DC: June 22, 2012). <https://www.federalregister.gov/articles/2012/06/22/2012-15375/wto-dispute-settlement-proceeding-regarding-united-states-countervailing-duty-measures-on-certain>.

68. Office of the U.S. Trade Representative, “Obama Administration Challenges China’s Export Subsidies To Auto and Auto Parts Manufacturers in China” (Washington, DC: September 17, 2012). <http://www.ustr.gov/about-us/press-office/press-releases/2012/september/obama-administration-challenges-china-auto-subsidies>.

69. WTO, “China Files Dispute against U.S. Countervailing and Anti-Dumping Measures” (Washington, DC: September 17, 2012). http://www.wto.org/english/news_e/news12_e/ds449rfc_17sep12_e.htm; WTO Dispute Settlement Body, *United States—Countervailing and Anti-dumping Measures on Certain Products from China*, DS449, Request for consultations September 17, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds449_e.htm.

70. WTO Dispute Settlement Body, *China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products*, DS363, Request for Consultations April 10, 2007. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds363_e.htm.

71. WTO Dispute Settlement Body, *China—Anti-Dumping and Countervailing Duty Measures on Broiler Products from the United States*, WT/DS427/1, Panel Formed May 25, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds427_e.htm. The United States alleged that the process of the subsidy investigation, the countervailing duty determination at issue, the antidumping investigation, and the antidumping determination at issue are inconsistent with various provisions of the Subsidies and Countervailing Measures and Antidumping Agreements.

72. World Trade Organization Dispute Settlement Body, *United States—Measures Affecting Imports of Certain Passenger Vehicle and Light Truck Tyres from China*, WT/DS399/AB/R, Appellate Body Report Circulated September 5, 2011. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds399_e.htm.

73. World Trade Organization Dispute Settlement Body, *United States—Measures Affecting Imports of Certain Passenger Vehicle and Light Truck Tyres from China*, WT/DS399/AB/R, Appellate Body Report Circulated September 5, 2011. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds399_e.htm.

74. World Trade Organization Dispute Settlement Body, *China—Measures Related to the Exportation of Various Raw Materials*, WT/394/AB/R, Appellate Body Report Circulated January 30, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds394_e.htm.

75. World Trade Organization Dispute Settlement Body, *United States—Anti-Dumping Measures on Shrimp and Diamond Sawblades from China*, WT/422/R, Panel Report Circulated June 8, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds422_e.htm.

76. WTO Panel Report, *China—Countervailing and Anti-Dumping Duties on Grain-Oriented Flat-rolled Electrical Steel from the United States*, WT/DS414/R, Circulated June 15, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds414_e.htm.

77. World Trade Organization Dispute Settlement Body, *China—Electronic Payment Services*, WT/413/R, Panel Report Circulated July 16, 2012. http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds413_e.htm.

78. Yahoo, “China Says ‘Reservations’ Over WTO Payments Ruling,” July 17, 2012. <http://sg.news.yahoo.com/china-says-reservations-over-wto-payments-ruling-055809283—finance.html>.

79. Aipeng Soo, “Citigroup Becomes First U.S. Bank to Issue Own Card in China,” Bloomberg, August 21, 2012.

80. Executive Order, *Establishment of the Interagency Trade Enforcement Center*, 77 FR 12981 § 3a (February 28, 2012).

81. Executive Order, *Establishment of the Interagency Trade Enforcement Center*, 77 FR 12981 § 3a (February 28, 2012).

82. Ronald Kirk, “Launch of the Interagency Trade Enforcement Center” (Washington, DC: Office of the United States Trade Representative, February 28, 2012). <http://www.ustr.gov/about-us/press-office/blog/2012/february/launch-interagency-trade-enforcement-center-itec>.

83. *Inside U.S.-China Trade*, “USTR Official Outlines China Enforcement Strategy; Touts ITEC [Interagency Trade Enforcement Center] Benefits,” July 24, 2012.

84. Office of the U.S. Trade Representative, “Statement by Deputy U.S. Trade Representative Michael Punke at the World Trade Organization’s Trade Policy Review of China” (Washington, DC: June 12, 2012). <http://www.ustr.gov/about-us/press-office/speeches/transcripts/2012/june/punke-statement-tpr-china>; *Inside U.S.-China Trade*, “USTR Official Outlines China Enforcement Strategy; Touts ITEC [Interagency Trade Enforcement Center] Benefits,” July 24, 2012.

85. Office of the U.S. Trade Representative, “Statement by Deputy U.S. Trade Representative Michael Punke at the World Trade Organization’s Trade Policy Review of China” (Washington, DC: June 12, 2012). <http://www.ustr.gov/about-us/press-office/speeches/transcripts/2012/june/punke-statement-tpr-china>; *Inside U.S.-China Trade*, “USTR Official Outlines China Enforcement Strategy; Touts ITEC [Interagency Trade Enforcement Center] Benefits,” July 24, 2012.

86. *Inside U.S.-China Trade*, “USTR Official Outlines China Enforcement Strategy; Touts ITEC [Interagency Trade Enforcement Center] Benefits,” July 24, 2012.

87. Jennifer Freedman, “China Floods the WTO with Tit-for-Tat,” *Bloomberg Businessweek*, June 07, 2012. <http://www.businessweek.com/articles/2012-06-07/china-floods-the-wto-with-tit-for-tat>.

88. Yasheng Huang, *Capitalism with Chinese Characteristics: Entrepreneurship and the State* (New York: Cambridge University Press, 2008).

89. Bob Davis, “China Lifts Spending as Growth Weakens,” *Wall Street Journal*, July 10, 2012, p. 1. http://online.wsj.com/article/SB10001424052702303649504577494832812388946.html?mod=WSJ_World_LeadStory.

90. *China Trade Extra*, “U.S.-EU [European Union] Use WTO Policy Review to Critique China’s Opaque Trade Regime,” June 12, 2012. <http://chinatradeextra.com/Inside-US-China-Trade/Inside-US-China-Trade-06/13/2012/us-eu-use-wto-policy-review-to-critique-chinas-opaque-trade-regime/menu-id-616.html>.

91. Hillary Clinton, speech at the Economic Club of New York (New York City, October 14, 2011). <http://www.state.gov/secretary/rm/2011/10/175552.htm>.

92. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned Enterprises and State Capitalism in China* (Washington, DC: U.S. Government Printing Office, March 30, 2011).

93. State-Owned Assets Supervision and Administration Commission, “Main Functions and Responsibilities of SASAC” (Beijing, China:) <http://www.sasac.gov.cn/n2963340/n2963393/2965120.html>.

94. State-Owned Assets Supervision and Administration Commission (SASAC), the People's Republic of China, "China State-owned Assets Management System Reform Entering New State," May 22, 2003. <http://www.sasac.gov.cn/n2963340/n2964727/n2974401/2976097.html>. An estimate by the Brussels Institute of Contemporary China Studies placed the 2006 value at 1.2 trillion euros. [http://www.vub.ac.be/biccs/site/assets/files/apapers/Asia%20papers/Asia%20Paper%204\(6\).pdf](http://www.vub.ac.be/biccs/site/assets/files/apapers/Asia%20papers/Asia%20Paper%204(6).pdf).
95. Richard McGregor, *The Party: The Secret World of China's Communist Rulers* (New York, NY: HarperCollins Publishers, 2010), p. 69.
96. James McGregor, *No Ancient Wisdom, No Followers: The Challenges of Chinese Authoritarian Capitalism* (Westport, CT: Prospecta Press, 2012).
97. Richard McGregor, *The Party: The Secret World of China's Communist Rulers* (New York, NY: HarperCollins Publishers, 2010), p. 69.
98. Cheng Li, "China's Midterm Jockeying: Gearing Up for 2012 (Part 4: Top Leaders of Major State-owned Enterprises)," *China Leadership Monitor* 34 (2011): 21.
99. Michael Wines, "China Fortifies State Businesses to Fuel Growth," *New York Times*, August 29, 2010. <http://www.nytimes.com/2010/08/30/world/asia/30china.html>.
100. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Adam Hersh, February 15, 2012.
101. Erica Downs and Michel Meidan, "Business and Politics in China: The Oil Executive Reshuffle in 2011," *China Security* 19:3–21.
102. Unirule Institute of Economics, *The Nature, Performance, and Reform of the State-owned Enterprises* (Beijing, China: April 12, 2011).
103. Cheng Li, "China's Midterm Jockeying: Gearing Up for 2012 (Part 4: Top Leaders of Major State-Owned Enterprises)," *China Leadership Monitor* 34 (February 2011): 3.
104. Cheng Li, "China's Midterm Jockeying: Gearing Up for 2012 (Part 4: Top Leaders of Major State-Owned Enterprises)," *China Leadership Monitor* 34 (February 2011): 3.
105. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 9.
106. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 10.
107. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Adam Hersh, February 15, 2012.
108. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Adam Hersh, February 15, 2012.
109. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Adam Hersh, February 15, 2012.
110. Banks around the World; "Top Banks in the World." <http://www.relbanks.com/worlds-top-banks/assets-2011>.
111. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc, October 26, 2011), p. 52.
112. *China Daily*, "Deputy Raps SOEs' Imparity on Taxes and Jobs," March 10, 2010. http://www.chinadaily.com.cn/china/2010-03/10/content_9567711.htm.
113. U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 41.
114. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), pp. 52–53.
115. Daniel Ren, "Paying the Price in Wenzhou's Underground Banking System," *South China Morning Post* (Hong Kong), October 15, 2012. <http://www.scmp.com/business/banking-finance/article/1061186/paying-price-wenzhou-underground-banking-system>.
116. Jiang Hong, *Revised Report Abstract of the Research on SOE Reform* (Beijing, China: Unirule Institute of Economics, 2011). http://english.unirule.org.cn/Html/Events/20110704161121587_3.html.
117. *Economist*, "Of Emperors and Kings, China's State-Owned Enterprises are on the March," November 12, 2011.

118. Nicholas Lardy, *Sustaining China's Economic Growth after the Global Financial Crisis* (Washington, DC: Peterson Institute for International Economics, January 2012), p. 138.
119. Nicholas Lardy, *Sustaining China's Economic Growth after the Global Financial Crisis* (Washington, DC: Peterson Institute for International Economics, January 2012), p. 138.
120. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Paul Saulski, February 15, 2012.
121. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Derek Scissors, February 15, 2012.
122. The World Bank, "Doing Business: Economy Rankings 2011" (Washington, DC: February 10, 2012). <http://www.doingbusiness.org/rankings/>.
123. Gao XU "State-Owned Enterprises in China: How Big Are They? *World Bank Blogs*, January 19, 2010. <http://blogs.worldbank.org/eastasiapacific/state-owned-enterprises-in-china-how-big-are-they>.
124. National Bureau of Statistics, "Communiqué on Major Data of the Second National Economic Census (No. 1)" (Beijing, China: December 25, 2009). http://www.stats.gov.cn/english/newsandcomingevents/t20091225_402610168.htm.
125. U.S.-China Economic and Security Review Commission, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 1.
126. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 25.
127. Wang Lan, "China State-run Firms: Stifling Nation's Vitality; Privatizing Behemoths Could Revitalize Economy, Correct Imbalances," *Caixin* online, January 12, 2012. http://english.caixin.com/2012-0-12/100347961_all.html.
128. Xiao Geng, Xiuke Yang, and Anna Janus, *State-owned Enterprises in China, Reform Dynamics and Impacts* (New York, NY: Columbia University Press, 2009), p.155.
129. Adrian Wooldridge, "The Visible Hand; the crisis of Western liberal capitalism has coincided with the rise of a powerful new form of state capitalism in emerging markets," *Economist*, January 21, 2012. <http://www.economist.com/node/215442931>.
130. *Economist*, Special Report: State Capitalism; "SOEs are good at infrastructure projects, not so good at innovation," January 21, 2012. <http://www.economist.com/node/21542929>.
131. Adrian Wooldridge, "The Visible Hand; the crisis of Western liberal capitalism has coincided with the rise of a powerful new form of state capitalism in emerging markets," *Economist*, January 21, 2012. <http://www.economist.com/node/2154429329>.
132. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Roselyn Hsueh, February 15, 2012.
133. Barry Naughton, "China's Economic Policy Today: The New State Activism," *Eurasian Geography and Economics* 52:3 (2011): 313–329.
134. Junheng Li, "China's So-Called 'Commercial' Banks Are Anything But," *Forbes*, June 28, 2012. <http://www.forbes.com/sites/china/2012/06/28/chinas-so-called-commercial-banks-are-anything-but/>.
135. Barry Naughton, "China's Economic Policy Today: The New State Activism," *Eurasian Geography and Economics* 52: 3 (2011): 313–329.
136. James McGregor, *No Ancient Wisdom, No Followers, The Challenges of Chinese Authoritarian Capitalism* (Westport, CT: Prospecta Press, 2012) p. 4.
137. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of David F. Gordon, February 15, 2012.
138. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 88, China's Five-Year Plan and Technology Development and Transfers to China."
139. Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China" (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 57.
140. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Timothy Brightbill, February 15, 2012.

141. The World Bank, "Quarterly Update: China" (Beijing, China: World Bank Office, June 2010). http://siteresources.worldbank.org/CHINAEXTN/Resources/318949-1268688634523/Quarterly_June_2010.pdf.
142. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Timothy Brightbill, February 15, 2012.
143. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Derek Scissors, February 15, 2012.
144. Dewey & LeBoeuf LLP for the National Foreign Trade Council, "China's Promotion of the Renewable Electric Power Equipment Industry Hydro, Wind, Solar, Biomass" (New York, NY: March 2010).
145. Mark Lee and Bruce Einhorn, "Microsoft's Ballmer Says China Piracy Makes India a Better Bet," Bloomberg, May 24, 2010. <http://www.bloomberg.com/news/2010-05-24/microsoft-s-ballmer-says-software-piracy-in-china-makes-india-a-better-bet.html>; *New York Times*, "Software Pirates in China Beat Microsoft to the Punch," October 18, 2009. http://www.nytimes.com/2009/10/19/business/global/19iht-windows.html?_r=0; and Business Software Alliance, *Fourth Annual BSA and IDC Global Software Piracy Study* (Washington, DC: 2007). http://download.microsoft.com/documents/australia/publicaffairs/4thannualbsa_idcGlobalstudyfinal.pdf.
146. Business Software Alliance, *2011 Global Software Piracy Study, China* (Washington, DC: 2011). http://portal.bsa.org/globalpiracy2011/downloads/opinionsurvey/survey_china.pdf.
147. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, testimony of Timothy Brightbill, February 15, 2012.
148. James McGregor, "China's Drive for 'Indigenous Innovation': A Web of Industrial Policies" (APCO Worldwide with the U.S. Chamber of Commerce and Global IP [intellectual property] Center, 2010); Deloitte. "Changing China; Will China's Technology Standards Reshape Your Industry" (New York, NY: July 2004). http://www.deloitte.com/assets/Dcom-France/Local%20Assets/Documents/DR_ChangeChina_July2004.pdf.
149. Business Software Alliance, *2011 Global Software Piracy Study, China* (Washington, DC: March 2012). http://portal.bsa.org/globalpiracy2011/downloads/opinion_survey/survey_china.pdf.
150. *China Trade Extra*, "SolarWorld Pushes Commerce on Scope in Proceedings Against China," September 22, 2012. <http://chinatradeextra.com/Inside-US-China-Trade/Inside-US-China-Trade-08/22/2012/solarworld-pushes-commerce-on-scope-in-proceedings-against-china/menu-id-616.html>.
151. *Bridges Trade BioRes*, "Washington Announces Final Duties on Chinese Solar Cells," 12:17 (October 15, 2012). <http://ictsd.org/i/news/biores/147229/>.
152. Ryan Tracy and Cassandra Sweet, "Fueled by Cheap Chinese Panels, U.S. Solar Use Soars; Overseas Suppliers Trough U.S. Panel Makers but Installations Are Soaring," *Wall Street Journal*, September 9, 2012, <http://online.wsj.com/article/SB10000872396390443589304577637333545350176.html>.
153. Ryan Tracy and Cassandra Sweet, "Fueled by Cheap Chinese Panels, U.S. Solar Use Soars; Overseas Suppliers Trough U.S. Panel Makers but Installations Are Soaring," *Wall Street Journal*, September 9, 2012, <http://online.wsj.com/article/SB10000872396390443589304577637333545350176.html>.
154. Ryan Tracy and Cassandra Sweet, "Fueled by Cheap Chinese Panels, U.S. Solar Use Soars; Overseas Suppliers Trough U.S. Panel Makers but Installations Are Soaring," *Wall Street Journal*, September 9, 2012, <http://online.wsj.com/article/SB10000872396390443589304577637333545350176.html>.
155. Wiley Rein, LLP, "The Reform Myth: How China is Using State Power to Create the World's Dominant Steel Industry" (Washington, DC: October 2010), p. 31.
156. Wiley Rein, LLP, "The Reform Myth: How China is Using State Power to Create the World's Dominant Steel Industry" (Washington, DC: October 2010), p. 31.
157. *Caixin*, "The 12th Five Year Plan Speeds up Going Out Strategy," May 10, 2011, as quoted in James McGregor, *No Ancient Wisdom, No Followers; The Challenges of Chinese Authoritarian Capitalism* (Westport, CT: Prospecta Press, September 2011), p. 77.
158. James McGregor, *No Ancient Wisdom, No Followers; The Challenges of Chinese Authoritarian Capitalism* (Westport, CT: Prospecta Press, September 2011), p. 77.
159. Worldsteel Association, "World Steel in Figures" (Brussels, Belgium: 2012). <http://www.worldsteel.org/media-centre/press-releases/2012/wsif.html>.

160. James McGregor, *No Ancient Wisdom, No Followers; The Challenges of Chinese Authoritarian Capitalism* (Westport, CT: Prospecta Press, September 2011), p. 81.
161. Jon Huntsman Jr., “Welcoming China’s Bigger Stake in the States,” *Caixin* online, March 29, 2011. http://english.caixin.com/2011-03-29/100242276_1.html.
162. Thilo Hanneman, “Changing Patterns of Chinese Outward FDI: Drivers and Implications” (Rhodium Group presentation at Stanford Center for International Development, December 6, 2011), p. 13. iis-db.stanford.edu/evnts/6930/Hanemann_1.pdf.
163. Ministry of Commerce, *Statistical Bulletin of China’s Outward Foreign Direct Investment* (Beijing, China: September 2011). <http://hzs.mofcom.gov.cn/accessory/201109/1316069658609.pdf>.
164. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 7.
165. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Derek Scissors, February 15, 2012.
166. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Derek Scissors and David F. Gordon, February 15, 2012.
167. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of David F. Gordon, February 15, 2012.
168. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 41.
169. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 44.
170. Daniel Kruger, “China Resumed Treasury Buys in July as Trade Surplus Widened,” *Bloomberg*, September 19, 2012. <http://www.bloomberg.com/news/2012-09-18/china-resumed-buying-treasuries-in-july-as-trade-surplus-widened.html>.
171. Organization for Economic Cooperation and Development. *OECD Investment Policy Reviews: China 2008* (Paris, France: 2008), p. 91; Export-Import Bank of China, *2010 Annual Report* (Beijing, China: 2010), p. 26. <http://english.eximbank.gov.cn/annual/2010fm.shtml>.
172. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 59.
173. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 61.
174. Andrew Szamosszegi and Cole Kyle, “An Analysis of State-owned Enterprises and State Capitalism in China” (Washington, DC: Capital Trade, Inc., October 26, 2011), p. 110.
175. United States International Trade Commission, “Certain Oil Country Tubular Goods from China, Investigation Nos. 701–TA–463 and 731–TA–1159 (Preliminary) Publication 4081” (Washington, DC: June 2009), pp. IV–5. http://www.usitc.gov/publications/701_731/pub4081.pdf.
176. Alan H. Price et al., “Facing the Challenges of SOE Investment Abroad” (Washington, DC: North American Steel Trade Committee, 2011), p. 10.
177. Zhang Qi, “Nanshan Aluminum to open US plant,” *China Daily*, February 23, 2012. http://usa.chinadaily.com.cn/us/2011-05/12/content_12495827.htm.
178. Alan H. Price et al., “Facing the Challenges of SOE Investment Abroad” (Washington, DC: North American Steel Trade Committee, June 2011), pp. 9–10. <http://www.steelnet.org/new/20110627.a.pdf>.
179. Alan H. Price et al., “Facing the Challenges of SOE Investment Abroad” (Washington, DC: North American Steel Trade Committee, June 2011). <http://www.steelnet.org/new/20110627.a.pdf>.
180. Richard McGregor, *The Party: The Secret World of China’s Communist Rulers* (New York, NY: HarperCollins Publishers, 2010), p. 21.
181. Adrian Wooldridge, “The Visible Hand; The crisis of Western liberal capitalism has coincided with the rise of a powerful new form of state capitalism in emerging markets,” *Economist*, January 21, 2012). <http://www.economist.com/node/215442931>.

182. U.S.-China Business Council, "Competition with Chinese Companies (SOEs and Private)" (Washington, DC: 2011). <https://www.uschina.org/info/members-survey/chinese-company-competition.html>.
183. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Timothy C. Brightbill, February 15, 2012.
184. Wiley Rein, LLP, "The Reform Myth: How China is Using State Power to Create the World's Dominant Steel Industry" (Washington, DC: October 2010), p. 6.
185. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Timothy C. Brightbill, February 15, 2012.
186. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Elizabeth J. Drake, February 15, 2012.
187. Unpublished paper by Wiley Rein, LLP, Washington, DC. See also U.S. Government Accountability Office, "Laws and Policies Regulating Foreign Investment in 10 Countries" (Washington, DC: February 28, 2008). <http://www.gao.gov/products/GAO-08-320>.
188. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Elizabeth J. Drake, February 15, 2012.
189. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Elizabeth J. Drake, February 15, 2012.
190. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Elizabeth J. Drake, February 15, 2012.
191. Deborah A. McCarthy, "State Capitalism and Competitive Neutrality" (Washington, DC: U.S.-Asia Business Summit, APCAC 2012, March 12, 2012). <http://www.state.gov/e/eb/rls/rm/2012/181520.htm>.
192. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Timothy C. Brightbill, February 15, 2012.
193. U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-owned and State-controlled Enterprises*, written testimony of Elizabeth J. Drake, February 15, 2012.
194. Cheng Li, "China's Midterm Jockeying: Gearing Up for 2012 (Part 4: Top Leaders of Major State-Owned Enterprises)," *China Leadership Monitor* 34 (2011): 5-8.
195. <http://money.cnn.com/magazines/fortune/global500/2012/countries/China.html>.
196. Unpublished paper by Wiley Rein LLP, Washington, DC. See also U.S. Government Accountability Office, "Laws and Policies Regulating Foreign Investment in 10 Countries" (Washington, DC: February 28, 2008). <http://www.gao.gov/products/GAO-08-320>.
197. U.S. Bureau of the Census, *Top Trading Partners—Total Trade, Exports, Imports, Year-to-Date* (Washington, DC: U.S. Department of Commerce, December 2011).
198. U.S. Bureau of the Census, *U.S. Trade in Goods and Services-Balance of Payments (BOP) Basis* (Washington, DC: U.S. Department of Commerce, June 8, 2012).
199. U.S. Bureau of the Census, *Trade in Goods with China* (Washington, DC: U.S. Department of Commerce, June 8, 2012).
200. Aaron Back and Geoffrey T. Smith, "China State-led system a threat to global trading system," *Wall Street Journal*, January 27, 2012. <http://blogs.wsj.com/davos/2012/01/27/higher-taxes-on-rich-only-possible-through-broad-reform/>.
201. Daniel H. Rosen and Thilo Hanemann, "Focus: Trade and Investment: The Rise in Chinese Overseas Investment and What it Means for American Businesses," *China Business Review* (July–September 2012).
202. Daniel H. Rosen and Thilo Hanemann, "Focus: Trade and Investment: The Rise in Chinese Overseas Investment and What it Means for American Businesses," *China Business Review* (July–September 2012).
203. Stephen S. Roach, "China's Twelfth Five-Year Plan: Strategy vs. Tactics" (New York, NY: Morgan Stanley, March 21, 2011). <http://www.scribd.com/doc/51554032/Chinas-Twelve-Five-Year-Plan-032111>.
204. U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 88.
205. China.org.cn, "More Loans for Key Industries," March 7, 2011.

206. APCO Worldwide, "China's 2011 National People's Congress (NPC): Fine-tuning the economy with an eye on social stability" (Washington, DC: March 2011). http://www.apcoworldwide.com/content/PDFs/npc_briefing_2011.pdf.
207. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Michael McCarthy, June 14, 2012.
208. HSBC Global Research, *Emerging Strategic Industries: Aggressive Growth Targets, China Strategy* (October 19, 2010).
209. People's Republic of China, *Twelfth Five-Year Plan for National Economic and Social Development* (Beijing, China: March 14, 2011), chapter ten.
210. Level3.com, "About Us." <http://www.level3.com/en/about-us/>.
211. Sean Buckley, "Huawei may win Level 3 long haul biz from Infinera," *Fierce Telecom*, July 21, 2009. <http://www.fiercetelecom.com/story/huawei-may-be-lighting-level-3/2009-07-21>.
212. Sean Buckley, "Huawei may win Level 3 long haul biz from Infinera," *Fierce Telecom*, July 21, 2009. <http://www.fiercetelecom.com/story/huawei-may-be-lighting-level-3/2009-07-21>.
213. Ray Le Maistre, "Is Huawei in at Level 3?" *Light Reading*, July 29, 2009. http://www.lightreading.com/document.asp?doc_id=179384.
214. Ray Le Maistre, "Is Huawei in at Level 3?" *Light Reading*, July 29, 2009. http://www.lightreading.com/document.asp?doc_id=179384.
215. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Michael McCarthy, June 14, 2012.
216. Office of the United States Trade Representative, *2012 National Trade Estimate Report on Foreign Trade Barriers* (Washington, DC: 2012), p. 70.
217. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael McCarthy, June 14, 2012.
218. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael McCarthy, June 14, 2012.
219. Office of the United States Trade Representative, *2012 National Trade Estimate Report on Foreign Trade Barriers* (Washington, DC: 2012), p. 69.
220. People's Republic of China, *Notification Regarding the Launch of National Indigenous Innovation Product Accreditation Work for 2009* (Beijing, China: 2009), at sec. III and App. 2 (limiting eligibility to products listed in the *2006 Catalogue of New- and High-technology Products*.)
221. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Michael McCarthy, June 14, 2012.
222. Stephen J. Ezell, "Understanding the Importance of Export Credit Financing to U.S. Competitiveness" (Washington, DC: The Information Technology and Innovation Foundation, June 2011).
223. Export-Import Bank of the United States, *2011 Annual Report* (Washington, DC: December, 2011).
224. Peter Elstrom, "Huawei's \$30 billion China Credit Opens Doors in Brazil, Mexico," *Bloomberg*, April 24, 2011.
225. Huawei.com, "FAQ." <http://www.huawei.com/facts-beta/faq-1.do>.
226. Venkatesha Babu, "Running Scared of Huawei," *Livemint*, February 17, 2010. <http://www.livemint.com/2010/02/16234753/Running-scared-of-Huawei.html>.
227. Fred Hochberg, "How the U.S. Can Lead the World in Exports: Retooling Our Export Finance Strategy for the 21st Century" (Washington, DC: Center for American Progress, June 15, 2011).
228. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael McCarthy, June 14, 2012.
229. Andrew Schmitt, "Global Service Providers Identify Optical Equipment Leaders," *Infonetics Research Survey Excerpts* (2011).
230. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael McCarthy, June 14, 2012.
231. Shayerah Ilias, *Export-Import Bank: Background and Legislative Issues* (Washington, DC: Congressional Research Service, February 2011), p. 1.
232. Stephen J. Ezell, "Understanding the Importance of Export Credit Financing to U.S. Competitiveness" (Washington, DC: The Information Technology and Innovation Foundation, June 2011).

233. Stephen J. Ezell, “Understanding the Importance of Export Credit Financing to U.S. Competitiveness” (Washington, DC: The Information Technology and Innovation Foundation, June 2011).

234. Export-Import Bank of the United States, *2010 Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States* (Washington, DC: June 2011), p. 112.

235. Export-Import Bank of the United States, *2010 Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States*, (Washington, DC: June 2011), p. 112.

236. The White House, “Joint Fact Sheet on Strengthening U.S.-China Economic Relations,” February 14, 2012. <http://www.whitehouse.gov/the-press-office/2012/02/14/joint-fact-sheet-strengthening-us-china-economic-relations>.

237. *China Trade Extra*, “Ex-Im Chief: New Export Credit Framework Needed to Allow U.S. Firms to Compete” (Washington, DC: *Inside U.S. Trade*, June 26, 2012).

238. *China Trade Extra*, “Ex-Im ramps up financing for sales to China, driven by aircraft deals” (Washington, DC: *Inside U.S. Trade*, September 18, 2012).

239. *China Trade Extra*, “Ex-Im Chief: New Export Credit Framework Needed to Allow U.S. Firms to Compete” (Washington, DC: *Inside U.S. Trade*, June 26, 2012).

240. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of James Fellowes, June 14, 2012.

241. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of James Fellowes, June 14, 2012.

242. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of James Fellowes, June 14, 2012.

243. A. Selway Ryan, “How to Avoid Contract Trouble in China,” *Digital Supply Chain*, March 15, 2012.

244. The Foundation for Law, Justice and Society, “The Rule of Law: Chinese Law and Business,” A Report of the Presentations and Discussions at a Workshop Held at Rhodes House, University of Oxford (May 11–13, 2005), p. 11.

245. The Foundation for Law, Justice and Society, “The Rule of Law: Chinese Law and Business,” A Report of the Presentations and Discussions at a Workshop Held at Rhodes House, University of Oxford (May 11–13, 2005), p. 11.

246. Hugo Restall, “The Rio Tinto Case and China’s Rule of Law,” *Wall Street Journal*, March 29, 2010. <http://online.wsj.com/article/SB10001424052702304370304575151612455202950.html>.

247. Patti Waldmeir, “Rule of Law Breaks Out in China,” *Financial Times*, December 13, 2011. <http://www.ft.com/intl/cms/s/0/e12ba290-24cc-11e1-ac4b-00144feabdc0.html#axzz29Ow7P4Jh>.

248. Patti Waldmeir, “Rule of Law Breaks Out in China,” *Financial Times*, December 13, 2011. <http://www.ft.com/intl/cms/s/0/e12ba290-24cc-11e1-ac4b-00144feabdc0.html#axzz29Ow7P4Jh>.

249. Chen Guangcheng, “How China Flouts its Laws,” *New York Times*, May 29, 2012. <http://www.nytimes.com/2012/05/30/opinion/how-china-flouts-its-laws.html?smid=tw-nytimes>.

250. Stanley Lubman, “Fraud, Culture and the Law: Can China Change?” *China Real Time Report—Wall Street Journal*, August 24, 2012.

251. Stanley Lubman, “Laws on Paper vs. Law in Practice,” *China Real Time Report—Wall Street Journal*, November 21, 2011.

252. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Ahmed Siddiqui, June 14, 2012.

253. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Ahmed Siddiqui, June 14, 2012.

254. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Ahmed Siddiqui, June 14, 2012.

255. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Ahmed Siddiqui, June 14, 2012.

256. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Ahmed Siddiqui, June 14, 2012.

257. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Ahmed Siddiqui, June 14, 2012.
258. U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 83.
259. International Intellectual Property Alliance, *2011 Special 301 Report on Copyright Protection and Enforcement, People's Republic of China* (Washington, DC: February 15, 2011). <http://www.iipa.com/rbc/2011/2011SPEC301PRC.pdf>.
260. U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 81.
261. Office of the United States Trade Representative, *2012 Special 301 Report* (Washington, DC: 2012), p. 26.
262. U.S. International Trade Commission, "China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy" (Washington, DC: May 2011), p. xiv.
263. U.S. International Trade Commission, "China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy" (Washington, DC: May 2011), p. xvii.
264. *China Business Review*, "The Rise in Chinese Overseas Investment and What it Means for American Businesses" (July–September 2012).
265. *China Business Review*, "The Rise in Chinese Overseas Investment and What it Means for American Businesses" (July–September 2012).
266. Jimmy J. Zhan, "FDI Statistics, A Critical Review and Policy Implications" (Geneva, Switzerland: World Association of Investment Promotion Agencies, October 2006).
267. *China Business Review*, "The Rise in Chinese Overseas Investment and What it Means for American Businesses" (July–September 2012).
268. *China Business Review*, "The Rise in Chinese Overseas Investment and What it Means for American Businesses" (July–September 2012).
269. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.
270. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.
271. Executive Office of the President, *U.S. Inbound Foreign Direct Investment* (Washington, DC: Council of Economic Advisers, 2011) http://www.whitehouse.gov/sites/default/files/microsites/cea_fdi_report.pdf.
272. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.
273. Organization for International Investment, *Chain Reaction: Global Investment Works for America* (Washington, DC: May 2012). http://www.ofii.org/docs/OFII_CHAINREACTION_REPORT.pdf.
274. Bureau of Economic Analysis, "Foreign Direct Investment in the United States, Balance of Payments and Direct Investment Position Data" (Washington, DC: U.S. Department of Commerce, 2012). www.bea.gov. Thilo Hanemann, "Chinese FDI in the United States: Q4 2011 Update" (New York, NY: The Rhodium Group, April 4, 2012). <http://rhgroup.net/notes/chinese-fdi-in-the-united-states-q4-2011-update>.
275. Thilo Hanemann, "Chinese FDI in the United States: Q4 2011 Update" (New York, NY: The Rhodium Group, April 4, 2012). <http://rhgroup.net/notes/chinese-fdi-in-the-united-states-q4-2011-update>.
276. *Economic Times*, "Chinese FDI in US Set to Touch Record High this Year," July 30, 2012. <http://articles.economictimes.indiatimes.com/2012-07-30/news/32942497-1-chinese-fdi-chinese-investment-china-s-fdi>.
277. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.
278. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.
279. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.
280. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.

281. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.

282. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.

283. U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011).

284. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.

285. David Payne and Fenwick Yu, *Foreign Direct Investment in the United States* (Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, Office of the Chief Economist, June 2011), p. 1.

286. Jose W. Fernandez, Remarks to the American Chamber of Commerce (Hong Kong, August 3, 2012). http://hongkong.usconsulate.gov/ushk_state_2012080301.html.

287. Thilo Hanemann, "Chinese FDI in the United States: Q1 and Q2 2012 Update" (New York, NY: The Rhodium Group, *China Investment Monitor*, July 25, 2012).

288. *Economic Times*, "Chinese FDI in US Set to Touch Record High this Year," July 30, 2012. http://articles.economictimes.indiatimes.com/2012-07-30/news/32942497_1_chinese-fdi-chinese-investment-china-s-fdi.

289. *People's Daily* online, "U.S. should not discriminate Chinese investment," May 11, 2011. <http://english.peoplesdaily.com.cn/90001/90776/90883/7375822.html>.

290. Daniel H. Rosen and Thilo Hanemann, "The Rise in Chinese Overseas Investment and What it Means for American Businesses," *China Business Review*, July, 2012. <https://www.chinabusinessreview.com/public/1207/rosen.html>.

291. Ariel Tung, "China urges more transparency in U.S. security review measures," *China Daily*, February 19, 2011.

292. Willy Lam, "U.S. intel report on Huawei, ZTE, could impact globalization of Chinese economy," *World Tribune*, October 16, 2012.

293. John J. Burke, "National Security and Chinese Investment in the United States," *China-U.S. Trade Law* (Washington, DC: Baker Hostetler, LLP, May 27, 2011). <http://www.chinaustradelawblog.com/tags/cfius/>.

294. John J. Burke, "National Security and Chinese Investment in the United States," *China-U.S. Trade Law* (Washington, DC: Baker Hostetler, LLP, May 27, 2011). <http://www.chinaustradelawblog.com/tags/cfius/>.

295. The Rhodium Group, "All States/All Industries/2000 to Q3 2012 Greenfield & Acquisitions/Any Ownership" (New York, NY: 2011). <http://rhgroup.net/interactive/china-investment-monitor>.

296. *China Business Review*, "The Rise in Chinese Overseas Investment and What it Means for American Businesses" (July–September 2012).

297. The White House, "Order Signed by the President regarding the Acquisition of Four U.S. Wind Farm Project Companies by Ralls Corporation" (Washington, DC: September 28, 2012). <http://www.whitehouse.gov/the-press-office/2012/09/28/order-signed-president-regarding-acquisition-four-us-wind-farm-project-c>.

298. Sara Forden, "Chinese-Owned Company Sues Obama Over Wind Farm Project," Bloomberg, October 2, 2012.

299. *Inside U.S.-China Trade*, "In Rare Move, Obama Unwinds Chinese Acquisition of U.S. Wind Farms," October 3, 2012.

300. *Inside U.S.-China Trade*, "In Rare Move, Obama Unwinds Chinese Acquisition of U.S. Wind Farms," October 3, 2012.

301. The White House, "Order Signed by the President regarding the Acquisition of Four U.S. Wind Farm Project Companies by Ralls Corporation" (Washington DC: September 28, 2012). <http://www.whitehouse.gov/the-press-office/2012/09/28/order-signed-president-regarding-acquisition-four-us-wind-farm-project-c>.

302. Sara Forden, "Chinese-Owned Company Sues Obama Over Wind Farm Project," Bloomberg, October 2, 2012.

303. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Nova J. Daly, June 14, 2012.

304. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of David N. Fagan, June 14, 2012.

305. *China Trade Extra*, "JCCT [Joint Commission on Commerce and Trade] Meeting this year in doubt; expert questions Romney China stance" (Washington DC: *Inside U.S. Trade*, September 26, 2012).

306. *China Trade Extra*, “China-Canada Economic Study Likely First Step to Talks on Trade Deal,” August 21, 2012.
307. *China Trade Extra*, “JCCT [Joint Commission on Commerce and Trade] Meeting this year in doubt; expert questions Romney China stance” (Washington DC: *Inside U.S. Trade*, September 26, 2012).
308. Henrick Isakson, “Value added trade statistics provides new insights on role of imports, exports, services and more,” *Made in the World* (Brussels, Belgium: World Trade Organization, June 2011). http://www.wto.org/english/res_e/statis_e/miwi_e/paper_june11_e.htm.
309. WTO, *Conference Proceedings: Globalization of Industrial Production Chains and Measurement of Trade in Value Added* (Paris, France: October 15, 2010), p. 3. http://www.wto.org/english/res_e/booksp_e/act_conf_e.pdf.
310. Joint OECD–WTO Note, “Trade in Value-Added: Concepts, Methodologies and Challenges” (Geneva, Switzerland: World Trade Organization, March 15, 2012).
311. Uri Dadush, “Broader Implications of the Growing Trade in Intermediaries,” *The Shifting Geography of Global Value Chains: Implications for Developing Countries and Trade Policy* (Geneva, Switzerland: World Economic Forum, 2012), p. 31.
312. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Judith Dean, June 14, 2012.
313. WTO, “WTO and OECD to develop statistics on trade in value added” (Geneva, Switzerland: World Economic Forum, March 15, 2012). http://www.wto.org/english/news_e/news12_e/miwi_15mar12_e.htm.
314. WTO, “New World input-output database sheds light on global value chains” (Geneva, Switzerland: April 16, 2012). http://www.wto.org/english/news_e/news12_e/miwi_16apr12_e.htm.
315. WTO, “New World input-output database sheds light on global value chains” (Geneva, Switzerland: April 16, 2012). http://www.wto.org/english/news_e/news12_e/miwi_16apr12_e.htm.
316. WTO, “DDG [Deputy Director General] Jara urges developing further trade statistics on global value chains” (Geneva, Switzerland: April 16, 2012). http://www.wto.org/english/news_e/news12_e/ddg_20apr12_e.htm.
317. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Shang-Jin Wei, June 14, 2012.
318. Sherry Stephenson, “Services and the Global Value Chain,” *The Shifting Geography of Global Value Chains, Implications for Developing Countries and Trade Policy* (Geneva, Switzerland: 2012), p. 19.
319. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Shang-Jin Wei, June 14, 2012.
320. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Yingying Xu, June 14, 2012.
321. Economic Policy Institute, “News from EPI: Growing U.S. trade deficit with China cost 2.7 million jobs between 2001 and 2011” (Washington, DC: August 23, 2012). <http://www.epi.org/press/growing-trade-deficit-china-cost-2-7-million/>.
322. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Yingying Xu, June 14, 2012.
323. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Yingying Xu, June 14, 2012.
324. Uri Dadush, “Broader Implications of the Growing Trade in Intermediaries,” *The Shifting Geography of Global Value Chains: Implications for Developing Countries and Trade Policy* (Geneva, Switzerland: World Economic Forum, 2012), p. 31.
325. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Shang-Jin Wei, June 14, 2012.
326. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, testimony of Shang-Jin Wei, June 14, 2012.
327. Robert Koopman, “The Importance of Measuring Trade in Value Added for the U.S. government and the U.S. ITC [International Trade Commission]” (Washington, DC: 2011). http://siteresources.worldbank.org/INTRANE/TTRADE/Resources/Internal-Training/287823-1256848879189/6526508-1283456658475/7370147-1308070299728/7997263-1308070338118/NOTES_Koopman.pdf.

328. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Yingying Xu, June 14, 2012.

329. WTO, "Lamy says more and more products are made in the world" (Geneva, Switzerland: October 15, 2010). www.wto.org/english/news_e/sppl_e/sppl174_e.htm.

330. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Shang-Jin Wei, June 14, 2012.

331. WTO, "DDG [Deputy Director General] Jara urges developing further trade statistics on global value chains" (Geneva, Switzerland: April 16, 2012). www.wto.org/english/news_eddg_20apr12_e.htm.

332. U.S.-China Economic and Security Review Commission. *Hearing on the Evolving U.S.-China Trade and Investment Relationship, testimony of Shang-Jin Wei, June 14, 2012.*

CHAPTER 2

CHINA'S IMPACT ON U.S. SECURITY INTERESTS

SECTION 1: MILITARY AND SECURITY YEAR IN REVIEW

Introduction

China's military continued to modernize and improve its regional force projection capability in 2012. The People's Liberation Army (PLA) tested and trained on its most advanced weapons platforms and continued development of new ones. The PLA's exercises in 2012 demonstrated a focus on naval, air, and joint force training, and the navy's international activities and areas of operation continued to expand. This section provides a broad overview of the most relevant Chinese military and security developments since the Commission's *2011 Annual Report to Congress*. It is divided into five subsections: military modernization, security developments, military exercises, the U.S.-China military-to-military relationship, and civil-military relations.

Military Modernization

Aircraft Carrier Program

China commissioned its first aircraft carrier in late September of this year. The carrier has the pennant number 16 and the name *Liaoning* in honor of its host province since its arrival to China in 2002.¹ The *Liaoning* began as a Soviet *KUZNETSOV*-class carrier that Chinese entities purchased from Ukraine in 1998.² After several years of refurbishment, the *Liaoning* had its first sea trial in mid-2011; over the course of the next year, China conducted another nine sea trials, the longest of which was a 25-day test in late July.³ The *Liaoning* will serve as a training platform to build proficiency in carrier operations until the full development of an associated air regiment,⁴ likely not until 2017 at the earliest.⁵

Beijing continues to seek to purchase and to develop equipment for the *Liaoning* in addition to its indigenous carrier program. Arresting gear, used to decelerate aircraft landing on a carrier, is one such example. Having likely faced Russian concerns regarding both security and unauthorized reproductions, China experienced difficulty acquiring this technology abroad and seems to have developed and installed indigenous substitutes.⁶ The U.S. Department of Defense noted this year that "China likely will build multiple aircraft carriers and associated support ships over the next decade," and "some components of China's first indigenously-produced car-

rier may already be under construction.”*⁷ One financial analysis indicates that construction of two potential carrier battle groups would represent approximately \$20.6 billion in investment, yielding benefits for related industries, such as equipment manufacturing, power systems, and electronic communications.⁸ In July, Wang Haiyun, a senior advisor with the China International Institute for Strategic Studies, called for Beijing to build up to five aircraft carriers in order to “avoid being subject to the blackmail of certain countries,” likely referencing the United States.⁹

China is in the early stages of developing its carrier air regiment, which is a central component of aircraft carrier operations. Photos showing a full-scale model of the ship-borne Jian-15 (J-15) fighter on the carrier’s deck and three types of air-launched missiles—likely also models—surfaced on Chinese military enthusiast websites this year.[†] With folding wings and a shortened tail, the J-15 is based on the Russian-built Sukhoi-33 (Su-33) carrier-based fighter, although much of its avionics and equipment derives from China’s land-based Jian-11B (J-11B) multirole fighter.[‡] China SignPost analysts Gabe Collins and Andrew Erickson emphasize that unlike U.S. Navy carriers, which have catapults to launch aircraft from their decks, the *Liaoning* has a ski-jump configuration that will limit the weight of aircraft taking off from it. This would impose weight constraints on the J-15’s fuel and weapons payloads, thereby also limiting the J-15’s range and mission capabilities.¹⁰

Notably, these weight constraints will also limit the type of airborne early warning aircraft that could operate aboard the *Liaoning*. Airborne early warning aircraft serve as the eyes and ears of a carrier; their ability to operate radar well above a carrier group allows them to better track and detect potential air and surface threats. Although Internet photos this year showed what appeared to be a Chinese fixed-wing airborne early warning test aircraft, analysts generally agree that the ski-jump configuration will limit China’s first carrier to helicopters for airborne early warning—most likely the Russian Kamov-31 and the Chinese Zhi-8 (Z-8) equipped to handle such a mission.¹¹

J-20 Fighter¹²

The Jian-20 (J-20), China’s next-generation fighter aircraft with stealth characteristics, continued flight testing in 2012, completing

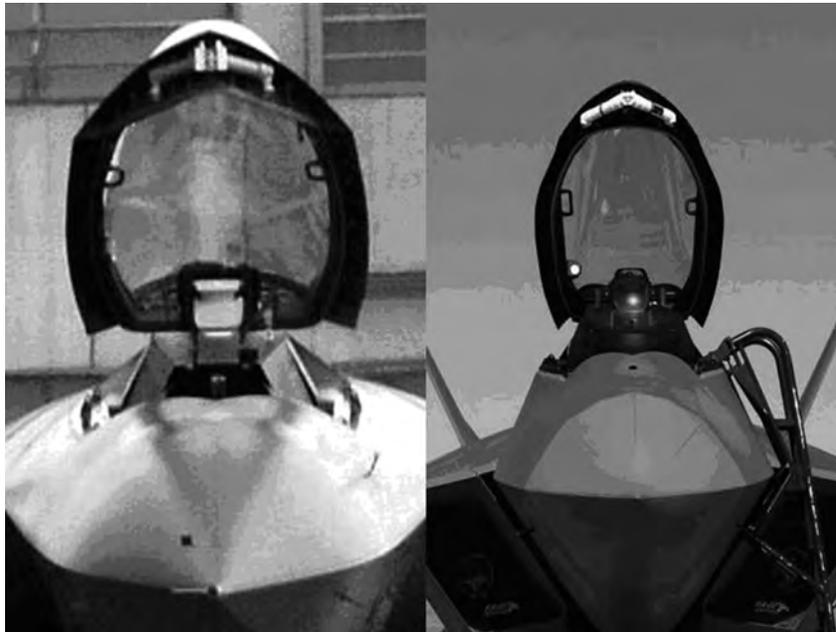
*The PLA Navy’s *LUYANG II*-class (also termed Type 052C) guided missile destroyers could be a key element of a future carrier surface group given its area air defense capability. The reported development of an update of the *LUYANG II*-class destroyer, known as the *LUYANG III*-class or Type 052D, suggests continued emphasis on area air defense capabilities in China’s surface fleet. Toshi Yoshihara and James Holmes, “The Master ‘PLAN’ [PLA Navy]: China’s New Guided Missile Destroyer,” *Diplomat* (Tokyo), September 4, 2012. <http://thediplomat.com/2012/09/04/the-master-plan-chinas-new-guided-missile-destroyer/?all=true>; Gabe Collins and Andrew Erickson, “New Destroyer a Significant Development for Chinese Sea Power,” *China Realtime*, October 8, 2012. <http://blogs.wsj.com/chinarealtime/2012/10/08/new-destroyer-a-significant-development-for-chinese-sea-power/>.

[†] Chinese military enthusiasts noted the presence of a KD-88 air-to-surface missile, and YJ-83K and YJ-91 antiship missiles. *Huangqiu Wang* (*Global Times* online) (Beijing), “Surprise Appearance of Three Types of Missiles on Our Aircraft Carrier, Exposure of Major Lethal Weapons May Be A Sign of Forthcoming Commissioning,” July 30, 2012. OSC ID: CPP20120803503003. <http://www.opensource.gov>.

[‡]The J-11B multirole fighter is itself an unlicensed adaptation of Russia’s Su-27 Flanker. FlightGlobal.com, “Russia Special Report.” <http://www.flightglobal.com/Features/russia-special/military/>.

in February its 70th such test.*¹³ According to David Helvey, acting deputy assistant secretary for East Asia at the Department of Defense, “the J-20 is still in a prototype phase” and will likely not “achieve an effective operational capability” before 2018.¹⁴ Questions concerning how the aircraft will be employed remain, and details about its capabilities have yet to be disclosed. However, according to the *Global Times*, a publication sponsored by the party-controlled *People’s Daily*, the aircraft has a combat radius of 2,000 kilometers (km) and is intended to focus on South China Sea contingencies.¹⁵ In June, photos of the J-20’s cockpit revealed striking similarities with the F-22, one of the most advanced U.S. stealth fighters (see figure 1, below), reviving concerns that human, cyber, or other forms of espionage may have played a role in the J-20’s development.†¹⁶ (For more information on Chinese cyber-related espionage, see chap. 2, sec. 2, of this Report). In May, photographs surfaced of a second J-20 prototype on its maiden flight from a Chengdu airfield.¹⁷ The photos revealed slight design modifications to the nose section and rear wheels of the aircraft.¹⁸

Figure 1: The Cockpits of the Chinese J-20 and U.S. F-22



On the left is an image of the J-20’s cockpit. The image on the right, taken from the same perspective, is of the F-22.

*The first flight test of the J-20 took place on January 11, 2011, during a visit to China by then Secretary of Defense Robert Gates.

†Unconfirmed reports over the past year discussed a separate case in which China may have acquired restricted U.S. military technology. A delegation from the Aviation Industry Corporation and the PLA’s General Staff Department and General Armaments Department reportedly entered Iran to research and reverse engineer the U.S. RQ-170, an unmanned aerial vehicle, captured in Iran on December 4, 2011. At the time of publication of this Report, there was no official U.S. statement confirming or denying these reports. ChinaDefenseMashUp.com, “Chinese Secret Delegation Enter Iran For Getting RQ-170 Drone,” August 15, 2012. <http://www.china-defense-mashup.com/chinese-secret-delegation-enter-iran-for-getting-rq-170-drone.html>.

Source: Eloise Lee and Robert Johnson, "China's J-20 and the American F-22 Raptor—You Are Not Seeing Double," *Business Insider*, June 4, 2012. <http://www.businessinsider.com/the-similarities-between-the-j-20-heads-up-display-and-that-on-the-f-22-are-striking-2012-6?op=1>.

J-31 Fighter

Photos and video emerged this year indicating the existence of another Chinese advanced fighter program, at Shenyang Aircraft Corporation. As there has been no official PLA acknowledgement of this program, details are scarce on the aircraft prototype, known as the Jian-31 (J-31).¹⁹ The plane's physical characteristics suggest an air-to-air combat focus, whereas the Chengdu Aircraft Corporation-manufactured J-20—likely a heavier, less maneuverable aircraft—may be intended to be a strike fighter.²⁰ Gary Li, an expert at the United Kingdom-based Exclusive Analysis, noted, "in traditional PLA thinking, there has always been a necessity for 'light' plus 'heavy' in terms of equipment."²¹ Both types of aircraft appear to incorporate low observable technology, which would give them the ability to better evade adversary radar.²² The concurrent development of two fighter aircraft prototypes from rival firms, both subsidiaries of state-owned Aviation Industry Corporation of China, has yielded varied speculation on the eventual missions and outcomes of the J-31. Some analysts, noting the twin nose wheels on the aircraft necessary for the hard landings on an aircraft carrier, believe the J-31 will be a carrier-based complement to the J-15; others suggest that it could be an item for export.²³

Space Program²⁴

China's space program, which operates with substantial PLA involvement, made advancements in late 2011 and 2012. In early November 2011, China's Shenzhou-8, an unmanned spacecraft, docked with the Tiangong-1, an orbital space lab.²⁵ In June 2012, China successfully docked a manned spacecraft, the Shenzhou-9, with the same module.²⁶ The only other states to have successfully executed such a docking are Russia and the United States.²⁷ This challenging maneuver is a critical skill necessary to conduct more sophisticated operations in space, including fulfilling Beijing's stated goal of establishing a permanent space station.²⁸ The knowledge and skills gained from the docking will be useful for advancing China's space-related military programs. As Lieutenant General Ronald L. Burgess Jr., U.S. Army (retired), then director of the Defense Intelligence Agency, testified to the Senate Armed Services Committee in February, China's "space program, including ostensible civil projects, supports China's growing ability to deny or degrade the space assets of potential adversaries and enhances China's conventional military capabilities."²⁹ Beijing's manned space program, he added, enhances its ability to "track and identify satellites," which is a "prerequisite for ASAT [antisatellite] attacks."* China also launched the 14th, 15th, and 16th satellites in its Beidou satellite navigation system this year. These are three of a total of 35

* China successfully conducted a direct ascent antisatellite weapon demonstration in 2007. Senate Armed Services Committee, *Hearing on Current and Future Worldwide Threats*, testimony of director of the Defense Intelligence Agency Ronald L. Burgess Jr., 112th Cong., 2nd sess., February 16, 2012.

planned satellites in the system, expected to rival the U.S. Global Positioning System when it is complete in 2020.³⁰

Ballistic Missile Program

In 2012, China made further advances in its ballistic missile forces. The first in a series of several intercontinental ballistic missile tests took place on July 24, which the press speculated to be a test of the Dong Feng-41 (DF-41), a new class of road-mobile intercontinental ballistic missile.[†]³¹ Although details remain scarce, this missile could employ a multiple, independently targeted, reentry vehicle capability, which would help a single missile threaten multiple targets and complicate missile defense, substantially improving China's nuclear deterrent.³² In mid-August, the PLA Navy flight-tested a Ju Lang-2 (JL-2) intercontinental submarine-launched ballistic missile from a *JIN*-class submarine.³³ The JL-2 program, which is not yet deployed operationally, appears to have experienced delays. However, the eventual success of this system would provide China for the first time with a credible and survivable sea-based nuclear deterrent.³⁴ A third and fourth intercontinental ballistic missile test took place on August 20 and August 30, reportedly testing an older DF-5A and a DF-31A, respectively.^{*}³⁵ Press reporting also suggested developments in China's conventional ballistic missile capability with the successful test of a DF-16 missile, which defense analysts believe is a medium-range ballistic missile that could supplement the PLA's short-range missiles targeting regional adversaries or forward-deployed U.S. forces.³⁶ Significantly, during this period of missile testing, the PLA Second Artillery Corps announced it had made a "comprehensive transformation" toward a fully mobile missile force, also emphasizing the increased inventory and precision of the Second Artillery Corps.³⁷ (For a more thorough description of these developments, see sec. 3 of this chapter, "China's Nuclear Developments.")

[†]Other sources suggested that the test was not actually a DF-41. Minnie Chan, "China Is Developing a 'Super-Missile,'" *South China Morning Post* (Hong Kong), August 24, 2012. <http://www.scmp.com/china/article/1022151/china-super-missile-confirmed>; Tian Jianwei and Liu Yang, "Widely Circulating of Reports on China Testing Most Powerful DF-41 Missile Shake Up the United States," *Huanqiu Shibao* (Beijing), August 22, 2012. OSC ID: CPP20120824702009. <http://www.opensource.gov>.

^{*}The DF-5A intercontinental ballistic missile has comprised China's primary nuclear deterrent since its deployment in 1981; the DF-31A is a newer-generation intercontinental ballistic missile that is being deployed to augment the DF-5A. See U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Cyber and Nuclear Capabilities*, testimony of Philip C. Saunders, March 26, 2012; Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists* 67:6 (November/December 2011): 82–83.

The Z-10 Attack Helicopter

In addition to fixed-wing military aircraft, China seeks to increase its inventory of military-use helicopters. One effort, the Z-10, is reportedly outfitted with a 23-mm cannon mounted under the nose and can carry antitank guided missiles, air-to-air missiles, and unguided rockets.³⁸ At an estimated 16 copies, the Z-10 program constitutes the PLA ground forces' entire attack helicopter inventory, according to the International Institute for Strategic Studies.³⁹ As with many other defense systems, China has sought to obtain foreign technology to support the program.

One incident came to light in June 2012, when Pratt & Whitney Canada (PWC), a subsidiary of United Technologies, pleaded guilty to illegally exporting to China "U.S.-origin military software" destined for the Z-10 program.⁴⁰ The software constituted a defense article requiring a U.S. export license, which PWC never sought to obtain.⁴¹ In addition to violating the U.S. Arms Export Control Act, the firm admitted to making false statements and belated disclosures in connection with these activities.⁴² As part of a settlement agreement, United Technologies's subsidiaries agreed to pay \$75 million to the U.S. Department of Justice and the U.S. Department of State.⁴³ A Chinese Defense Ministry spokesman denied the transfer, saying, "China's attack helicopters and their engines are all self-developed."⁴⁴

2012 Defense Budget

China's official 2012 defense budget, released on March 4, is \$106 billion.⁴⁵ An 11.2 percent increase from last year, the budget also marks the 21st consecutive year-on-year increase.⁴⁶ While the official figure makes China the world's second-largest defense spender after the United States, the publicly disclosed budget does not account for numerous areas like foreign procurement and nuclear forces modernization.⁴⁷ State ownership of China's defense industry complicates the task of precisely tabulating total military spending.* The Stockholm International Peace Research Institute estimates actual Chinese defense expenditures to be about 50 percent greater than the official figure; the U.S. Department of Defense estimates Chinese military-related spending to be from \$120 billion to \$180 billion.† As in years past, Chinese officials explained the growth in military spending by situating it relative to the country's economic growth and gross domestic product.⁴⁸ At a March 30 press conference, a People's Republic of China (PRC) Ministry of National Defense spokesman, Yang Yujun, also pointed out that "the budgets for education, public health, and social security and

* For a detailed account of items included in China's official defense budget figures, see Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009), p. 66-7. The U.S. Department of Defense notes, "Estimating actual PLA military expenditures is difficult because of poor accounting transparency and China's still incomplete transition from a command economy." Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 6.

† The institute writes that "estimates for Chinese military spending for recent years come to a little over 1.5 times the official defence budget for most years." SIPRI.org, "Sources and methods for SIPRI [Stockholm International Peace Research Institute] Military Expenditure Data." http://www.sipri.org/databases/milex/sources_methods.

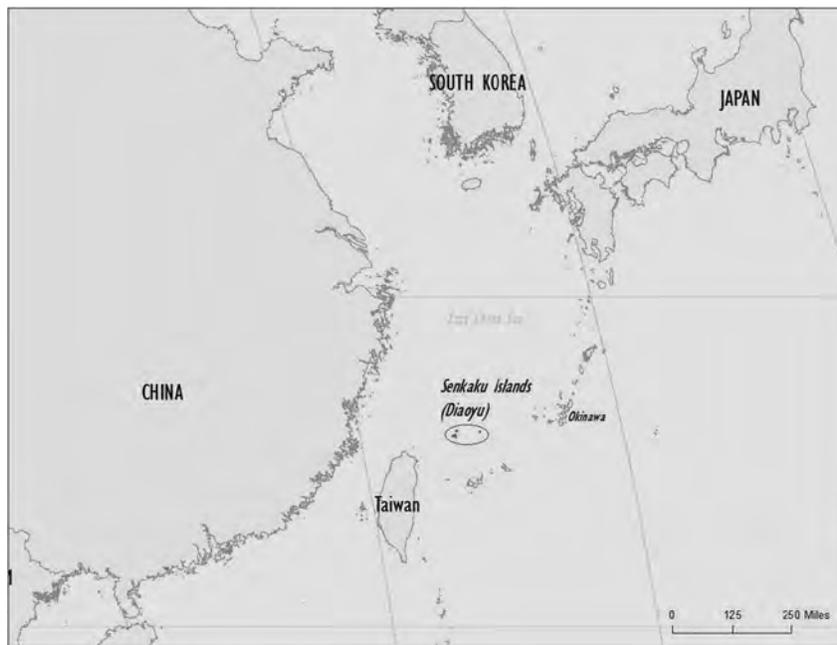
employment were increased 17.5 percent, 15.4 percent and 16.1 percent respectively [in 2012].”⁴⁹ China’s official public security budget, which includes police, state security, armed militia, courts, and jails, increased 11.5 percent this year to \$111 billion.⁵⁰ That figure slightly eclipses China’s official defense budget, a development that reportedly contributed to the idea among some Chinese senior officials that the domestic security apparatus had accumulated too much power and needed to be restricted.⁵¹

Security Developments

*The East China Sea*⁵²

In early September, the Japanese government announced its purchase of three islands in a disputed archipelago in the East China Sea for 2.05 billion yen (\$26 million) from the Japanese family who owned them. Tokyo, Beijing, and Taipei all claim the resource-rich island group, called Senkaku in Japan, Diaoyu in China, and Diaoyutai in Taiwan, in its entirety, although Japan has administered the island group since the 1970s (see figure 2 for a map, below).‡

‡Article 2 of China’s 1992 law “On the Territorial Sea and the Contiguous Zone” states, “The land territory of the People’s Republic of China includes the mainland of the People’s Republic of China and its offshore islands . . . including the Diaoyu Islands.” National People’s Congress, *Law of the People’s Republic of China on the Territorial Sea and the Contiguous Zone* (Beijing, China: February 25, 1992). http://www.fdi.gov.cn/pub/FDI_EN/Laws/GeneralLawsandRegulations/BasicLaws/P020060620318668126917.pdf. China and Taiwan’s claims to the islands, deriving from their common historical backgrounds and China’s claim over Taiwan, are nearly identical. Seokwoo Lee, *Territorial Disputes among Japan, China, and Taiwan Concerning the Senkaku Islands* (Durham, UK: Durham University International Boundaries Research Unit, 2002), p. 11.

Figure 2: East China Sea Area Map

Note: The East China Sea and surrounding area (Diaoyu/Senkaku Islands have been enlarged for detail).

Source: Mark E. Manyin, “Senkaku (Diaoyu/Diaoyutai) Islands Dispute: U.S. Treaty Obligations” (Washington, DC: Congressional Research Service, September 25, 2012). <http://www.fas.org/sgp/crs/row/R42761.pdf>.

Top Chinese leaders condemned the action as “illegal and invalid.”⁵³ PRC Foreign Minister Yang Jiechi, in his 2012 address to the United Nations (UN) General Assembly, insisted that Japan “stop all activities that violate China’s territorial sovereignty” and that the purchase of the islands “can in no way change the historical fact that Japan stole Diaoyu and its affiliated islands from China and the fact that China has territorial sovereignty over them.”⁵⁴ At a meeting in Russia, Chinese Vice President Xi Jinping called the move a “farce.”⁵⁵ A spokesman at the Ministry of Foreign Affairs in Beijing stated, “China’s will and determination to safeguard our sovereignty is unshakable.”⁵⁶

The purchase sparked widespread, sometimes violent, protests and boycotts of Japanese goods in China. The Chinese government allowed protests outside of the Japanese embassy in Beijing, and throughout the country demonstrators “smashed” Japanese cars and “ransacked” Japanese businesses, causing some to temporarily suspend operations on the mainland.⁵⁷ A Japanese diplomat said they “were the largest anti-Japanese demonstrations since 1972, when the two countries restored diplomatic ties.”⁵⁸

Following the announcement of the purchase, six China Marine Surveillance ships, tracked by the Japanese Coast Guard, entered Japanese-controlled waters surrounding the islands.⁵⁹ Upon being

requested to exit Japanese waters, the Chinese ships responded by demanding the Japanese Coast Guard ships withdraw.⁶⁰ In response, Japanese Prime Minister Yoshihiko Noda convened a meeting at his crisis management center and recalled the Japanese ambassador to Beijing.⁶¹ The following week, a total of ten China Marine Surveillance ships also returned to patrol the area around the Senkaku/Diaoyu Islands.⁶² Chinese fisheries authorities also pledged to provide safety to what Chinese media reported to be close to 2,000 fishing boats headed toward the islands.⁶³ At the end of September, the official Chinese press reported multiple Chinese ships continuing to maintain a presence around the islands, conducting what the State Oceanic Administration termed a “rights defense” patrol.⁶⁴ Japan devoted about half of its coast guard cutters to monitoring this flotilla.⁶⁵

Taiwan also took steps to underscore its sovereignty over the islands. In early September, Taiwan President Ma Ying-jeou outlined his policy approach to the East China Sea in a visit to Taiwan-administered Pengjia Islet, 61 km north of Taiwan, and 141 km west of the contested island group.⁶⁶ Later in the month, Taiwan dispatched coast guard vessels to escort several dozen fishing vessels to the disputed waters in protest of the Japanese action.⁶⁷

The move to purchase the islands was, according to the Noda government, a means to prevent the then Governor of Tokyo, Shintaro Ishihara, from not only purchasing them but also developing them, a potentially even more incendiary action he began pursuing in April.⁶⁸ The central government’s nationalization of the islands was thus intended to preclude any development and outwardly maintain the status quo. Many Chinese, however, did not find such a rationale compelling. Hu Lingyuan, deputy director of the Center for Japanese Studies at Fudan University in Shanghai, said, “Justifying the so-called nationalization as a means to keep the Diaoyu Islands situation stable is self-deception. . . . The Chinese people won’t fall for the Noda government’s lie.”⁶⁹

The islands’ status constitutes a particularly sensitive issue in Sino-Japanese relations for historical and geopolitical reasons. Many in China view Japan’s control of the archipelago as a remnant of its imperial past. The United States has nevertheless been explicit that, because the islands are Japanese administered, they fall under the U.S.-Japan mutual security agreement. In 2010, Secretary of State Hillary Clinton remarked that “the United States has never taken a position on sovereignty, but we have made it very clear that the islands are part of our mutual treaty obligations, and the obligation to defend Japan.”⁷⁰

Antipiracy Operations and Naval Diplomacy

Throughout 2012, China continued to deploy the PLA Navy to contribute to the international antipiracy mission in the Gulf of Aden and to strengthen military diplomacy efforts worldwide. China continued assisting with UN antipiracy operations, which the PLA Navy has participated in since 2009. The PLA Navy dispatched its 12th rotation of naval escorts to the Gulf of Aden this year and began to directly coordinate its activities with its Japanese and Indian counterparts.⁷¹ Following its 11th escort taskforce, the PLA Navy sent ships into the Black Sea for the first time, via

the Suez, Dardanelles, and Bosphorus straits.⁷² The guided missile destroyer *Qingdao* and the frigate *Yantai*, both part of the 11th escort taskforce, entered the Black Sea on July 31 and made port calls in Bulgaria, Romania, and Ukraine.⁷³ On August 13, along with the supply ship *Weishan Hu*, the vessels visited Israel—also a first for the PLA Navy—where they spent four days in the port city of Haifa.⁷⁴ Finally, the *Zheng He* naval training vessel embarked on a round-the-world training cruise in April. China's first such voyage was undertaken by a guided missile destroyer and a supply ship in 2002, making the *Zheng He's* cruise this year the PLA Navy's first single-ship global circumnavigation.⁷⁵ During the five-month cruise, the vessel made official visits to 11 countries and an additional three logistics port calls. It also transited the Suez and Panama canals.⁷⁶

China-India Military Developments

In 2012, China and India agreed to establish a defense hotline and resume joint military exercises, which the countries had not held for two years.*⁷⁷ The agreement took place during Chinese Defense Minister General Liang Guanglie's September 2012 visit with Indian Prime Minister Manmohan Singh and Defense Minister A.K. Antony. The visit, the first official trip to India by a Chinese defense minister since 2004, also yielded plans for future high-level official exchanges, joint maritime search-and-rescue exercises, and more robust Gulf of Aden antipiracy operations.⁷⁸ Amidst long-standing tensions over land borders between the two countries, some Indian commentators viewed General Liang's official visit warily, concerned that military motivations may be the principal driver behind China's increasing cooperative efforts with India's neighbors, such as Sri Lanka and Pakistan.†

Military Exercises

First China-Russia Joint Naval Exercise

The PLA Navy and the Russian Federation Navy held "Maritime Collaboration 2012" in the Yellow Sea from April 22 to April 27. Though China and Russia have conducted military drills bilaterally or under the auspices of the Shanghai Cooperation Organization (SCO) since 2005, Maritime Collaboration 2012 was the first naval exercise between the two nations. Chinese participation included a total of 16 surface vessels from the PLA Navy's North Sea Fleet.⁷⁹ With five missile destroyers, five missile frigates, and four missile patrol craft participating, the exercise employed roughly a third of

*The United States and China established a bilateral defense hotline in early 2008. However, according to Christopher K. Johnson, Freeman Chair in China Studies at the Center for Strategic and International Studies, it has only been utilized a "handful of times and never to test procedures in a simulated crisis." Christopher K. Johnson, "Time to Fix U.S. Military Ties with China" (Washington, DC: *Center for Strategic and International Studies Commentary*, September 20, 2012). <http://csis.org/publication/time-fix-us-military-ties-china>. Also see Euan Graham, "Maritime 'Hotlines' No Panacea for Crisis Management" (Singapore: *S. Rajaratnam School of International Studies Commentary*, September 12, 2012). <http://www.rsis.edu.sg/publications/Perspective/RSIS1702012.pdf>.

†China's purchase of a port in Pakistan and planned development for a space port and satellite monitoring base in Sri Lanka are examples of such efforts. See Minnie Chan, "India still wary of military ties with China ahead of joint drills," *South China Morning Post* (Hong Kong), September 9, 2012, <http://www.scmp.com/news/china/article/1032524/india-still-wary-military-ties-china-ahead-joint-drills>.

the North Sea Fleet's inventory of those vessel types, based on U.S. Department of Defense order of battle estimates.⁸⁰ The other two surface vessels were a replenishment vessel and a hospital ship. Two submarines, 13 aircraft, and five shipboard helicopters also participated. Russian naval contributions from its Pacific Fleet included four surface vessels, three of which were missile capable, and three supply vessels.⁸¹

The drill, based out of Qingdao, included elements of force-on-force training and exercised antisubmarine warfare, air defense, search and rescue, and a simulated maritime hijacking.⁸² Vice Admiral Ding Yiping, deputy commander of the PLA Navy, gave a speech prior to the commencement of the exercise underscoring that the exercise was not aimed at a third party and was intended to build stronger navy-to-navy relations and regional maritime security.⁸³ Indeed, some analysts have suggested that because the interoperability of the two navies is somewhat limited, the exercise probably had greater political significance than operational value and intended to strengthen Sino-Russian strategic trust.⁸⁴

Joint Training

In pursuit of a more integrated force among its military branches and arms, the PLA continues to incorporate joint training in its exercise schedule. This year, China held a theater-level exercise named "Joint 2012" from June 29 to July 3, drawing elements from PLA command and staff units under the Jinan Military Region, the PLA Navy's North Sea Fleet, the PLA Air Force's Jinan component, an unspecified Second Artillery unit, and the People's Armed Police. The exercise emphasized joint training and command among a variety of units and systems and introduced U.S. military-related case studies (e.g., military operations in Iraq) and concepts (e.g., "air-sea battle warfare").⁸⁵ The Jinan Military Region is one of a few military regions since 2009 to host a training pilot project creating a theater-level leadership for joint operations.*⁸⁶ According to the official Chinese press, Joint 2012 is "the first large-scale training activity organized by the Jinan Military Region for a new cycle of theater joint training."⁸⁷

Shanghai Cooperation Organization Activities

The SCO †—composed of China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, and Uzbekistan as member states—began its 11th

*In a related training development, the PLA also held its first joint education exercise in Jinan Military Region called "Joint Education-2012 Queshan." The exercise, which took place from June 5 to June 12, involved all four PLA branches, all four headquarters elements (combat operations, political work, logistics, and armaments), and 19 academies and schools, for an approximate total of 3,000 participating personnel. Yang Lei and Liu Feng'an, "Forces Participating in 'Joint Education—2012 Queshan' Arrive at Queshan," Xinhua, June 6, 2012. OSC ID: CPP20120606680003. <http://www.opensource.gov>; Yang Lei and Yang Xinxin, "Six Major Innovations to be Achieved in 'Joint Education 2012—Queshan' Joint Exercises," Xinhua, June 6, 2012. OSC ID: CPP 20120606680001. <http://www.opensource.gov>.

†For additional information on the Shanghai Cooperation Organization, see pp. 220–221 of the Commission's *2009 Annual Report to Congress*, in U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2009). U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011). http://www.uscc.gov/annual_report/2011/Chapter2.3.pdf.

year in 2012.* In June, China hosted the organization's annual summit for the third time. At the Beijing meeting, the organization accepted Turkey as a "Dialogue Partner" and provided Afghanistan "observer" status.⁸⁸ PRC President Hu Jintao announced that China "will offer a loan of \$10 billion to support economic cooperation within the bloc" and separately promised a \$150 million grant to Afghanistan.⁸⁹ Iran, an SCO "observer" state, was represented at the summit by President Mahmoud Ahmadinejad.⁹⁰

Following the summit, China joined the other members of the SCO, with the exception of Uzbekistan, in conducting "Peace Mission 2012," a joint exercise sponsored by the SCO and hosted at a training range near Khujand, Tajikistan.† The stated aim of the exercise was the "preparation and implementation of joint anti-terror operations under mountainous terrain conditions."⁹¹ The drills had a heavy ground force emphasis, drawing from army aviation, armor, and artillery units of SCO member militaries.⁹² Personnel contributions from the PLA totaled approximately 350 and included one motorized infantry company, an artillery squad, and unspecified army aviation units.⁹³ This year's exercise was the fifth iteration—and, with approximately 2,000 troops participating, the smallest in terms of personnel—since the Peace Mission exercises began in 2005.⁹⁴ Peace Mission 2012 differed from previous years in its approach to joint multilateral command; as host of the exercise, Tajikistan held the role of general director of the exercise, while the other four participating militaries held deputy director roles. The official Chinese press reported that Peace Mission 2012 marked "the first time participating personnel and equipment from the Chinese Army made a long-distance motorized march to an exercise region," although PLA elements also arrived in Tajikistan by way of civil and army aviation.⁹⁵ This suggests that Peace Mission 2012 offered useful experience for the PLA's ability to mobilize troops for long-distance deployments.⁹⁶

Other Notable Exercise and Training Emphases

China's other major exercise and training evolutions in 2012 revealed two important trends. First, China held several exercise and training interactions with its Southeast Asian neighbors. Most notable among these were "Knife Sharp 2012," a two-week anti-terrorism exercise with Indonesia held in July, and "Blue Strike 2012," a two-week marine corps exercise with Thailand held in May.⁹⁷ Furthermore, as the PLA Navy's *Zheng He* training vessel embarked on its round-the-world cruise, its schedule of port calls saw an emphasis on Southeast Asia, to include Vietnam, Malaysia, Indonesia, and Brunei.⁹⁸ Second, limited press reports on a variety of other exercises suggest that the PLA is continuing to strengthen its skill set for contingencies on China's periphery. The Indian

* Formed originally "as a confidence-building mechanism to resolve border disputes," SCO and its activities have "expanded to include increased military cooperation, intelligence sharing, and counterterrorism drills." The United States applied for "observer" status in 2005 and was rejected. Andrew Scheineson, *The Shanghai Cooperation Organization* (New York, NY: Council on Foreign Relations, March 2009). <http://www.cfr.org/international-peace-and-security/shanghai-cooperation-organization/p10883#p6>.

† Uzbekistan's nonparticipation hinted at a divided approach to antiterrorism cooperation within the organization. Roger McDermott, "China Leads SCO Peace Mission 2012 in Central Asia," *Eurasia Daily Monitor* 9:121 (June 26, 2012). http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=39538.

press and the Institute for Defence Studies and Analysis, a New Delhi-based think tank,⁹⁹ for example, expressed concern that this year's PLA Air Force fighter ground attack training and surface-to-air missile testing in the Tibetan plateau was directed against India.¹⁰⁰ PLA Navy training in the East and South China seas raised similar concern from regional media and governments amid contention over sovereignty in those regions, though the Chinese press reported such activities as "routine" and "planned long in advance."¹⁰¹

U.S.-China Military-to-Military Relations

U.S.-China Defense Consultative Talks

In December 2011, U.S. and Chinese military leaders resumed the bilateral Defense Consultative Talks in Beijing, despite the U.S.'s announcement of an arms package for Taiwan just three months prior.¹⁰² The talks are a significant, high-level, military-to-military dialogue between the countries and, according to a Pentagon spokesperson, aim to "expand areas where we can cooperate and discuss mutual expectations."¹⁰³ Michèle Flournoy, then under secretary of Defense for Policy, led the U.S. side to the 12th round of Defense Consultative Talks, and the then Deputy Chief of the General Staff General Ma Xiaotian, the Chinese side.¹⁰⁴ The Chinese side requested an explanation for Washington's November 2011 agreement with Canberra to begin rotational deployments of up to 2,500 American marines through the northern Australian city of Darwin.* "We assured General Ma and his delegation," said Under Secretary Flournoy, "that the U.S. does not seek to contain China: We do not view China as an adversary. These posture changes were first and foremost about strengthening our alliance with Australia."¹⁰⁵ Under Secretary Flournoy reported no progress on what she referred to as the "critical issue" of the South China Sea or on repeated requests for China to increase military transparency. Nonetheless, according to the state-run Xinhua news service, "The fact that the consultations took place as scheduled shows that both countries are sincere about maintaining military exchanges."¹⁰⁶

* Referring to the agreement around the time of its announcement, Major General Luo Yuan of the PLA's Academy of Military Sciences remarked, "[T]he U.S. has always asked China to be transparent about its strategy. It is the U.S. who should make its intentions clear." Li Xiaokun and Qin Zhongwei, "China Wants US to Explain Military Plans in Australia," *China Daily* (Beijing), December 7, 2011. http://www.chinadaily.com.cn/indy/2011-12/07/content_14223660.htm.

U.S. Rebalance to Asia

In November 2011, the United States announced a policy of rebalancing toward Asia, ahead of President Barack Obama's and Secretary of State Hillary Clinton's trips to the region. After a decade of foreign policy focus in Iraq and Afghanistan, the United States sought "the implementation of a substantial and important reorientation in American global strategy" toward the Asia Pacific, according to National Security Advisor Tom Donilon.¹⁰⁷ The policy shift, known initially as the Asia "pivot" but now generally described as "rebalancing,"* is intended to be a multifaceted, coordinated effort across the whole of U.S. government, focusing on several key aspects: security alliances, relationships with emerging powers, engagement with multilateral institutions, trade and investment, military presence, and democracy and human rights.¹⁰⁸

With a few exceptions (see "Implications for the United States" subsection, below), statements from Ministry of National Defense and Ministry of Foreign Affairs officials regarding the policy shift have been generally muted.¹⁰⁹ For example, at a regularly scheduled Foreign Ministry press conference, spokesperson Liu Weimin stated in response to a question about the rebalance, "we welcome the constructive role played by the U.S. in the Asia-Pacific and . . . hope the U.S. side can work with China and other Asia-Pacific countries to build a more stable and prosperous Asia-Pacific."¹¹⁰ Other Chinese perspectives, particularly media outlets, have taken a more critical stance, as in one editorial in *People's Daily* that describes the U.S. strategy as "stirring up tensions and conflict among Asian countries."¹¹¹

PRC Minister of Defense Liang Guanglie's Visit to the United States

In May 2012, China's defense minister, General Liang Guanglie, toured the United States for six days, the first visit by a PRC minister of defense in nine years.[†]¹¹² Originally scheduled for 2011, Beijing postponed the tour following the U.S.'s announcement of a Taiwan arms package.¹¹³ General Liang's destinations included U.S. Southern Command, Florida; Fort Benning, Georgia; Camp Lejeune, North Carolina; and the U.S. Military Academy at West Point. Secretary of Defense Leon Panetta characterized his meeting with General Liang as "very productive," remarking that "our military-to-military dialogue is critical to ensuring that we avoid dan-

*The policy was initially presented as a "pivot," though policymakers also described it as a "rebalancing to Asia." However, some felt that the term "pivot" implied impermanence, as if the United States could pivot away just as it pivoted toward Asia. Another criticism of the term "pivot" was that it "suggests that we left Asia and have returned to Asia," in the words of Kenneth Lieberthal, director of The Brookings Institution's John L. Thornton China Center. By mid-2012, "rebalancing" became the preferred term used more frequently in official statements. The Brookings Institution, panelist comments of Kenneth Lieberthal, *Panel on Understanding the U.S. Pivot to Asia* (Washington, DC: January 31, 2012); Richard Weitz, "Pivot Out, Rebalance In," *Diplomat* (Tokyo), May 3, 2012. <http://thediplomat.com/2012/05/03/pivot-out-rebalance-in/>.

† While it had been nine years since a Chinese defense minister visited the United States, some of the PLA's other top leadership have more recently visited. In 2011, for example, PLA Chief of Staff and Central Military Commission member Chen Bingde led a delegation to the United States. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 164–5.

gerous misunderstandings and misperceptions that could lead to [a] crisis.”¹¹⁴ General Liang’s delegation included a number of senior military officers, among them General Zhang Youxia, Commander of the Shenyang Military Region; Vice Admiral Su Shiliang, deputy commander of the PLA Navy; Lieutenant General Yang Guohai, chief of staff of the PLA Air Force; and Major General Gao Jin, chief of staff of the Second Artillery Corps.¹¹⁵

For his part, General Liang remarked, the “China-U.S. bilateral relationship is on a new starting line in history” and that there had been a “kind of turnover” in military ties.¹¹⁶ He proposed building “a new type of China-U.S. military relationship based on equality, cooperation and mutual benefit,” as well as a “state-to-state relationship . . . not in the stereotype that the two major powers are predestined to engage into confrontation or conflict.”¹¹⁷ The two discussed a range of challenges, including “maritime areas, cyberspace, nuclear proliferation and missile-defense.”¹¹⁸ General Liang reciprocated the invitation, resulting in Secretary Panetta’s visit to China in mid-September.¹¹⁹

Commander, U.S. Pacific Command, Admiral Samuel J. Locklear’s Visit to China

Admiral Samuel J. Locklear III visited China in June for four days, making stops in Beijing, Guangzhou, and Guilin.¹²⁰ His visit was the first in four years by the commander of the U.S. Pacific Command, as the United States and China sought to normalize their military relationship.¹²¹ Admiral Locklear acknowledged that U.S.-China military links have been “on-again, off-again” but maintained that “both nations realize that it’s not in the best interests of anyone in the world for the U.S. and China not to have a favorable relationship with each other, and that good military-to-military relations [are] critical to that.”¹²² Reiterating the U.S. position on conflicting claims in the South China Sea, Admiral Locklear remarked that “whatever happens in that part of the world has to be resolved peacefully and without coercion.”¹²³ He also expressed concern over Beijing’s military buildup, the motivation for it, and the lack of transparency surrounding it.¹²⁴

In addition to meeting with Defense Minister Liang Guanglie and General Ma Xiaotian, Admiral Locklear addressed the PLA’s Academy of Military Sciences.¹²⁵ Although no reporters were permitted to attend the event, Admiral Locklear stated, “I outlined the Asia-Pacific rebalance so they could understand what we are doing and why we are doing it.”¹²⁶ He further emphasized that the United States does not intend to “contain China” and that enhanced ties with Pacific allies are “not something China should fear.”¹²⁷ Following his trip, Admiral Locklear expressed renewed confidence in building a stable, U.S.-China military relationship.¹²⁸

International Institute for Strategic Studies’ 2012 Shangri-La Dialogue

China appeared to deemphasize a prominent regional security dialogue in 2012. Sponsored by the United Kingdom-based International Institute for Strategic Studies, the Shangri-La Dialogue is

an annual “forum where the Asia-Pacific’s defence ministers . . . engage in dialogue aimed at building confidence and fostering practical security cooperation.”¹²⁹ China’s minister of Defense and other high-ranking officials did not attend the event in 2012 as they have in years past. This year’s Chinese delegation, led by Lieutenant General Ren Haiquan, vice president of the Academy of Military Science, was the first since 2007 that did not include a PLA deputy chief of staff.¹³⁰ John Chipman, the director general and chief executive of the International Institute for Security Studies, was told “that travel schedules and domestic priorities might make minister level attendance this year difficult.”¹³¹ Analysts noted, however, that during the prior week, China’s defense minister had attended an ASEAN (Association of Southeast Asian Nations) conference in Cambodia.¹³²

Speculation varied over China’s rationale for downgrading the delegation. According to Bonnie Glaser, senior fellow at the Center for Strategic and International Studies, with high-ranking officials, “the Chinese believe . . . that China becomes a target of concern and there would be many questions and criticisms that [they] would have to face.”¹³³ Additionally, “because of the domestic situation in China, they would feel compelled to forcefully defend China’s position.”¹³⁴ Others speculated that, anticipating a focus on the South China Sea, Beijing wanted to avoid engaging in a multiparty discussion of the issues, particularly given a U.S. presence at the forum.¹³⁵ Beijing’s long-standing policy is to deal with competing territorial claims only with rival claimants on a bilateral basis.¹³⁶

PLA Deputy Chief of General Staff Lieutenant General Cai Yingting’s Visit to the United States

In late August 2012, Lieutenant General Cai Yingting, a deputy chief of the PLA’s general staff, visited the United States, with an agenda that included meetings at the Pentagon in Washington, DC, and at Pacific Command in Hawaii. During the visit, General Cai expressed “the importance of developing a new type of military-to-military relationship,” though in meetings he reportedly made clear his objections to the expansion of the American military presence in Asia and his view that it was intended to contain China.¹³⁷ That General Cai, the least senior of the six deputy chiefs of general staff, led a senior delegation to the United States is suggestive of his status as a rising star in the next generation of PLA leaders.¹³⁸

U.S. Secretary of Defense Leon Panetta’s Visit to China

On September 17, 2012, Secretary of Defense Leon Panetta arrived in Beijing for his first trip to China since assuming his post. His three-day visit took place against a backdrop of escalating tensions between China and Japan over the Senkaku/Diaoyu Islands as well as the announcement of a U.S.-Japan agreement to deploy an advanced missile-defense radar in Japan.¹³⁹ Secretary Panetta sought to reassure Chinese leaders during this trip, stating that the U.S. rebalance was “not an attempt to contain China” but rather “an attempt to engage China and expand its role in the Pacific.”¹⁴⁰

The trip itinerary included meetings with Defense Minister General Liang Guanglie, State Councilor Dai Bingguo, Vice Chairman of the Central Military Commission Xu Caihou, and Vice President Xi Jinping to discuss key regional security issues including the East China Sea dispute, U.S. arms sales to Taiwan, territorial disputes in the South and East China seas, cyber security, and outer space. The secretary also made stops at the PLA Engineering Academy of Armored Forces in Beijing and the PLA Navy's North Sea Fleet headquarters in Qingdao, the latter of which included a visit to a *SONG*-class conventionally powered submarine.*¹⁴¹ General Liang stated his intention to “promote a new type of military relations featuring equality, reciprocity, and win-win cooperation.”¹⁴² To this same end, Secretary Panetta pledged to prioritize defense exchanges with China, beginning with his invitation to his Chinese counterpart to join the United States in its 2014 Rim of the Pacific Exercise, the world's largest international naval exercise hosted by the U.S. Pacific Command.¹⁴³

Naval and Maritime Relationship

In early September 2012, a Chinese Maritime Safety Administration vessel, the *Haixun 31*, visited Hawaii for five days and worked with the U.S. Coast Guard on a series of maritime cooperation exercises.¹⁴⁴ It was the Maritime Safety Administration's first ship visit to the United States and the first time a Maritime Safety Administration ship had made a foreign visit with a helicopter aboard. This helicopter took part in the highlight of the visit, a full-scale search-and-rescue exercise involving both American and Chinese ships and helicopters.¹⁴⁵ Additionally, the first bilateral counterpiracy exercise between the PLA Navy and the U.S. Navy took place in the Gulf of Aden this September. Personnel from the U.S. guided missile destroyer USS *Winston S. Churchill* and the Chinese frigate *Yi Yang* participated in this exercise, which allowed the two navies to conduct a joint visit, board, search, and seizure scenario.¹⁴⁶

Civil-Military-Security Relations

As the PLA prepared to transition its top-level leadership during the 18th Party Congress,¹⁴⁷ a few hints of civil-military discord emerged in the press. The Bo Xilai scandal in particular sparked media speculation of tensions among elements of the PLA and the Chinese Communist Party (CCP), due to Mr. Bo's particularly close military ties.¹⁴⁸ James Mulvenon, director of the Defense Group Inc.'s Center for Intelligence Research and Analysis, projected overall limited effects on civil-military relations from the Bo affair, despite potential damage to the career prospects of PLA officers close to Mr. Bo.¹⁴⁹ One notable example of these officers was General Liu Yuan, political commissar of the General Logistics Department,

* In April 2009, then Chief of Naval Operations Admiral Gary Roughead also visited a *SONG*-class submarine at Qingdao during China's International Fleet Review commemorating the PLA Navy's 60th anniversary of its founding. Li Dong, “Wo Haijun Zhuli Jian Qi Ju Qingdao 115 he 526 hao Xishu Liangxiang” (Main Force Naval Ships Gather in Qingdao, Numbers 115 and 526 Fully Displayed) China.com.cn, April 21, 2009, http://www.china.com.cn/news/txt/2009-4/21/content_17643007.htm#; Xinhua, “China invites foreign delegates to navy ships to boost military openness, cooperation,” April 22, 2009. http://news.xinhuanet.com/english/2009-04/22/content_11238271.htm.

who initiated an anticorruption effort within the PLA that reportedly resulted in the sacking of the General Logistics Department's deputy director, General Gu Junshan. This personnel action was reportedly executed only after President Hu Jintao's direct appeal to the CCP's civilian discipline inspection commission, as opposed to utilizing the military disciplinary system to address the issue.¹⁵⁰ Such an unusual measure at the central leadership level implies systemic challenges to the PLA disciplinary system's ability to address corruption within its own ranks.

Some media outlets have suggested that General Liu's efforts are part of a trend of an increasingly outspoken PLA eager to assert its role in Chinese politics and point to the party's effort to publicize and strengthen its control over the military in a variety of official and unofficial media outlets following the Bo affair.¹⁵¹ Notably, General Liu and General Zhang Haiyang, Second Artillery Political Commissar, the two officers most closely linked to Mr. Bo, were passed over for promotion when China announced changes to the composition of the Central Military Commission in October.¹⁵² China's armed forces general promotions this year, where two of six officers promoted to full general were the People's Armed Police commanding officer and political commissar, also suggested a possible effort to ensure loyalty over the organization in charge of maintaining domestic security.¹⁵³ Some analyses suggest that the CCP may be poised to assert greater control over a police apparatus that some leaders reportedly perceive as too powerful;¹⁵⁴ others posit that China's continued emphasis on social stability will result in a renewed focus on building a more professional domestic security force.¹⁵⁵ Given these developments, it remains unclear as to how CCP and Central Military Commission chairman heir apparent Xi Jinping, who has known connections to the PLA including General Liu, will manage civil-military-security relations in China after the leadership transition.¹⁵⁶

Implications for the United States

China's military modernization, particularly its aircraft carrier, fighter aircraft, space, and ballistic missile programs, is strengthening China's ability to execute its "Area Control Strategy," described in the Commission's *2011 Annual Report to Congress*.¹⁵⁷ Training developments also indicate that the PLA is improving its ability to operate jointly, at greater distances, and in a widening spectrum of environments. In particular, the development of the PLA's aircraft carrier will, once deployed, allow extended air cover for Chinese naval operations increasingly further from Chinese shores. This improving ability to execute its Area Control Strategy could impede the U.S. military's ability to operate freely.

An increasingly modern PLA has allowed China to be more assertive, particularly in pursuit of its territorial claims in the East and South China seas. China's development and fielding of next-generation fighter aircraft and other advanced weapons and platforms will continue to shift the balance of military power in the Taiwan Strait and vis-à-vis Japan and others in the region. Other developments include improvements in the PLA's nuclear-capable ballistic missile programs. As a result, U.S. allies and others in the

region are looking to the United States for heightened engagement there.

U.S. announcements about the need to rebalance toward the Asia-Pacific region have drawn occasional criticism from China. For example, China's Ministry of Defense and Ministry of Foreign Affairs, respectively, censured the U.S. Navy's plan to "reposture its forces from today's roughly 50/50 percent split between the Pacific and the Atlantic to about a 60/40 split"¹⁵⁸ as "not conducive to security and mutual trust" and "inappropriate."¹⁵⁹ Chinese commentators have also expressed concern that U.S. plans to deploy up to a full-strength Marine Air Ground Task Force rotation to Darwin, Australia, are China focused.¹⁶⁰ However, as General James Cartwright, U.S. Marine Corps (retired), former vice chairman of the Joint Chiefs of Staff and current senior fellow at the Center for Strategic and International Studies, noted to the Commission, Darwin's far southern location imposes limits on its operational utility.¹⁶¹

The United States, as part of the rebalancing policy toward Asia, has taken a calibrated approach—strong enough to reassure allies and partners of the U.S.'s enduring presence in the region but nuanced enough to balance regional priorities, including the U.S.'s relationship with China. The United States must continue to prioritize military exercises, cooperation, and diplomacy in the region.

As the PLA becomes increasingly capable, questions remain about whether China is in a fundamentally defensive security posture, as it claims, or is strengthening the PLA's capabilities in order to become more assertive regionally and, ultimately, around the world. The answer to those questions will shape the U.S.'s future defense challenges and requirements.

Conclusions

- China continues to modernize its military, developing platforms to strengthen its power projection capability in the region. Developments in China's aircraft carrier, advanced fighter aircraft, space, and missile programs signal the potential for the PLA to threaten U.S. forces operating in the western Pacific.
- China's defense budget continues its trend of annual increases, making China the world's second-largest defense spender after the United States. As in past years, actual defense expenditures are greater than the announced sums, given the omission of key items such as foreign procurement.
- Over the past year, China's military and maritime enforcement agencies have demonstrated a greater presence in the East China Sea and South China Sea. This increased level of activity has inflamed regional tensions.
- The PLA's training and military diplomatic activities, increasingly taking place farther afield with a growing diversity of partners, indicate a widening in its range of missions and skill sets.
- Notwithstanding several disruptions in late 2011 and early 2012, significant U.S.-China military engagements took place this year, suggesting the potential for greater institutionalization of military-to-military ties.

- Civil-military relations saw challenges this year in China as corruption within the PLA surfaced in the press, suggesting some uncertainties in relations between the PLA and the CCP. China also appears to be consolidating party control over the organizations charged with maintaining domestic security and stability.

SECTION 2: CHINA'S CYBER ACTIVITIES

Introduction

China's cyber capabilities provide Beijing with an increasingly potent tool to achieve national objectives. In a strategic framework that leans heavily on cyber espionage, a diverse set of Chinese hackers use pilfered information to advance political, economic, and security objectives. China's pursuit of intellectual property and trade secrets means that much of this espionage targets private enterprises. The U.S. defense industrial base and a range of government and military targets also face repeated exploitation attempts by Chinese hackers, as do international organizations and nongovernmental groups. China's persistence, combined with notable advancements in exploitation activities over the past year, poses growing challenges to information systems and their users. Chinese penetrations of defense systems threaten the U.S. military's readiness and ability to operate.

This section, which draws from a public hearing the Commission held in March on China's cyber activities, surveys notable developments throughout 2012. It discusses China's cyber strategy and Beijing's overall posture in the cyber domain. It addresses recent exploitation of government, military, economic, and nongovernmental targets. The section then identifies emerging threats from Chinese cyber activities, based primarily on evidence that surfaced over the past year. Finally, it addresses the international situation in which these activities occur, raises key implications for the United States, and offers some conclusions and recommendations.

China's Cyber Strategy

China takes a multipronged approach to the cyber domain. Numerous stakeholders influence cyber-related activities and priorities and a broad, national-level enterprise of government and military actors, supplemented by civilian groups, implements the resultant policies. (See the textbox, below, for a guide to China's key actors in cyber exploitation and attack.) In many areas, such as China's civilian cybersecurity apparatus, the specific institutions and their responsibilities are fragmented and opaque.¹⁶² No single, publicly available document articulates a full strategy. However, in China's numerous plans for national development, the theme of leveraging cyberspace and related technologies appears commonly. Recent Five-Year Plans; the National Medium- to Long-Term Plan for the Development of Science and Technology (2006–2020); and various other documents, such as China's 2010 Internet white paper,¹⁶³ demonstrate some of Beijing's funding priorities and policy preferences. China also uses long-standing funding vehicles, such as the 863 program (which supports applied research into,

and acquisition of, dual-use technologies) and the 973 program (which seeks to support basic research), to develop talent and increase capabilities in numerous high-technology areas, including those related to cyberspace.¹⁶⁴ Cyber espionage activities designed to steal intellectual property, trade secrets, and other business information, aim to fill needs in numerous segments of the economy in order to assist in national development.¹⁶⁵

China's People's Liberation Army (PLA) and other security institutions play a central role in implementing Chinese policy in cyberspace. This includes traditional military functions. In this context, fighting and winning "local wars under conditions of informatization," a decade-old concept that acknowledges the centrality of information in modern combat, serves as the guiding concept.¹⁶⁶ (As China's most recent defense white paper explains, the PLA now "focuses informationization on raising its fighting capabilities based on information systems.") * Subsequent refinements, such as the 2004 explication by Chinese President Hu Jintao of the PLA's "New Historic Missions," have instructed the PLA to view information technology (IT) and the Internet as not only a means to economic development that the PLA must secure but also as an avenue to attain military advantage.¹⁶⁷

Based on available open sources, PLA doctrine on cyber issues is improving rapidly in sophistication, and implementation is underway. General Chinese military strategy texts such as the *Science of Military Strategy* and the *Science of Campaigns* lack specificity on cyber operations but do identify information warfare as key to defeating a stronger adversary.[†]¹⁶⁸ More directed guidance comes in the form of specialized writings of PLA strategists on "Integrated Network Electronic Warfare" and "Information Confrontation Theory." Such writings stress the need for a holistic approach to information warfare, including use of tactics such as jamming and interference, and in battlegrounds that range from space to public opinion.¹⁶⁹ The use of space and electronic warfare in particular comport well with China's overall "counterintervention" (or what western analysts call antiaccess/aread denial) approach to warfare, which seeks to keep potential adversaries far from Chinese coasts. This imperative itself drives PLA cyber activities in peacetime. According to materials submitted to the Senate Armed Services Committee by Samuel J. Locklear III, commander of U.S. Pacific Command, China's military is:

building capability to target U.S. military space-based assets and computer networks using network and electronic warfare. The development of these wartime capabilities ... [motivates] China's efforts at peacetime penetration of U.S.

*The same document offers the following assessment: "Significant progress has been made in building information systems for reconnaissance and intelligence, command and control, and battlefield environment awareness. Information systems have been widely applied in logistics and equipment support. A preliminary level has been achieved in interoperability among command and control systems, combat forces, and support systems, making order transmission, intelligence distribution, command and guidance more efficient and rapid." Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011).

†The PLA defines "virtual battle space" as "the space created by technology, computers and the 'web' (Internet) that is subject to human control and reflects human will." Its components are cyberspace, information space, and digital space. Dai Qingmin, "Lun Wangdian Yiti Zhan" (On Integrating Network Warfare and Electronic Warfare), *Zhongguo Junshi Kexue* (China Military Science), February 1, 2002, pp. 112–117.

*government and industry computer systems. The theft of U.S. information and intellectual property is attractive as a low-cost research and development tool for China's defense industry, and provides insight into potential U.S. vulnerabilities.*¹⁷⁰

Part of the dilemma for the PLA is to develop cyber warfare and cyber defense doctrine appropriate for the PLA's level of modernization while at the same time taking advantage of the Chinese armed forces' strengths in electronic warfare, electronic information gathering, precision attack, and massed firepower.¹⁷¹ The PLA does not have a deep reservoir of personnel able to manage sophisticated information systems. Chinese military leaders, however, recognize this weakness and intend to develop a pool of soldiers who can conduct or plan joint military operations, manage information systems and cyber technology, and use or maintain advanced weapon systems.¹⁷² The PLA's goal is to achieve this expanded pool of personnel by 2020. Also, the PLA builds into its exercises situations involving the use of cyber attacks and trains its personnel to defend against cyber attacks.¹⁷³

Who Carries Out Chinese Cyber Exploitation and Attack?¹⁷⁴

Military Groups

A variety of Chinese military entities, including elements of the PLA headquarters organization and likely each of the PLA branches, operate in cyberspace. Key entities include:

- *2PLA*—The Second Department of the PLA General Staff Department (2PLA) is responsible for military intelligence. It may use cyber operations as part of its collection activities.
- *3PLA*—The Third Department of the PLA General Staff Department (3PLA) is responsible for the collection of signals intelligence. This includes computer network exploitation, reportedly drawing upon Technical Reconnaissance Bureaus geographically distributed across the country. It may also lead the PLA's computer network defense efforts.
- *4PLA*—The Fourth Department of the PLA General Staff Department (4PLA) engages in electronic warfare. In addition, it appears to be responsible for computer network attack.
- *PLA services*—The PLA Navy and PLA Air Force, like 3PLA, operate Technical Reconnaissance Bureaus that may engage in computer network operations. The Second Artillery Forces, a PLA service-level branch responsible for nuclear and conventional missiles, may also have cyber-related responsibilities.

Who Carries Out Chinese Cyber Exploitation and Attack?—Continued

- *Cyber warfare militias*—A subset of the PLA militia has cyber-related responsibilities. These units, usually comprised of workers with high-tech day jobs, focus on various aspects of military communications, electronic warfare, and computer network operations.

Intelligence and Security Services

Though little is known about China's intelligence and security services' roles and missions in cyberspace, several entities are probably active in the domain:

- *Ministry of State Security*—As China's foreign intelligence service, the organization may engage in various cyber operations.
- *Ministry of Public Security*—As China's domestic security service, the organization engages in surveillance, including in cyberspace, of Chinese citizens. Foreigners traveling within China are similarly subject to various forms of digital monitoring (though it is unclear which organization has this responsibility).
- *Other security entities*—Travelers to China sometimes report Chinese officials tampering with their electronic devices upon entry or exit. Customs or border enforcement entities may perform or enable such activities.

“Independent” Actors

Although not always on government payrolls, several categories of nominally independent actors conduct exploitation activities. In some cases, their actions may be sanctioned or overlooked by authorities:

- *“Hacktivists”*—Sometimes called “patriotic hackers,” these groups appear to act primarily on the basis of nationalistic sentiments, often engaging in denial of service attacks or website defacements. The Chinese government has on occasion acted to curtail their activities, but enforcement is uneven.
- *For-profit hackers*—Some groups may commit industrial or traditional espionage on behalf of private sector, state-owned sector, or government clients. A variety of notable Chinese hackers have formed security firms or consulting firms that may engage in these activities.

Who Carries Out Chinese Cyber Exploitation and Attack?—Continued

- *Purely criminal hackers*—There is a range of strictly nonstate hacking activities, such as identify theft, perpetrated by those seeking status or income. Although these activities are illegal in China and perpetrators are sometimes punished (China recently reported 9,000 cyber-related arrests), government agencies may recruit from this pool.

“Corporate” Actors

Some corporate entities in China may engage in, support, or benefit from cyber espionage. The prevalence of state-owned or -controlled enterprises in the telecommunications and IT sectors in China mean that such activities would often constitute state sponsorship.

- *Telecommunications providers*—Internet service providers, web services providers, domain registrars, and similar organizations may perform, enable, or conceal malicious cyber activities.
- *Information technology companies*—IT components and systems manufacturers, assemblers, or support staff may introduce “backdoors” (i.e., surreptitious access points) or other vulnerabilities into their systems.

China’s Cyber Posture

In the cyber domain, China is subject to many of the same weaknesses, limitations, and vulnerabilities as the United States. This includes everything from lagging infrastructure development to cybercrime and attacks from activists such as “Anonymous.”* Measuring the level of these activities, and a nation’s resilience to them, remains a challenge.† According to a study by the Economist Intelligence Unit, China ranks 13th out of the G–20 countries as a “cyber power,” which measures “the ability to withstand cyber attack and to deploy a secure digital infrastructure that supports a productive economy.”¹⁷⁵ (By comparison, the same study ranked the United States as number two, following the United Kingdom.) The National Computer Network Emergency Response Coordination Center of China reported in March that China is the world’s largest victim of cyber attacks. Citing figures from 2011, the report asserted that “10,593 Chinese websites were controlled by 11,851

*On lagging infrastructure development, China recently ranked 93rd worldwide in Internet speeds. See David Belson, ed., *The State of the Internet* (Singapore: Akami Technologies, 2012), vol. 5, no. 1, p. 21. On threats from Anonymous, see Lee Ferran, “Anonymous Lashes out at Chinese Government,” ABC News, April 5, 2012. <http://abcnews.go.com/Blotter/anonymous-china-attacks-government-websites/story?id=16079707>.

†For example, one group of Chinese researchers placed the value of the Chinese online, underground economy at about \$850 million in 2011. See Zhuge Jianwei, Gu Lion, and Duan Haixin, “Investigating the Chinese Underground Economy of Information Security,” in Jon Lindsay, ed., *China and Cybersecurity: Political, Economic, and Strategic Dimensions* (San Diego, CA: Report from Workshops held at the University of California, April 2012), p. 10. <http://igcc.ucsd.edu/assets/001/503568.pdf>. Another study covering 2012 placed the cost of cybercrime in China at \$46 billion. See Adam Palmer and Marian Merritt, *Norton Cybercrime Report 2012* (Mountain View, CA: Norton, 2012). Slide 7.

overseas Internet Protocol addresses (IPs),” and “[a]bout 47,000 overseas IPs were involved in attacks against 8.9 million Chinese computers last year.”¹⁷⁶

Although such assertions cannot be verified independently, other data-driven analyses demonstrate that China contends with moderate to serious levels of malicious activity in the cyber domain.* Microsoft characterized the level of “phishing” websites in China at approximately the world average (0.03 per 1,000 hosts in China versus 0.02 elsewhere).†¹⁷⁷ By another key indicator of malicious activity, sites hosting “drive-by” downloads, China reached only 6 percent of the world average (0.226 per 1,000 hosts in China versus 3.6 elsewhere).‡ Conversely, Chinese sites hosted “malware” at 9.5 times the average rate elsewhere (0.57 per 1,000 hosts in China versus 0.06 elsewhere).§¹⁷⁸ Some challenges to China’s resilience and connectivity in the domain are self imposed, such as issues that periodically arise on account of the country’s extensive censorship architecture. For example, in April, a two-hour disruption in certain Internet traffic between China and abroad led to speculation that Chinese censors had overstepped while upgrading filtering software or tested an Internet “kill switch.”¹⁷⁹

China’s massive scale in the cyber domain makes the nation particularly consequential.¶ Notwithstanding a modest quantity of total websites, which slowly rebounded to 2.3 million last year following an extensive purge in 2010, China now has about 538 million Internet users.¹⁸⁰ Though many access the Internet through shared computing resources, such as those in Internet cafés, research firm IDC estimates that 676.8 million devices will be used to access the Internet in mainland China in 2012 alone.¹⁸¹ This scale greatly influences the global volume of malicious activity. For example, according to statistics from CloudFlare, a services provider, about 15 percent of global web traffic on any given day in 2011 constituted attacks. Around China’s October 1 National Day, when many workers take leave, that figure plummeted to about 6.5

*The studies cited in the subsection use various measurement techniques. For methodological notes and other qualifiers, consult the source itself.

†Phishing is “a digital form of social engineering that uses authentic-looking—but bogus—emails to request information from users or direct them to a fake Web site that requests information.” Richard Kissel, *Glossary of Key Information Security Terms* (Gaithersburg, MD: National Institute of Standards and Technology, February 2011), p. 138. <http://csrc.nist.gov/publications/nistir/ir7298-rev1/nistir-7298-revision1.pdf>. In addition to e-mails, attackers can use other means of delivery for phishing attacks, such as chat applications. Other goals of such attacks can include persuading a victim to download or execute malicious software (see below).

‡A drive-by download occurs when “a website that hosts one or more exploits that target specific vulnerabilities in web browsers, and browser add-ons. Malware distributors use various techniques to attempt to direct Internet users to Web sites that have been compromised or are intentionally hosting hostile code. Users with vulnerable computers can be secretly infected with malware simply by visiting such a website, even without attempting to download anything themselves.” Tim Rains, “What You Should Know About Drive-By Download Attacks—Part 1,” *Microsoft Security Blog*, December 8, 2011. <http://blogs.technet.com/b/security/archive/2011/12/08/what-you-should-know-about-drive-by-download-attacks-part-1.aspx>.

§Malware, or malicious software, is “a program that is inserted into a system, usually covertly, with the intent of compromising the confidentiality, integrity, or availability of the victim’s data, applications, or operating system or of otherwise annoying or disrupting the victim.” Richard Kissel, *Glossary of Key Information Security Terms* (Gaithersburg, MD: National Institute of Standards and Technology, February 2011), p. 115. <http://csrc.nist.gov/publications/nistir/ir7298-rev1/nistir-7298-revision1.pdf>.

¶For another measure of scale, the UN Broadband Commission estimated in September that, if current growth rates persist, the number of users accessing the Internet in Chinese could overtake those accessing it in English by 2015. UN Broadband Commission, *The State of Broadband 2012: Achieving Digital Inclusion for All* (New York: UN General Assembly, September 2012), p. 61. <http://www.broadbandcommission.org/Documents/bb-annualreport2012.pdf>.

percent.* Another study covering early 2012, performed by Akamai Technologies, demonstrated that 16 percent of Internet attack traffic originated in China, more than any other country in the world.¹⁸²

With respect to talent, China operates on a sound baseline and appears to be on a favorable trajectory.† The Chinese government seeks to leverage the nation’s increasingly educated and skilled workforce for offensive and defensive cyber activities. To support students and researchers, generous government and military funding, including under the 863 and 973 programs, underwrites information security research at military and civilian Chinese universities in fields such as encryption, data mining techniques, information warfare target recognition, and other areas.¹⁸³ Anecdotal, Chinese hackers’ sophistication may fall short of their counterparts in Russia or elsewhere,¹⁸⁴ but some indicators suggest improving skills.¹⁸⁵ Obscuring the matter is a notable capability gap between various Chinese actors¹⁸⁶ and a common practice of expending the minimum amount of effort necessary to compromise a target. This includes the utilization of widely available tools and known exploits, which require less skill than original or customized exploitation methods.¹⁸⁷ Fundamentally, the volume of operations is in some regard as consequential as skill level, particularly due to the general absence of penalties for failed attempts to compromise targeted systems.

Recent Developments

Hackers operating from China, including state-sponsored actors, continue to exploit U.S. information systems across government, industry, and civil society.¹⁸⁸ Attribution of these threats remains problematic, but security researchers can increasingly group incidents into *campaigns*, which Nart Villeneuve, senior threat researcher at Trend Micro, described as “a series of failed and successful attempts to compromise a target over time.”¹⁸⁹ These campaigns yield distinctive indicators of compromise and utilize unique combinations of tools, tactics, techniques, and procedures. Monitored over an extended period, these factors provide a more complete understanding of the actors responsible for intrusions.¹⁹⁰ As former Vice Chairman of the U.S. Joint Chiefs of Staff James Cartwright testified, “While it’s very difficult in cyber to have a ‘smoking gun,’ so to speak, the clear paths back into servers and other mechanical devices inside of the Chinese sovereign domain remain

*Much of this reduction probably follows from the holiday shutdown of compromised Chinese office computing resources, which often utilize pirated and unpatched software that could be controlled by non-Chinese actors. See Matthew Prince, “Do Hackers Take the Holidays Off?” *CloudFlare Blog*, December 14, 2011. <http://blog.cloudflare.com/do-hackers-take-the-holidays-off>. (Note: Malicious traffic also varied up on other, non-Chinese holidays. Similar or greater reductions would be expected around the Chinese New Year, which is not covered in this dataset.) Alternatively, some portion of the reduction may account for Chinese hackers’ leave time. Examples are well documented of “company men” hackers operating on regular schedules from around 9 am to 5 pm, China Standard Time. McAfee Foundstone Professional Services/McAfee Labs, *Global Energy Cyberattacks: “Night Dragon”* (Santa Clara, CA: McAfee, February 10, 2011). <http://www.mcafee.com/us/resources/white-papers/wp-global-energy-cyberattacks-night-dragon.pdf>.

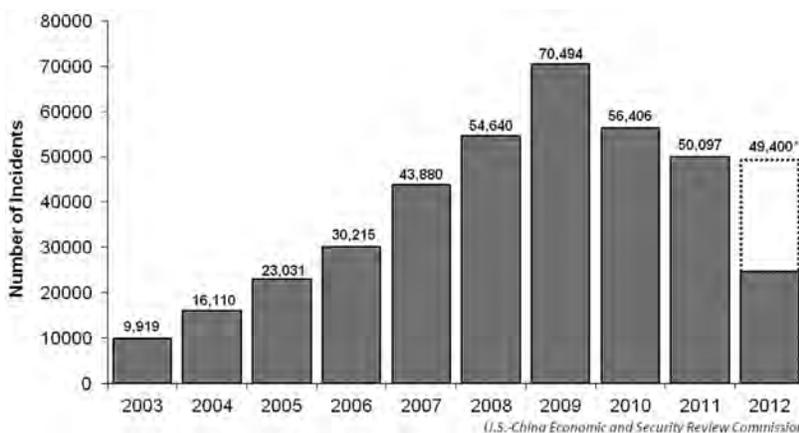
†The Economist Intelligence Unit study referenced above ranks China eighth of the G-20 countries in the “socio-economic foundation for a well-functioning cyber environment measured through educational levels, technical skills, trade openness, and the degree of innovation within the business environment.” The Cyber Hub, “Cyber Power Rank,” undated. <http://www.cyberhub.com/CyberPowerIndex>.

a constant problem for us [the U.S. defense establishment].”¹⁹¹ Industry also faces a heavy threat environment, as do various types of nongovernmental organizations. This subsection surveys recent cyber activities directed at each.*

Government and Military

Hackers operating abroad, including in China, continue to target government and military networks. The Commission uses statistics furnished by the U.S. Department of Defense about exploitations and attacks on their information systems as one indicator of overall trends in the cyber threat environment.† Figure 1, below, demonstrates changes in the volume of such activities over the past decade. After reaching a high point in 2009, the figures decreased in both 2010 and 2011, which the department attributed to greater leadership attention and the creation of U.S. Cyber Command.¹⁹² However, if the threat activity from the first half of the year persists at its current rate throughout the second half, 2012 will bring levels of malicious activities comparable to 2011.

Figure 1: U.S. Department of Defense Reported Incidents of Malicious Cyber Activity, 2003–2011, with Projection for 2012*



*The figure for 2012 represents a projection based on incidents logged from January 1, 2012, to June 30, 2012. The projection assumes a constant rate of malicious activity throughout the year.

Sources: Coby D. Bland, lieutenant colonel, U.S. Air Force, (staff member, U.S. Cyber Command), interview with Commission staff, August 16, 2012; and U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office: Washington, DC: 2011) p. 174. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf. Several historical figures have been revised on the basis of updated information from the U.S. Department of Defense.

*This subsection only includes incidents that source material linked to China. Please consult the original sources for additional details, including qualifiers on attribution information.

†Dating back to at least 2006, malicious activities against the U.S. Department of Defense have exceeded those against the rest of the U.S. federal government, according to data compiled by the U.S. Computer Emergency Readiness Team. See House Committee on Homeland Security, Subcommittee on Oversight, Investigations, and Management, *Hearing on Cybersecurity: Threats Impacting the Nation*, testimony of Government Accountability Office Director of Information Security Issues Gregory C. Wilshusen, 112th Cong., 2nd sess., April 24, 2012, p. 10. <http://www.gao.gov/assets/600/590367.pdf>. (Note: it is unclear which agencies submit exploitation information to the U.S. Computer Emergency Readiness Team.)

Not all of the incidents depicted necessarily relate to China (the department has not made available that level of detail), but defense officials regard China as the dominant concern. For example, in a March Senate Armed Services Committee hearing on cyber security, when asked whether “the major threats to our [U.S.] national security” come specifically from China, Keith B. Alexander, commander of U.S. Cyber Command, replied, “Absolutely.”¹⁹³ In the wider defense establishment, such concerns arise from active and apparently successful campaigns. Perhaps the most notable case study is the seemingly deliberate targeting of the F-35 Joint Strike Fighter program. Produced by Lockheed Martin in conjunction with Northrop Grumman and BAE Systems, the fighter program includes some 900 subcontractors.¹⁹⁴ Lockheed Martin officials reportedly acknowledged that six to eight F-35 subcontractors were “totally compromised” in 2009 alone.¹⁹⁵ Various reports identify Chinese hackers as repeatedly targeting each of the fighter’s three primary contractors: Lockheed Martin in 2009; Northrop Grumman during the 2010 “Aurora” campaign; both again in 2011; and, previously, BAE Systems, according to an executive’s remarks in 2012.¹⁹⁶ These contractors are also involved in many of the U.S.’s most critical defense programs, which could also be targeted by hackers.

From a federal government standpoint, several significant examples surfaced of malicious Chinese cyber activity in 2012. For example, the National Aeronautics and Space Administration (NASA) in February disclosed a series of penetrations against its networks. According to testimony to the House Committee on Science, Space, and Technology, Subcommittee on Investigations and Oversight, from Paul K. Martin, NASA inspector general:

In FY [fiscal year] 2011, NASA reported it was the victim of 47 APT [Advanced Persistent Threat] attacks, 13 of which successfully compromised Agency computers. In one of the successful attacks, intruders stole user credentials for more than 150 NASA employees—credentials that could have been used to gain unauthorized access to NASA systems. Our ongoing investigation of another such attack at JPL [Jet Propulsion Laboratory] involving Chinese-based Internet protocol (IP) addresses has confirmed that the intruders gained full ... functional control over these [JPL] networks.*¹⁹⁷

In September, reports surfaced of Chinese spear phishing directed at the White House Military Office, which contributes to presidential communications, travel, and a variety of other sensitive functions.¹⁹⁸ The White House subsequently acknowledged

*The term “Advanced Persistent Threat” (APT) is generally used synonymously with Chinese state-sponsored cyber exploitation. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Richard Bejtlich, March 26, 2012. According to NASA’s account, however: “APTs refer to those groups that are particularly well resourced and committed to steal or modify information from computer systems and networks without detection. The individuals or nations behind these attacks are typically well organized and well funded and often target high-profile organizations like NASA. Moreover, even after NASA fixes the vulnerability that permitted the attack to succeed, the attacker may covertly maintain a foothold inside NASA’s system for future exploits.”

the intrusion attempt but declined to comment on whether it was linked to China.¹⁹⁹

Industry

Chinese cyber espionage centers on industrial targets and information.* According to the U.S. Department of Defense, “Chinese actors are the world’s most active and persistent perpetrators of economic espionage,” which represents “a growing and persistent threat to U.S. economic security.”²⁰⁰ Although it is unclear whether the Chinese state directs all of this activity, the theft of industrial secrets through cyber espionage is apparently Chinese state policy.²⁰¹ The state controls up to 50 percent of the Chinese economy, and industrial espionage appears to be a key mission of the Chinese intelligence services.²⁰² Notably, China designates seven so-called “strategic” industries, including armaments, power generation and distribution, oil and petrochemicals, telecommunications, coal, civil aviation, and shipping, over which the state must retain absolute control.† Chinese cyber espionage targeting these industries specifically, in the United States and abroad, has a particularly high likelihood of state sponsorship.

The most notable trend in Chinese cyber espionage over the past year was increasingly creative and resourceful targeting. As the private sector works harder to secure their information systems, Chinese actors have turned to lesser-defended targets. Richard Bejtlich, chief security officer at Mandiant, testified about penetrations against multiple firms in the same supply chain, allowing the same actors to aggregate information on a broader, more advanced technology.²⁰³ In January, Bloomberg reported on a China-linked exploitation of several Canadian law firms that had sensitive information about a pending deal in the chemical sector and apparently weaker cyber defenses than their clients.²⁰⁴ Similarly, in a larger campaign victimizing 760 organizations, Chinese state-sponsored hackers reportedly penetrated iBahn, a broadband provider serving large hotel chains globally, in order to compromise corporate guests’ communications.²⁰⁵ A December 2011 *Wall Street Journal* report revealed that an intrusion of the U.S. Chamber of Commerce, a prominent business lobby, compromised six weeks of e-

*This subsection focuses primarily upon industrial espionage. Chinese hackers may target the private sector for other purposes as well, such as to compromise critical infrastructure. For a recent example with probable links to China, see Brian Krebs, “Chinese Hackers Blamed for Intrusion at Energy Industry Giant Telvent,” KrebsOnSecurity.com, September 2012, <http://krebsonsecurity.com/2012/09/chinese-hackers-blamed-for-intrusion-at-energy-industry-giant-telvent/>.

†The Chinese government defines “absolute control” as greater than 50 percent ownership. The government has designated other preferred sectors of the economy in which competing firms may also be particularly susceptible to state-sponsored cyber espionage. This includes the six “heavyweight” industries (machinery, automobiles, information technology, construction, iron and steel, and nonferrous metals) and the seven “strategic and emerging” industries (energy saving and environmental protection, next-generation information technology, bio industries, high-end assembly and manufacturing, new energy sources, new materials, and new energy-powered cars). For information on these designations and others, see chapter 5 of this Report; U.S.-China Economic and Security Review Commission Research Staff supported by Reperi, LLC, *The National Security Implications of Investments and Products from the People’s Republic of China in the Telecommunications Sector* (Washington, DC: January 2011), p. 10. http://www.uscc.gov/RFP/2011/FINALREPORT_TheNationalSecurityImplicationsofInvestmentsandProductsfromThePRCintheTelecommunicationsSector.pdf; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office: Washington, DC: 2011), chapter 1, section 4, “China’s 12th Five-Year Plan and Technology Development and Transfers to China,” p. 106. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf.

mails between four of the organization's Asia policy specialists and, as a result, communications with approximately 50 members.²⁰⁶

With the level of cyber exploitation against U.S. firms, questions arise about the extent to which the perpetrators, or their beneficiaries, ultimately commercialize stolen industrial information. Victims, if they become aware of such events, rarely publicize the details. However, according to Mr. Bejtlich, "We see them [Chinese hackers] taking the technology from these [compromised] telecom companies to improve their own capabilities and then also to come out with low-cost competitors who can then outbid everyone else on these ... national infrastructure projects."²⁰⁷ Anecdotal evidence revealed over the past year provides a possible example. In October, Cisco released excerpts from a theretofore confidential neutral experts' evaluation produced during the course of their 2003–2004 litigation with Huawei.* One excerpt states: "The exactness of the comments and spacing [in an evaluated Huawei product] not only indicate that Huawei has access to the Cisco code but that the Cisco code was electronically copied and inserted into" the evaluated Huawei product.†²⁰⁸

Commercialization of stolen information, moreover, need not take the form of another firm bringing a competing product to market. Chinese actors often target firms without intellectual property or manufacturing lines. Firms in virtually all sectors can hold sensitive plans, negotiating positions, and other information from which competitors would benefit. For example, one unidentified firm negotiating to open a plant in China reportedly had real estate and development pricing information compromised through the penetration of a third party.²⁰⁹ Problems also persist for deals outside of China. Entities involved in bidding processes, such as those associated with mergers and acquisitions and auctions related to extractive industries, face particularly high risks.²¹⁰

Nongovernmental Organizations

Chinese dissident groups, activists, religious organizations, rights groups, media institutions, and associations are among the most aggressively targeted entities in cyberspace. Often small organizations with modest IT budgets, many of these groups nevertheless

* In a September 13 public hearing of the House Permanent Select Committee on Intelligence, Charles Ding, Huawei corporate senior vice president and representative to the United States, testified that the 2003–2004 intellectual property dispute between his firm and Cisco was resolved because, following an investigation, "there was not any infringement found" in Huawei products and ultimately, "Cisco withdrew the case." This characterization prompted Cisco to make the above disclosure. Mark Chandler, "Huawei and Cisco's Source Code: Correcting the Record," Cisco the Platform Web Log, October 11, 2012. <http://blogs.cisco.com/news/huawei-and-ciscos-source-code-correcting-the-record/>.

† Available materials do not necessarily identify cyber espionage as the means through which Huawei might have acquired electronic copies of Cisco's code. A more explicit example, albeit with less documentation, surfaced in February, when the *Wall Street Journal* reported that Ontario-based multinational telecommunications firm Nortel Networks Ltd. had experienced a decade-long penetration from China-based hackers that "over the years downloaded technical papers, research-and-development reports, business plans, employee emails and other documents." Citing a telecom industry source, Canada's *The Globe and Mail* subsequently reported that by "around 2004, it was clear to many that Huawei was copying Nortel's telecom hardware, and even its instruction manuals." Siobhan Gorman, "Chinese Hackers Suspected In Long-Term Nortel Breach," *Wall Street Journal*, February 14, 2012. <http://online.wsj.com/article/SB10001424052970203363504577187502201577054.html>; Iain Marlow, "Nortel turned to RCMP [Royal Canadian Mounted Police] about cyber hacking in 2004, ex-employee says," *Globe and Mail* (Toronto), updated March 26, 2012. <http://www.theglobeandmail.com/technology/tech-news/nortel-turned-to-rcmp-about-cyber-hacking-in-2004-ex-employee-says/article534295/>.

maintain robust web presences and engage in other activities that make them highly vulnerable to exploitation. To disseminate information, they rely heavily upon social media; travel to and within heavily monitored areas; and exchange digital media with colleagues and sources in China. Numerous reports of Chinese espionage against such organizations surfaced in 2012. According to Mr. Villeneuve, the perpetrators do not always demonstrate the most advanced tradecraft, relying instead on the “exploitation of trust through social engineering,” and “continual probes,” successful and unsuccessful.²¹¹ However, some attempts do utilize previously unknown (“zero day”) exploits for which no patch exists,²¹² and other hallmarks of increased sophistication have surfaced in recent months.*

Campaigns targeting Tibetan and Uygur groups are particularly prevalent. Trend Micro in 2012 released a case study on the China-linked “Lurid’ Downloader” that targeted several “government ministries ... research institutions and agencies related to the space industry” as well as the Tibetan community.²¹³ In March, the same organization revealed a case study on the “Luckycat” campaign, also linked to China, which targeted military institutions in India and various military and industrial institutions in Japan, in addition to Tibetan activists.²¹⁴ In comments about the campaign, James A. Lewis, senior fellow at the Center for Strategic and International Studies, observed that the targeting of “Tibetan activists is a strong indicator of official Chinese government involvement.”²¹⁵ This specific, persistent targeting generally excludes the possibility of accidental or collateral compromise.†

*Namely, certain campaigns have used malware signed by stolen certificates or that targets both Mac and PC operating systems. See Ivan Macalintal, “Another Tibetan-Themed Malware Email Campaign Targeting Windows and Macs” (Cupertino, CA: Trend Micro), April 10, 2012. <http://blog.trendmicro.com/another-tibetan-themed-malware-email-campaign-targeting-windows-and-macs/>; Dennis Fisher, “Stolen Certificates Found in Malware Possibly Targeting Tibetan Groups,” Threatpost.com, May 15, 2012. http://threatpost.com/en_us/blogs/stolen-certificates-found-malware-possibly-targeting-tibetan-groups-051512.

†As Microsoft has observed, in “targeted attacks,” the perpetrators seek to exploit individuals or groups “specifically because of who they are or what they represent; or to access, exfiltrate, or damage specific high-value assets that they possess. In contrast, most malware attacks are more indiscriminate with the typical goal of spreading malware widely to maximize potential profits.” See Microsoft Security Intelligence Report, *Determined Adversaries and Targeted Attacks* (Redmond, CA: Microsoft, July through December 2011), vol. 12, p. 10. See also Citizen Lab.org, “Information Operations and Tibetan Rights in the Wake of Self-Immolations: Part I,” March 9, 2012. <https://citizenlab.org/2012/03/information-operations-and-tibetan-rights-in-the-wake-of-self-immolations-part-i/>.

Emerging Threats

Chinese hackers in recent years have begun to move beyond the archetypical procedures used by state-sponsored actors (such as the events described above) and into increasingly advanced types of operations or operations against specialized targets. For example:

- *Defeating secure authentication*—As more applications require two-factor authentication, such as the use of a token in addition to a traditional password, Chinese hackers increasingly seek to defeat these security measures.²¹⁶ In January of this year, security researchers identified an apparently China-based cyber espionage operation targeting the U.S. Department of Defense's Common Access Card standard.²¹⁷
- *Bridging air gaps*—Network engineers use “air gaps,” or the physical isolation of critical networks, to protect resources from higher-risk environments, such as networks that connect to the Internet. Indian media reports in July accused China of successfully using removable media (e.g., a compact disc or thumb drive) to compromise air-gapped computers at India's Eastern Naval Command.²¹⁸
- *Targeting deployed platforms*—China also seeks to target various military platforms that operate in forward or otherwise remote areas, including at sea and in space. According to General Cartwright, any aperture in military systems, including “missiles or airplanes or ships or ground systems,” can be exploited.²¹⁹ Similarly, asked about the Chinese cyber threat in January, Jonathan W. Greenert, U.S. Navy chief of naval operations, referenced cyber threats to ships at sea.*
- *Leveraging the cloud*—Cloud services † are an attractive target for hackers, although there is little evidence that Chinese hackers have successfully penetrated cloud systems, according to Mr. Bejtlich.²²⁰ However, Mr. Ville-

*Specifically, when asked about the Chinese cyber threat, Admiral Greenert said: “We’ve ... had a lot of probes on our networks ... all over the place, both ashore and at sea. ... We need to protect our networks at sea—we need to have the systems to do it, the means to do it—just as we protect our headquarters. ... The first and most significant area will be the Western Pacific and that is where the vast majority of our afloat cyber investments are right now, today, and in the future.” See Jonathan W. Greenert, *Cooperation from Strength: The U.S., China and the South China Sea* (Washington, DC: Center for a New American Security, January 11, 2012). <http://www.cnas.org/node/7668>.

†“Cloud computing, often referred to as simply ‘the cloud,’ is the delivery of on-demand computing resources—everything from applications to data centers—over the Internet and on a pay-for-use basis,” according to IBM. See IBM, “What is Cloud Computing?” undated. <http://www.ibm.com/cloud-computing/us/en/what-is-cloud-computing.html>. For a fuller explanation of China's efforts in this arena, please see chapter 5, “Assessing China's Efforts to Become an Innovation Society,” in this Report.

Emerging Threats—Continued

neuve testified that cyber operators increasingly use cloud services for command and control infrastructure in their exploitations.²²¹ From the user's perspective, cloud systems can either reduce defenders' visibility of threats, and thereby inhibit an organization's detection of malicious activity,²²² or help identify targeted campaigns, by aggregating intelligence and monitoring suspicious patterns of activity.²²³

- *Compromising mobile devices*—In several cases, sophisticated malware has propagated within China specifically targeting smart phones.²²⁴ In February, researchers at CrowdStrike demonstrated how an actual Chinese exploit, designed to enable a range of surveillance activities, could compromise mobile devices.²²⁵
- *Launching attacks*—There are only a few indications that China attempts to conduct disruptive or destructive cyber attacks during peacetime.²²⁶ In April 2012, potent denial of service attacks on the U.S.-based website Boxun.com, which reported heavily on the Bo Xilai scandal,* led to speculation about Chinese state involvement.²²⁷ In June of this year, while investigating an intrusion targeting a high-technology telecommunications firm, researchers at CrowdStrike observed an unusual event wherein a Chinese hacker potentially associated with state-sponsored exploitation activity attempted to delete a directory essential to the victim's operating system.†

Supply Chain Threats

China plays a central role in many high-technology supply chains, which presents numerous challenges for supply chain security. As a 2012 study conducted on behalf of the Commission by Northrop Grumman observed, criminally motivated counterfeiting is the most prevalent threat. However:

*governments and private firms alike are increasingly concerned about the potential for state-sponsored attempts to corrupt supply chains to gain access to sensitive networks and communications, or to create the ability to control or debilitate critical systems during a time of crisis by way of vulnerabilities engineered into the integrated circuits of essential network components.*²²⁸

* For more information about this scandal, see chapter 6, "China's Political Transitions in 2012," in this Report.

† The actor targeted the "System32" directory of a Microsoft Windows operating system, attempting also to delete subdirectories and read-only files, while bypassing any prompts for the victim's verification. The attacker gained access to the system using a backdoor. Adam Meyers (director of intelligence, CrowdStrike), telephone interview with Commission staff, July 20, 2012.

The growing complexity of technical systems and the increasing fragmentation of their supply chains allow numerous points for subversion.* A common network router, analyzed by Northrop Grumman on behalf of the Commission, includes dozens of finished semiconductors from 16 separate manufacturers, which could have been fabricated or assembled in almost 20 different countries.²²⁹ Modern military platforms have orders of magnitude more in components and suppliers. For example, the carrier variant of the F-35 Joint Strike Fighter includes some 3,500 integrated circuits.²³⁰

For the purposes of national security, the integrity of the defense and telecommunications supply chains pose the greatest concerns. A 2012 Senate Armed Services Committee investigation found numerous instances of suspect (e.g., counterfeit or deliberately subverted) parts used in a variety of military systems, including thermal imaging equipment, missile defense systems, various military transport aircraft, and a maritime surveillance aircraft. The study concluded that the use of suspect parts “in defense systems can compromise performance and reliability, risk national security, and endanger the safety of military personnel.”²³¹ Moreover, the report identified China as “the dominant source country for counterfeit electronic parts that are infiltrating the defense supply chain,”²³² a finding echoed by a related U.S. Government Accountability Office investigation.²³³

With respect to the telecommunications supply chain, any threats or compromises could allow failures, attacks, or systemic espionage. The private sector lacks specific guidance on how to address these threats, including information about the extent to which Chinese or other foreign-made products increase risk levels.† In the U.S. government, even national security-related agencies, including the Defense Department, “have not determined and do not currently track the extent to which their telecommunications networks contain foreign-developed equipment, software, or services,” according to a recent U.S. Government Accountability Office report.²³⁴

Malicious supply chain attacks have already taken place. Asked at a July 2011 House Committee on Oversight and Government Reform hearing, “Are you aware of any component software/hardware coming to the United States of America that have security risks already embedded into those components?” a senior Department of Homeland Security official confirmed, “I am aware there have been

*Any effort to deliberately subvert a supply chain would come with distinct operational challenges. These challenges are directly proportional to the number of transactions between the point of subversion and the intended end user. For example, an attack launched at a chip fabrication plant would be much more difficult to execute successfully than one launched by selling a deliberately compromised part directly to a defense contractor. For a discussion of upstream versus downstream attacks, see Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 88–94. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf. Notably, the Senate Armed Services Committee’s investigation found that “unvetted independent distributors are the source of the overwhelming majority of suspect parts in the defense supply chain.” U.S. Senate Committee on Armed Services, *Inquiry into Counterfeit Electronic Parts in the Department of Defense Supply Chain* (Washington, DC: May 21, 2012), p. v. <http://www.armed-services.senate.gov/Publications/Counterfeit%20Electronic%20Parts.pdf>. Compromising software supply chains may pose the fewest barriers (see discussion below).

†However, some guidance is included in the House Permanent Select Committee on Intelligence investigation report described in the “Chinese Information Technology Firms” textbox, below.

instances where that has happened.”²³⁵ Similarly, the 2009 Cyber-space Policy Review cites the existence of a few “unambiguous, deliberate subversions” of U.S. supply chains.²³⁶ Little detail on such instances is available in the public domain, but several examples illustrate the vulnerabilities:

- In February of this year, Commission members met with a representative of the U.S. Army Cyber Directorate, who described an incident brought to his organization’s attention in January 2007, wherein a U.S. government investigation of a Lenovo-brand desktop computer revealed beaconing activity (i.e., a self-initiating attempt to establish a connection) to a suspicious foreign entity.²³⁷
- A team from Microsoft reported in September that four of 20 computers purchased in different cities throughout China came preloaded with malware.²³⁸
- In 2008, a digital picture frame containing malware, designed to propagate when connected to computers, shipped to U.S. retailers. A subsequent investigation “traced the malware to a single computer at a contractor’s plant in China,” according to Bloomberg.²³⁹
- In an example from the criminal world, in 2008, credit card readers manufactured in China and used in stores and supermarkets throughout Europe were compromised either during or shortly after the manufacturing process. In addition to their intended function of enabling transactions, the readers transmitted account and PIN (personal information number) information via mobile phone connection to a suspected criminal syndicate with operations in Pakistan.²⁴⁰

Recent research demonstrates that even component-level products, such as individual chips, can be designed with malicious functions or contain vulnerabilities that an adversary could exploit after production.²⁴¹

Software supply chains can also be compromised. Backdoors or other illicit features can be designed into the system from inception or introduced after the point of sale. A recent survey conducted by the Department of Commerce, for example, asked telecommunications operators about testing regimes for software upgrades, updates, and patches.²⁴² Mr. Bejtlich testified that foreign IT suppliers are:

*trying to allay people’s fears by saying ... ‘we’ll have national certification and testing [of our products].’ ... The problem is if any of these systems are remotely upgradable—and everything is, because you need to apply security patches—they’ll test everything, they’ll say it’s clean. As soon as they ship it, and they need to upgrade it, that’s when they’ll slip in the backdoors.*²⁴³

Although it is not clear that the incident was intentional, Chinese computer manufacturer Lenovo in 2008 shipped to Microsoft Windows operating system users a software package containing malware.²⁴⁴

Chinese Information Technology Firms

Chinese IT firms, notably Zhongxing Telecommunications Equipment (ZTE) and Huawei, continued to attract attention throughout 2012. ZTE was involved in several controversies. In early 2012, Reuters reported that ZTE provided Iran with over \$130 million in communications surveillance equipment, as well as some U.S. IT products, and subsequently agreed to transfer additional embargoed U.S. communications systems.²⁴⁵ In response to a U.S. Commerce Department inquiry into the firm's potential violation of U.S. sanctions, ZTE officials reportedly began discussions of shredding documents related to the sale. When this came to light, the Federal Bureau of Investigation began its own investigation.²⁴⁶ Reports also surfaced this year alleging ZTE involvement in kickback scandals in the Philippines and Algeria.²⁴⁷ With respect to technical issues, security researchers in May identified a backdoor that could allow unauthorized users to gain full control over select model ZTE mobile phones. The backdoor may have been included for administration purposes but could also be exploited by others.²⁴⁸

Huawei also encountered legal and security problems in 2012. In June, Algerian courts sentenced at least one company official to ten years in jail after a bribery conviction following an inquiry into Huawei's dealings (along with ZTE) with state-owned Algérie Télécom.²⁴⁹ Previously, in March, the company announced that Australia had blocked it from bidding on contracts for its new national broadband network. Media reports attributed the decision to the Australian attorney general based on security concerns within the Australian Security Intelligence Organization.²⁵⁰ With respect to security, several models of Huawei routers came under scrutiny in July, when security researchers revealed critical flaws that could be exploited remotely.²⁵¹

ZTE and Huawei present a host of market and security concerns for the United States, according to testimony to the Commission by Michael O. McCarthy, chief legal and administrative officer at Infinera Corporation. In addition to numerous subsidies from the Chinese government, "Huawei and ZTE are afforded above market pricing in their protected home market so that they can sell below market overseas."²⁵² Citing these "predatory pricing trends," Mr. McCarthy suggested that ZTE and Huawei could be the "last firms standing" in certain IT sectors, which would ultimately allow them to "raise their prices dramatically, causing further economic harm."²⁵³ The use of ZTE and Huawei products in the United States, according to Mr. McCarthy, also has potential security implications. Network suppliers and operators have the ability to cause disruptions, gather information, or inject malware into connected or supporting systems. Numerous obstacles inhibit effective monitoring for these activities.²⁵⁴

Chinese Information Technology Firms—Continued

The House Permanent Select Committee on Intelligence conducted an in-depth investigation of ZTE and Huawei from November 2011 to October 2012. Despite Huawei requesting an investigation by the U.S. government in order to stem security concerns, the House Permanent Select Committee on Intelligence was “unsatisfied with the level of cooperation and candor provided by each company.” Moreover, the investigation found that “neither company was willing to provide sufficient evidence to ameliorate the Committee’s concerns” and that companies “failed to provide evidence that would satisfy any fair and full investigation.” Consequently, the committee concluded that “[t]he United States should view with suspicion the continued penetration of the U.S. telecommunications market by Chinese telecommunications companies.”²⁵⁵

Similarly, in March, Representative Frank Wolf (VA) testified to the Commission about the severity of such threats. He stated that:

[T]he U.S. has failed to develop a coherent and strategic policy to address the unique and unprecedented threat from Chinese state-owned or state-directed companies that are operating in the U.S. I believe this threat is particularly pronounced from Chinese telecom firms. . . . Chinese state-directed [firms] are collaborating and cooperating with the Chinese government to a degree that would be unfathomable in the U.S. or other Western economies. And as those Chinese state-backed firms enter the U.S. market, it is unclear whether they will be playing by our rules, or their own.

Commission members and staff met with Huawei executives several times throughout 2012, most recently in May and July. In these meetings, which the company solicited, the executives attempted to explain Huawei’s cybersecurity strategy and related matters. They also answered questions about the firm’s security practices and strategy for the U.S. market. The company agreed to provide responses, in writing, to additional questions. The Commission sent these questions in early July but had not received any response by the time this Report went to print.

International Context

Chinese hackers target numerous other countries in cyberspace as well as international institutions. Britain’s security service, MI5, has warned United Kingdom (UK) businesses on several occasions in recent years about the threat from Chinese cyber espionage.²⁵⁶ In June of this year, citing both state and nonstate threats, the organization’s director called the level of malicious cyber activities “astonishing.”²⁵⁷ Officials in Canada, Germany, and Australia, among other places, have also reportedly raised concerns about Chinese cyber espionage. Chinese actors appear to target Japan extensively, with both the legislature and key entities in the defense

industrial base suffering substantial intrusions over the past two years.²⁵⁸ Although the latter has not been publicly attributed, Japanese investigators recently linked the penetration of the legislature to the former senior member of the PLA who published extensively on information warfare-related topics as a student at Nanjing University in Jiangsu Province studying under an 863 program grant.²⁵⁹ Taiwan is also a frequent target; their National Security Bureau revealed in September that Chinese hackers had stolen at least 27,000 discrete pieces of information through cyber espionage over the past seven years.²⁶⁰

This high level of intrusion activity adversely affects the international security environment. Due in large part to the perception of Chinese threats, Asian nations are increasingly looking to procure cyber-related goods and services,²⁶¹ which could include the development of offensive capabilities. Recent disclosures of successful penetrations in Japan and India have even led some commentators in those countries to call for the creation of cyber militias, or confederations of part-time or volunteer cyber operators that seek to assist formal state entities to pursue national objectives in cyberspace. Given the possibility of transitory or tenuous relations with the host state, any movement in this direction would be “profoundly destabilizing for the region,” according to Adam Segal, Maurice R. Greenberg senior fellow for China studies at the Council on Foreign Relations.²⁶² Finally, cyber threats already have negative consequences for information-sharing within international institutions. For example, in March of this year, Chinese hackers reportedly created false social network pages for the North Atlantic Treaty Organization’s (NATO) supreme allied commander in order to glean contact information, such as e-mail addresses and phone numbers, from other NATO and NATO-member government officials.²⁶³

China’s diplomatic posture toward cyberspace is problematic. In recent years, China has increased its advocacy in diplomatic fora on cyber-related issues. For example, as the U.S. Department of Defense has noted, “China has not yet accepted that existing mechanisms (such as the Law of Armed Conflict), apply in cyberspace.”²⁶⁴ Equally important, Beijing holds state-centric views on most Internet issues. In September 2011, for example, China (along with Russia) was a primary sponsor of “an Information Security Code of Conduct that would have governments exercise sovereign authority over the flow of information in cyberspace.”²⁶⁵ Similarly, China’s preference to adjudicate cyber-related issues in a United Nations (UN) framework has led to an emphasis on expanding the role of organizations such as the International Telecommunications Union, a UN body, in Internet administration issues.²⁶⁶ As China’s 2010 white paper, *The Internet in China*, concludes:

China holds that the role of the UN should be given full scope in international Internet administration. . . . China maintains that all countries have equal rights in participating in the administration of the fundamental international resources of the Internet, and a multilateral and transparent allocation system should be established on the basis of the current management mode, so as to allocate

*those resources in a rational way and to promote the balanced development of the global Internet industry.*²⁶⁷

Realization of this policy would come at the expense of non-governmental organizations. For example, the Internet Corporation for Assigned Names and Numbers (better known as ICANN), currently manages the Internet's domain name system. If managed by a UN body, China would be more able to assert control over the system. The Chinese government has become increasingly adept "in utilizing international organizations to advance national interests and to extract what it needs from these institutions," according to a 2011 study for the Commission by the Economic Strategy Institute.²⁶⁸

Implications for the United States

China is "rapidly growing its cyber capabilities," according to an October speech by U.S. Secretary of Defense Leon E. Panetta.²⁶⁹ Chinese computer network exploitation and attacks jeopardize U.S. national security, steal intellectual property, and collect economic, financial, and other data. While most of the intrusions to date against government and military systems appear oriented toward collecting intelligence rather than launching attacks, each objective requires the same sort of accesses. One of the hallmarks of Chinese intrusions is the level of effort the operators expend to maintain access to compromised systems. With little notice, a compromise could switch to become disruptive or destructive in nature. Problematically, penetrations of U.S. military systems still reportedly require weeks to investigate.²⁷⁰ In the aggregate, as a Commission-sponsored research report concludes, "Chinese capabilities in computer network operations have advanced sufficiently to pose genuine risk to U.S. military operations in the event of a conflict," which has far-reaching consequences for the U.S.'s security posture.²⁷¹ Even outside the context of an active conflict, China's capabilities could impede general military readiness or even the operations of U.S. critical infrastructure.

Chinese cyber espionage comes with serious economic consequences. C. Frank Figliuzzi, assistant director of the Federal Bureau of Investigation's counterintelligence division, testified to the House Committee on Homeland Security, Subcommittee on Counterterrorism and Intelligence, in June that in his organization's "pending case load for the current fiscal year, economic espionage losses to the American economy total more than \$13 billion."²⁷² Although this includes more than Chinese cyber espionage, Representative Mike Rogers (MI) in September identified China as the world's most persistent collector, citing "dozens of examples of Chinese economic espionage" compiled by the Department of Justice.²⁷³ Although aggregate damages in terms of monetary or job losses are difficult to tabulate, individual accounts illustrate some of the consequences of this trend.²⁷⁴ For example, Bloomberg reported, citing U.S. officials, that "[o]ne U.S. metallurgical company lost technology to China's hackers that cost \$1 billion and 20 years to develop."²⁷⁵

Potential Chinese threats to supply-chain security raise doubts about defense system and critical infrastructure assurance. As

James R. Clapper, Jr., U.S. director of National Intelligence, testified to the Senate Armed Services Committee in February, “Managing the enormous vulnerabilities within the IT supply chain for U.S. networks” is one of our “greatest strategic cyber challenges.”²⁷⁶ The problem includes both counterfeit components sold for profit and deliberately subverted equipment that can enable espionage and attacks. Many components of high-technology supply chains are produced outside of the United States, oftentimes in environments permissive to exploitation. However, evaluating hardware is tremendously challenging, especially at the scale of the purchases made by government entities or infrastructure operators. The U.S. government does not have the capability to evaluate even the software element of the supply chain, according to April 2011 testimony to the Senate Judiciary Subcommittee on Crime and Terrorism from Gordon Snow, assistant director of the Federal Bureau of Investigation’s Cyber Division.²⁷⁷ Frequent software updates in many critical systems complicate matters further.

Many U.S. entities do not have the capability to sufficiently manage the threat of Chinese cyber espionage. Persistent Chinese actors eventually identify and exploit gaps in even well-defended IT environments. Information that may help raise defenses is not always available because of bottlenecks in exchanging practical information among military, government, private sector, and other non-governmental stakeholders. Military and government institutions must balance the imperative to provide security against intelligence collection efforts. In many instances, according to Jason Healey, director of the Cyber Statecraft Initiative at the Atlantic Council, the latter prevails. He testified that “[w]e will never make progress if everyone looks for their classification stamps when the words ‘China,’ ‘cyber,’ and ‘espionage,’ are used together.”²⁷⁸ Businesses, for their part, often have concerns about exposing proprietary or other sensitive information. This extends beyond tactical information-sharing practices and into matters of corporate governance. Notwithstanding Securities and Exchange Commission guidance encouraging the disclosure of material penetrations, many listed firms still do not report significant breaches, either due to choice, ignorance, or ambiguities in the reporting requirements.²⁷⁹

In the international context, Chinese actions increasingly affect the state of the Internet. Persistent espionage poses substantial dangers to the operations of numerous international organizations and nongovernmental entities. Fear of such espionage as well as attacks has led countries, particularly China’s Asian neighbors, to increase their own cyber capabilities, which may have destabilizing consequences. Chinese diplomatic initiatives, if successful, could consolidate state control over the Internet at the expense of non-governmental organizations and other independent actors. Moreover, Beijing may influence the Internet’s development through the introduction and advancement of Chinese technological standards.²⁸⁰ For example, a June 2012 proposal by state-owned China Mobile and China Telecom to the Internet Engineering Task Force, an international standards-setting body, advocates for segmenting the Internet’s domain name system, which would allow China more control over the Chinese portion of the Internet.²⁸¹ Technological standards have numerous implications, ranging from freedom of

speech to commerce. China's large Internet population and the increasing dominance of its technology firms abroad make its ability to affect such standards more likely over the long term.

Conclusions

- China-based cyber exploitations and attacks are executed by numerous different actors. The PLA has several distinct entities that operate in the domain, including elements of the headquarters staff and potentially each military branch, some combination of which would seek to execute cyber attacks during wartime. Several entities within China's intelligence and security services also likely have a cyber espionage mandate. Nominally independent groups likely engage in state-sponsored exploitation, and certain corporate actors, such as Chinese information technology or telecommunications firms, may also operate in cyberspace on the state's behalf.
- The Chinese military, the People's Liberation Army, is refining and implementing strategies for the cyber domain. Conceptually, the PLA bundles cyber issues together with other areas of conflict, such as electronic warfare, space warfare, and public opinion warfare. This approach seeks to provide the PLA with the ability to defend, and comprehensively leverage, information for China's benefit. China has no single public strategy to attain its civil goals in cyberspace, but the country's numerous development plans identify investment priorities and inform cyber-related bureaucratic objectives and decisions.
- The state of the Internet in China substantially affects the broader cyber domain. With close to 540 million Internet users and over 675 million Internet devices, much of the country's influence relates to its massive scale. As in the United States and elsewhere, Chinese users face a range of malicious cyber activities, and these devices are vulnerable and often compromised. China seeks to shape its cyber domain with heavy investment in emerging technologies and comparable investment in research, including in areas that relate to cyber exploitation and attack. To these ends, China's high-technology talent pool is on a favorable trajectory.
- In 2012, Chinese state-sponsored actors continued to exploit government, military, industrial, and nongovernmental computer systems. Any individual penetration remains difficult to attribute, but security researchers are increasingly able to group exploitations into "campaigns" based on common features and gain better insight into those responsible. Although most China-based activity observed over the past year relied on basic and straightforward techniques, a series of new developments suggest Chinese exploitation capabilities are improving significantly. Irrespective of sophistication, the volume of exploitation attempts yielded enough successful breaches to make China the most threatening actor in cyberspace.
- China presents the largest challenge to U.S. supply chain integrity. Many components of defense systems and telecommuni-

cations infrastructure are manufactured in China or sourced from Chinese entities. This yields active problems with counterfeit and substandard components and raises the potential for the introduction into critical systems of intentionally subverted components. Counterfeit parts can cause failures that raise costs, adversely affect military readiness, and subject servicemen and women to unnecessary dangers. Subverted components can allow foreign militaries or intelligence services to disrupt, destroy, or otherwise compromise U.S. systems.

- Chinese activities in cyberspace have a range of consequences for the international environment. Countries targeted by Chinese espionage increasingly seek their own cyber capabilities, which may yield destabilizing consequences. Beijing also advocates for policies in cyberspace that enhance state control over the Internet. To the extent China is successful in this regard, the shift would have adverse consequences for free speech and other norms and would come at the expense of nongovernmental participation in Internet administration.

SECTION 3: CHINA'S NUCLEAR DEVELOPMENTS

Introduction

In conjunction with a broader, militarywide modernization program, China has over the past two decades made a series of quantitative and qualitative improvements to its nuclear forces. New classes of missiles, designed for greater mobility, reliability, and reach, incorporate features to ensure their ability to overcome adversary defenses and strike their targets. Emerging platforms, particularly land- and sea-based, and expanded subterranean storage facilities add to these weapons' survivability against a possible first strike. In tandem, organizational and doctrinal reforms have sought to streamline the operations of China's nuclear forces. In the aggregate, China has assumed a more muscular nuclear posture, which ongoing improvements will continue to enhance.

Several developments in recent years have attracted attention from western policymakers and defense analysts on China's nuclear weapons stockpiles, capabilities, and intentions. U.S. and Russian commitments to reduce stockpiles raised questions about the desirability of further cuts without clearer information on China's nuclear forces. This is particularly relevant given a spirited debate over the past two years, inspired largely by greater attention to China's network of underground nuclear weapons storage and transport tunnels, about the accuracy of widely accepted assessments of China's nuclear posture. Additionally, discussions within the U.S. defense establishment about the potential for precision military strikes on China's conventional forces in the context of a military contingency have brought into focus potential ambiguities in Beijing's position on thresholds for the use of nuclear weapons.

In light of these issues, this section of the Annual Report surveys China's nuclear complex. Drawing from a public hearing the Commission held on the subject in March 2012, this portion of the Report includes explanations of China's nuclear arms-related organizations and associated command and control issues; Chinese nuclear policy and strategy; China's nuclear arsenal; and China's fissile material stocks. This is followed by a description of the international context of China's nuclear modernization and concludes with a discussion of the implications for the United States.

Organization and Command and Control

China's nuclear forces have specialized organizational characteristics to streamline command and control. The Second Artillery Forces (sometimes referred to as the "Strategic Rocket Forces"), an independent branch of the People's Liberation Army (PLA), maintain primary responsibility for China's nuclear weapons. For dec-

ades after its creation in 1966, the organization received limited attention and resources within the wider, ground forces-centric Chinese defense establishment. Although not considered a service itself, the Second Artillery status has been elevated since the late 1990s to a level similar to the PLA Air Force and PLA Navy.²⁸² Today, the branch has grown to include approximately 100,000 people and about 28 missile launch brigades, subordinate to six army-level missile bases throughout China.²⁸³

The command authority of the Second Artillery is highly centralized. The organization falls “under the direct command and control” of the Central Military Commission,²⁸⁴ the Chinese military’s supreme body. This differs from the PLA services, including the PLA Navy and PLA Air Force, which, although also ultimately subordinate to the Central Military Commission, report through various additional layers of command.* While the Second Artillery receives various combat orders through the PLA headquarters’ General Staff Department, only the Central Military Commission can send nuclear launch orders (it is unclear whether this also applies to conventional missile launches).²⁸⁵ As an organizational matter, the inclusion since 2004²⁸⁶ of the Second Artillery commander as a member of the Central Military Commission presumably strengthened this command relationship. The Second Artillery reportedly follows the Central Military Commission’s orders “in the strictest and most precise manner.”²⁸⁷

The special relationship between the Central Military Commission and the Second Artillery provides the Chinese Communist Party (CCP) ultimate control over China’s nuclear arsenal. Though the Central Military Commission is composed primarily of military officers, the entity is formally a department of the CCP Central Committee.²⁸⁸ In principle, decisions about whether and when to use nuclear weapons would be made by the full Politburo Standing Committee,²⁸⁹ of which the Central Military Commission’s civilian chairman (presently China’s President Hu Jintao) and vice chairman (presently China’s Vice President and presumptive next President Xi Jinping) are key members. These individuals’ authority on the Central Military Commission follows from their ranks within the party, not necessarily from their concurrent roles as senior state leaders.²⁹⁰

In practice, command authority may face various constraints. General James E. Cartwright (U.S. Marine Corps, ret.), former vice chairman of the U.S. Joint Chiefs of Staff, testified to the Commission that, with respect to China and nuclear issues, “[w]hat worries me most are the disconnects that tend to occur between [China’s] government and their military.” Citing China’s 2007 antisatellite demonstration and the 2011 test flight of its J-20 fighter aircraft (which occurred during a visit to China by then U.S. Secretary of Defense Robert Gates), both of which may have caught China’s civilian leadership off guard, General Cartwright said that these and

*These additional layers of command could include service, military region, or other PLA headquarters bureaucracies, depending on circumstances.

other incidents point to possible breakdowns in command and control and policy coordination.*²⁹¹

China's civilian leadership appears to take this issue seriously. Informed by events during the 1966–1976 Cultural Revolution, such as a risky and potentially unauthorized 1966 nuclear ballistic missile test that overflowed populous areas,²⁹² China's modern nuclear complex is designed to promote unitary control and is improving from its historically low (even "primitive," according to one analysis) level of development.²⁹³ Nuclear weapons security is now apparently of "equal or greater importance than operational efficiency and effectiveness," according to Mark A. Stokes, executive director of the Project 2049 Institute.²⁹⁴ This prioritization manifests in China's stockpile management practices. China's 2008 defense white paper reports that, for safety, the Second Artillery "has adopted reliable technical means and methods," in addition to other safety measures, "to avoid unauthorized and accidental launches."²⁹⁵ Few details about these measures have emerged, but China's land-based missiles "appear to be stored separately from warheads," and the two are only mated and deployed "in elevated readiness conditions and perhaps on occasion for training purposes," according to Mr. Stokes.²⁹⁶

However, the increasing mobility of China's nuclear weapons, and the maturation of its air- and sea-based varieties in particular, will challenge existing safeguards within China's nuclear command and control architecture.† As the U.S. Department of Defense has stated:

*The introduction of more mobile systems will create new command and control challenges for China's leadership, which now confronts a different set of variables related to deployment and release authorities. For example, the PLA Navy has only a limited capacity to communicate with submarines at sea, and the PLA Navy has no experience in managing an SSBN [nuclear-powered ballistic missile submarine] fleet that performs strategic patrols with live nuclear warheads mated to missiles. Land-based mobile missiles may face similar command and control challenges in wartime.*²⁹⁷

The diversification of China's nuclear arsenal affects virtually every layer of its command and control regime. For example, the Second Artillery may have ceded some or all aspects of the storage, management, and use of some portion of China's arsenal to the other PLA services, particularly the PLA Navy.²⁹⁸ On a technical level, such developments "may erode traditional controls against unauthorized launches," which relied historically upon the separation of components, according to testimony by Phillip C. Saunders,

*Alternatively, such events may indicate breakdowns in the Chinese government's planning mechanisms or public relations posture, or be contrived to instill uncertainty in foreign audiences.

†As one analyst notes, "China has not developed detailed procedures for the security (from unauthorized launch) and safety (from accidental launch) of its launch forces. On land, the PLA has addressed these dangers through maintaining the separation of warhead and launch platforms. Yet that approach will not be viable at sea, and so positive control of the warheads will need to rely on other approaches." Christopher P. Twomey, "Asia's Complex Strategic Environment: Nuclear multipolarity and other dangers," *Asia Policy* 11 (Seattle, WA: National Bureau of Asian Research, January 2011): 70–1.

director of the Center for the Study of Chinese Military Affairs at the National Defense University.²⁹⁹ Questions remain about whether China has a “two-man rule” or other provisions in place to ensure that, with emerging mobile platforms, launches can take place only with authorization.*

This command and control system may be the fundamental determinant of China’s responsiveness in a nuclear contingency. Each of these features, designed to increase assurance in launch orders, would necessarily affect the speed with which China could commence a nuclear strike, whether preventive, preemptive, or retaliatory. Acceptance of a delayed nuclear counterstrike is consistent with China’s articulated nuclear strategy, discussed below. Although little information is available about China’s nuclear alert posture, a recent defense white paper claims that its nuclear forces “are kept at an appropriate level of readiness” and are not “aimed at any country” during peacetime.³⁰⁰

Policy and Strategy

China’s official pronouncements about nuclear policies and strategies are short, consistent, and ill defined. Biennial defense white papers convey that “China consistently upholds the policy of no first use of nuclear weapons, adheres to a self-defensive nuclear strategy, and will never enter into a nuclear arms race with any other country.”³⁰¹ To fulfill these principles, these papers assert that China “will limit its nuclear capabilities to the minimum level required for national security.”³⁰¹ Elsewhere, China’s white papers describe a requirement to maintain a “lean and effective” nuclear force.³⁰² Both characterizations are subject to interpretation.³⁰³ The U.S. Department of Defense provides little insight into how it views the matter, noting only in its *Military and Security Developments Involving the People’s Republic of China 2012* report to Congress that China seeks the capability to respond to a nuclear attack “with sufficient strength to inflict unacceptable damage on the enemy.”³⁰⁴ For planning purposes, Chinese strategists consider the United States as the principal threat.³⁰⁵

Notwithstanding the significant problem of how outsiders ought to interpret China’s statements, they are generally consistent and grounded in policies formulated by Mao Zedong and Deng Xiaoping.³⁰⁶ Dr. Saunders testified that:

China’s senior political and military leaders have consistently emphasized that the principal utility of nuclear weapons lies in deterring a nuclear attack and countering nuclear coercion. Although Chinese leaders believe that possession of nuclear weapons bestows international status, they do not believe that more warheads increase a state’s power or status. Unlike U.S. and Soviet strategists who focused heavily on the potential impact of relative capabilities in nuclear war-fighting scenarios, Chinese leaders ap-

*A “two-man rule,” in this context, requires that at least two people take action to initiate a launch. Dr. Saunders testified that China has “been exposed to some of that technology, but I don’t think we [U.S. PLA observers] know for sure the extent to which they [China] may have adopted it,” particularly in the case of submarines. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, testimony of Phillip C. Saunders, March 26, 2012.

*pear to have concluded that one or a few nuclear weapons striking an adversary's homeland would constitute unacceptable damage, making a large arsenal unnecessary to achieve the desired strategic effects.*³⁰⁷

However, numerous questions remain about the size and features of China's nuclear stockpile (see "Arsenal" subsection, below).

Deterrence and Retaliation

China seeks to maintain nuclear deterrence by assuring the ability to retaliate to a nuclear first strike.³⁰⁸ Second Artillery training materials, to the limited extent they are available for outside analysis, generally support this premise. According to testimony from Dr. Saunders, "Doctrinal materials and published reports about Second Artillery Corps training are consistent with Chinese public statements about nuclear strategy."³⁰⁹ Additionally, "Doctrinal materials published in the early 2000s describe the Second Artillery's 'nuclear counterstrike campaign' and refer to 'striking after the enemy has struck' as a basic guiding principle." The materials, according to his analysis, also "stress the need to be prepared to operate in an environment where nuclear strikes have occurred."³¹⁰ This retaliatory approach appears to comport in most respects with features of China's current nuclear arsenal (described below), including size and alert level.

China announced a "No First Use" policy soon after its first nuclear test in 1964, but its exact meaning is ambiguous.³¹¹ Although debated periodically within China's defense establishment, the character of the formulation has not changed.* The most recent iteration, in the 2010 defense white paper, reads:

*China will not be the first to use nuclear weapons at any time and under any circumstance, and unequivocally commits that under no circumstances will it use or threaten to use nuclear weapons against nonnuclear weapon states or nuclear weapon free zones.*³¹²

Although seemingly definitive, such pronouncements raise a variety of questions about how to interpret them. It is unclear whether another side's "use" means detonation, or whether something like "nuclear coercion," a staple term within prenuclear China's security policy lexicon,† might somehow constitute first use. Other actions that may or may not be covered by the declaration include strikes on what China considers its own territory (e.g., Taiwan or large areas of the South China Sea), demonstration strikes, or high-altitude bursts.³¹³ Further questions surround the prospects for the use of nuclear weapons in response to conventional strikes against

*A series of debates about nuclear strategy that appeared in PLA-related literature in the early 1990s and mid-2000s introduced doubts about the No First Use pledge. Senior PLA officers (in addition to, reportedly, at least one Chinese arms control official) have also periodically made statements in various fora, including to the media, that do not comport with a strict, literal interpretation of the No First Use pledge. See U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012; Mark Schneider, "The Nuclear Doctrine and Forces of the People's Republic of China," *Comparative Strategy* 28 (Spring 2009): 246–8.

†"Nuclear coercion" refers to intimidation, blackmail, or other coercive diplomacy by nuclear weapons states. For an explanation of the classical usage, see M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security* 45: 2 (Fall 2010): 60.

China's nuclear weapons or command and control systems, strikes with weapons of mass destruction-like effects, or in other scenarios interpreted to threaten the survival of the Chinese regime.³¹⁴ Moreover, there is some speculation as to whether early warning about a possible nuclear strike on China would cause its leaders to cross the nuclear threshold, and what types of indications would be considered credible and threatening enough to act upon.³¹⁵ The Chinese government, like some other nuclear countries, remains deliberately ambiguous on these points.³¹⁶

“Active Defense”

Another important consideration is how China's nuclear strategy fits in with its overall defense strategy. The PLA's overriding strategy depends heavily on the concept of “active defense.” This principle emphasizes gaining and maintaining the initiative in warfare, at times by striking first.³¹⁷ According to testimony before the House Armed Services Committee from Keith B. Payne, commissioner of the Congressional Commission on the Strategic Posture of the United States, Chinese military doctrine places nuclear weapons into the active defense construct.³¹⁸ According to testimony from Dr. Saunders:

Although Chinese nuclear doctrine, force structure, and training appear broadly consistent with publicly articulated Chinese nuclear policy, some aspects have raised concerns for Western analysts. One is the emphasis in Chinese military doctrine of the importance of maintaining the initiative, a concept in tension with the retaliatory principle of ‘strike only after the enemy has struck.’³¹⁹

It is unknown how Chinese defense planners reconcile apparently contradictory elements of this strategy with China's No First Use policy and whether or how this might change in a time of conflict.

Arsenal

China has disclosed little information about the size, composition, and disposition of its nuclear forces, which yields uncertainties about the size and characteristics of its warhead inventory. According to Mr. Stokes, the lack of information follows from China's overall approach to deterrence, which has long “relied upon quantitative and geographic ambiguity.”³²⁰ This deliberate ambiguity, according to one analysis, means that, “within the study of Chinese military and security affairs, problems of data availability are most acute regarding nuclear issues.”³²¹ Similarly, many outside analysts regard the Second Artillery as perhaps the least transparent entity within the PLA,³²² which as an institution is sometimes criticized for its opaqueness. According to Hui Zhang, a senior research associate at Harvard University, “Beijing believes the transparency of its nuclear strategy and nuclear doctrine is more important than that of the force posture and that the opacity of its force posture can serve to enhance the ‘deterrence effect’ of its small nuclear force.”³²³

Most western assessments conclude that China possesses somewhere between 100 and 500 nuclear weapons, while the most rig-

orous open source surveys to date produce results that cluster around 240. (Figure 1, below, shows common estimates of China's stockpile in comparison to other nuclear countries.) Several sources, particularly from China's neighbors, present substantially higher estimates. Taiwan's Ministry of Defense asserted in 2011 that China's Second Artillery possessed between 450 and 500 nuclear warheads.³²⁴ According to testimony from Mark B. Schneider, senior analyst at the National Institute of Public Policy, various Russian estimates tend to be greater still.³²⁵ One projection ranges from 1,600 to 1,800 nuclear weapons in total (with 800–900 operational); others suggest even higher numbers.* The variance in these estimates follows not just from the dearth of public information on the subject but also from the use of different analytical methodologies and assumptions. In most cases, these estimates do not distinguish between strategic and tactical weapons, a distinction clouded by China's regional deterrence missions.

Figure 1: World Nuclear Forces¹

Country	Operational Strategic	Operational Nonstrategic	Reserve/ Nondeployed	Military Stockpile	Total Inventory
Russia	1,800 (1,550) ²	0	3,700	5,500	10,000
U.S.	1,950 (1,550) ³	200	2,850	5,000	8,000
France	290	N/A	?	300	300
UK	160	N/A	65	225	225
Israel	0	N/A	80	80	80
Pakistan	0	N/A	90–110	90–110	90–110
India	0	N/A	80–100	80–100	80–100
North Korea	0	N/A	<10	<10	<10
China					
Source			Estimated Total Inventory		
— Testimony to Commission ⁴			100–200		
— Hui Zhang ⁵			166		
— Various ⁶			240		
— Perry-Schlesinger Commission ⁷			400		
— Taiwan Ministry of National Defense ⁸			450–500		
— IISS Military Balance (modified) ⁹			526		
— Viktor Yesin ¹⁰			1,600–1,800		

¹ Except where otherwise noted, these figures are from the Federation of American Scientists, "World Nuclear Forces" (Washington, DC: May 7, 2012). <http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html>. The data presented on this chart include numerous assumptions. For a full explanation, see information contained in the source itself.

* Viktor Yesin, "The Third One after the U.S. and Russia," *Voyenno-Promyshlennyy Kuryer* (Moscow), May 2, 2012. OSC ID: CEP20120627037003. <http://www.opensource.gov>. Higher potential numbers are suggested in Aleksey Arbatov, "China, Strategic Stability, Disarmament: PRC Economic and Technical Potential Permits a Rapid Nuclear Missile Buildup," *Voyenno-Promyshlennyy Kuryer* (Moscow), November 23, 2011. OSC ID: CEP20120706767004. <http://www.opensource.gov>. Some western nuclear analysts have questioned these accounts.

²Under New START [Strategic Arms Reduction Treaty], the United States and Russia have each committed to draw down deployed strategic warheads to 1,550 and deployed strategic delivery systems to 700 by February 2018. See *Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms*, April 8, 2010. <http://www.state.gov/documents/organization/140035.pdf>. Note that the treaty employs some counterintuitive accounting rules, particularly for bombers.

³Here again, 1,550 represents commitments made for reductions by 2018.

⁴Phillip A. Karber testified that the lower-bound of most estimates is 100 operational weapons. Other commonly accepted estimates range up to 400. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012. Henry Sokolski testified that most commonly accepted estimates cluster around 200. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Henry Sokolski, March 26, 2012. No testimony to the Commission provided upper-bound estimates.

⁵Hui Zhang, "Nuclear Modernization in China," in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will, a project of the Women's International League for Peace and Freedom March 2012), p. 20. <http://reachingcriticalwill.org/images/documents/Publications/modernization/assuring-destruction-forever.pdf>.

⁶Several sources arrive directly at 240: U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark A. Stokes, March 26, 2012; and due to a common author, Federation of American Scientists, "World Nuclear Forces" (Washington, DC: May 7, 2012). <http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html>; Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists* 67: 81 (2011): 85. <http://bos.sagepub.com/content/67/6/81.full.pdf>; and Shannon N. Kile, Phillip Schell, and Hans M. Kristensen, "Chinese nuclear forces," in SIPRI [Stockholm International Peace Research Institute] *Yearbook 2012* (London, United Kingdom: Oxford University Press, forthcoming, November 2012), p. 328. <http://www.sipri.org/yearbook/2012/files/SIPRIYBc07sV.pdf>.

⁷William J. Perry et al., *America's Strategic Posture* (Washington, DC: United States Institute of Peace Press, Spring 2009), p. 111. http://media.usip.org/reports/strat_posture_report.pdf. A helpful qualification to this figure is contained in Christopher P. Twomey, "Asia's Complex Strategic Environment: Nuclear multipolarity and other dangers," *Asia Policy* 11 (Seattle, WA: National Bureau of Asian Research, January 2011), p. 58 (Table 1 n).

⁸This figure appears to exclude nuclear bombers and submarine launched ballistic missiles. The source regards about 180 of these weapons to be operational. Republic of China, *National Defense Report* (Taipei: Ministry of National Defense, 2011). p. 82. http://2011mndreport.mnd.gov.tw/en/pdf/100report_english.pdf.

⁹This source cites 470 strategic missiles. A detailed breakdown (which only adds up to 460) reveals that this only includes land-based systems. Interestingly, the 470 figure includes 36 DF-21C missiles and 6 DF-21D missiles, which may be capable of delivering nuclear payloads but are probably intended for conventional missions. (Page 36 of the *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* also refers to a nuclear DF-21D, but the Department of Defense confirmed to the Commission that this was a typographical error. (Name withheld (staff member, Office of the Secretary of Defense Legislative Affairs), interview with Commission staff, September 12, 2011.) The source also cites one XIA-class and two JIN-class ballistic missile submarines with 12 JL-1 missiles and "up to" 12 JL-2 missiles, respectively. Although unspecified in the source, for the purposes of this chart, the Commission assumes a single warhead for each missile. Thirty-six warheads are thus added to the 470 figure provided in the source. Similarly, the source cites one regiment of nuclear-ready H-6E bombers but does not specify the number of bombers per regiment or the quantity of bombs per bomber. For the purposes of this chart, the Commission thus assumes a total of 20 bombers, each carrying one operational warhead, raising the figure once again by 20. These bomber-related assumptions are consistent with those made by the Stockholm International Peace Research Institute and the Federation of American Scientists (cited above). See The International Institute for Strategic Studies, *The Military Balance 2012* (London; UK: Routledge, 2012). pp. 234, 237.

¹⁰This source assumes 800–900 of these weapons to be operational. Viktor Yesin, "The Third One after the U.S. and Russia," *Voyenno-Promyshlennyy Kuryer* (Moscow), May 2, 2012. OSC ID: CEP20120627037003. <http://www.opensource.gov>. The Russian Academy of Sciences appears to have adopted this figure in at least one publication. See Interfax-AVN online (Moscow), "China may have 1,600–1,800 nuclear munitions—experts," September 28, 2012. OSC ID: CEP2012 0928950016. <http://www.opensource.gov>. As noted above, some western nuclear analysts have questioned this account.

China has a variety of means to deliver nuclear weapons. The most critical is the Second Artillery's land-based ballistic missile programs, which form the backbone of China's nuclear deterrent. The PLA Navy has a symbolic ballistic missile submarine capability that, through ongoing developments, could soon yield an operational, sea-based nuclear capability. The PLA Air Force also has a bomber capable of dropping nuclear weapons. Finally, these means of delivery must be viewed in light of the PLA's nuclear

weapons storage and handling infrastructure, which is particularly critical given China's emphasis on the security and mobility of its nuclear forces. This subsection discusses each issue in turn.

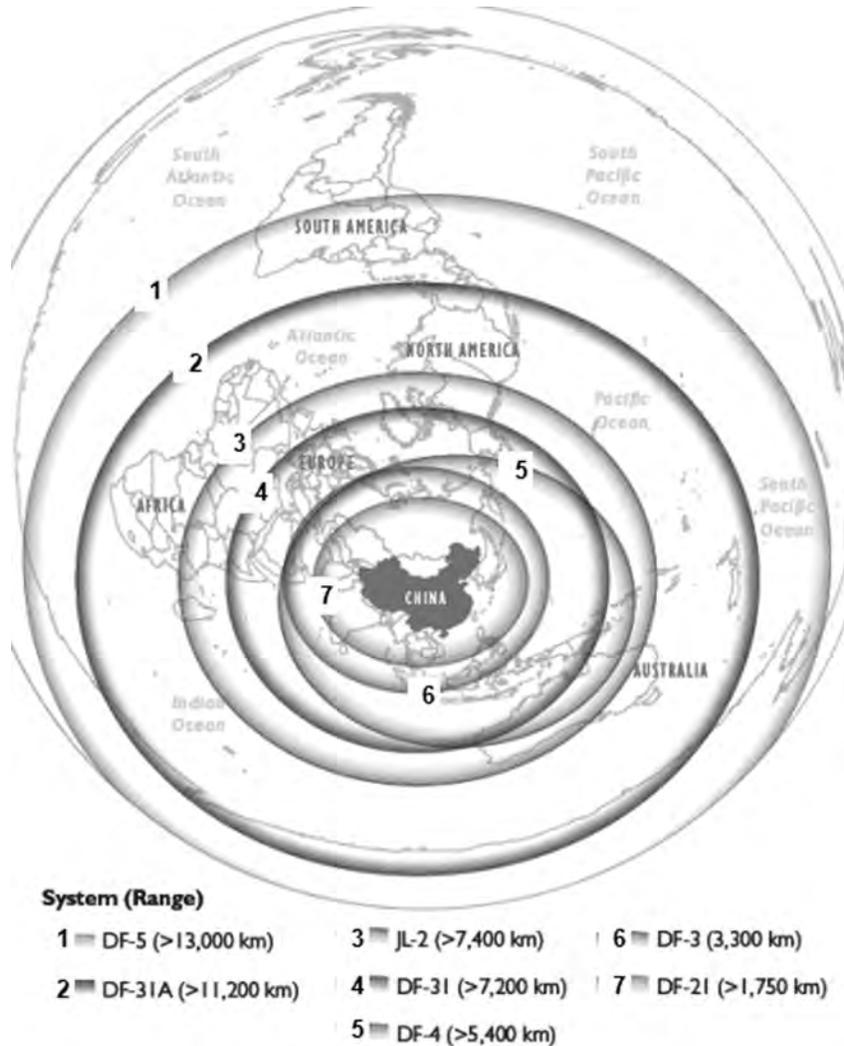
Intercontinental Ballistic Missiles

China's land-based intercontinental ballistic missile force is the central component of China's nuclear deterrent posture and is likely to remain so into the foreseeable future.³²⁶ Although China does not disclose figures, the U.S. Department of Defense reports that China has 50 to 75 intercontinental ballistic missiles (i.e., those with greater than a 5,500 kilometer [km] range).³²⁷ Although the department has not provided detailed breakdowns since its 2010 report to Congress on China's military, this figure includes some combination of the DF-5 (greater than a 13,000 km range), the DF-31A (greater than a 11,200 km range), and the DF-31 (greater than a 7,200 km range).³²⁸ China is in the process of modernizing and increasing this intercontinental ballistic missile inventory, but the rate of modernization remains unclear. In the aggregate, "The number of Chinese intercontinental ballistic missiles that can strike the continental United States will probably more than double by 2025," according to recent testimony by Ronald L. Burgess, Jr., U.S. Army (retired), then director of the U.S. Defense Intelligence Agency.³²⁹

Part of China's modernization program includes active missile testing and the development of at least one new class of road mobile, intercontinental ballistic missiles, sometimes referred to as the DF-41 program.³³⁰ China reportedly tested this missile, successfully, on July 24.³³¹ Although details remain scarce, this missile could employ a multiple, independently targeted reentry vehicle capability, which would allow a single missile to threaten multiple targets and complicate missile defense, substantially improving China's nuclear deterrent.³³² Following a subsequent test in mid-August of China's new submarine-launched, intercontinental ballistic missile, the JL-2 (described below), China tested an older DF-5A on August 20 and a newer DF-31A on August 30.³³³ Contemporaneously with the latter, the PLA Second Artillery Corps announced it had succeeded in making a "comprehensive transformation" toward a fully mobile missile force.³³⁴

The Second Artillery also possesses a variety of shorter-range nuclear and nuclear-capable ballistic missiles for regional deterrence. (Figure 2, below, shows the ranges of China's ballistic missiles.) In addition to maintaining the ability to strike allied capitals (e.g., in South Korea and Japan), many of these missiles could strike the U.S. military's forward bases in the Pacific. However, available materials on China's nuclear strategies do not suggest that China's defense planners envisage the use of nuclear weapons for this type of application.³³⁵

* Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 43. The intercontinental ballistic missile designation will also capture the JL-2 (projected at greater than a 7,400 km range) when it becomes operational. Note that the visual depiction in figure 2 does not appear to account for the additional range provided during submarine patrols.

Figure 2: China's Missile Ranges, 2012

Source: U.S. Department of Defense. Modified from Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 43.

China also seeks to make a range of qualitative improvements in its strategic missile forces.³³⁶ This includes advances in range and reliability as well as new features intended to defeat ballistic missile defense systems. According to the U.S. Department of Defense, China is developing new technologies such as “maneuvering reentry vehicles, MIRVs [multiple independently targeted reentry vehicles], decoys, chaff, jamming, thermal shielding, and anti-satellite” weapons.³³⁷

In parallel with China's procurement of more and better nuclear weapons, the Second Artillery is developing and refining its concepts for using these missiles effectively. For example, Chinese official media report the occurrence of "numerous Second Artillery Corps training exercises featuring maneuver, camouflage, and launch operations under simulated combat conditions, which are intended to increase survivability," according to the U.S. Department of Defense.*³³⁸ These activities complement the Second Artillery's unique, highly mobile strategy. Whereas the United States has long relied on hardened silos, designed to withstand an opponent's nuclear blast, to store and launch its land-based ballistic missiles, China relies to a much greater extent on mobility, camouflage, and concealment. To these ends, the Second Artillery uses large, wheeled "transporter erector launchers" for many of its ballistic missiles. The premise behind this strategy is that, in a time of tension, the vehicles would deploy from hardened facilities and disperse widely. If the tension erupted into a nuclear exchange, presumably some portion of the trucks would survive to conduct a nuclear counterstrike. Complementing this system is China's vast network of underground tunnels, which are used to store and transport China's missiles as well as complicate an adversary's targeting (these concepts are discussed more fully below).³³⁹

Nuclear Ballistic Missile Submarines

China has had a symbolic† ballistic missile submarine capability for decades but is only now on the cusp of establishing its first credible, "near-continuous at-sea strategic deterrent."³⁴⁰ The PLA Navy has operated a sole *XIA*-class (also called the Type-092) submarine and the attendant JL-1 series missile since 1981, but it is unknown whether the combination has ever conducted a real, viable deterrent patrol.³⁴¹ China's *JIN*-class submarine (also called the Type-094) and JL-2 submarine-launched intercontinental ballistic missile combination is intended to provide China with this capability. Two of approximately five planned *JIN*-class submarines are already deployed within the PLA Navy.³⁴² The JL-2 program, conversely, is still in development. The U.S. Department of Defense reports that the missile "has faced repeated delays" but "continues to undergo flight testing" and "may reach initial operating capability within the next two years."³⁴³ Notably, media reports from China and Taiwan in early 2012 reported a series of supposedly successful JL-2 tests in late 2011.³⁴⁴ Subsequently, in mid-August 2012, additional information surfaced that the PLA Navy again flight-tested a JL-2 from a *JIN*-class submarine.³⁴⁵

*Although these exercises are challenging to quantify, a review of articles in *Huojianbing Bao*, the Second Artillery's newspaper, referenced at least six exercises in May 2012, including a field maneuver communications exercise, a joint electronic countermeasures exercise, an opposing forces signal training exercise, a general field training exercise, an emergency handling drill, and a missile simulation training exercise.

†The system is regarded as "symbolic" because, in addition to its dubious operational status, the PLA Navy's possession of only one *XIA*-class means that China would necessarily face long periods of time (e.g., for maintenance and training) when the submarine would be unavailable for use (see below).

Nuclear Bombers

China's final means of delivering nuclear weapons is by way of bomber. According to the Federation of American Scientists, "China's nuclear bomber capability is minor and involves secondary missions for only a small number of aircraft."³⁴⁶ The PLA Air Force operates perhaps 20 nuclear-ready H-6 bombers, which apparently rely primarily upon gravity bombs. The H-6 may also carry DH-10 cruise missiles with nuclear payloads, though available sources do not definitively specify whether the PLA Air Force has or seeks that capability.³⁴⁷ If the PLA Air Force is indeed working toward this end, success would represent a potent improvement in the range of the PLA's air-based nuclear weapons. Assuming similar characteristics as the conventional DH-10 land attack cruise missile,³⁴⁸ a nuclear variant could provide the PLA Air Force with approximately a 3,300 km range—almost double that of the DF-21 missile.³⁴⁹ More importantly, a more robust, air-launched nuclear missile capability would increase the survivability of China's nuclear forces and enhance China's ability to deter rivals in the region.

Storage and Transportation Infrastructure

The Second Artillery uses an elaborate infrastructure to store and transport its nuclear weapons. In addition to rail and road networks,³⁵⁰ this infrastructure reportedly includes up to 5,000 km of underground facilities designed specifically to facilitate the movement, concealment, and protection of China's nuclear assets.³⁵¹ In construction since the early 1950s, these facilities first began to be partially disclosed by Chinese and foreign media sources in the early 1990s.* In late 2009, Chinese and foreign media began to provide greater detail about the structures, possibly to signal China's resilience to nuclear strikes.³⁵² According to the U.S. Department of Defense:

Although secrecy and ambiguity remain China's predominant approach in the nuclear realm, occasional disclosure of information on some missile-related UGFs [underground facilities] is consistent with an effort to send strategic signals on the credibility of its limited nuclear arsenal. These public disclosures include images of tunnels, modern network-based security and control centers, and advanced camouflage measures.³⁵³

Limited information is available about how these facilities fit into the Second Artillery's operations and campaign planning. The primary function appears to be to shield Second Artillery assets from a first strike and enable their subsequent transportation and dispersal. This would enhance the survivability of China's nuclear arsenal and promote the PLA's ability to launch retaliatory strikes. A substantial portion of the Second Artillery's operations can occur underground. According to the U.S. Department of Defense, the

*Although the U.S. Department of Defense says such tunneling activities date back to the 1950s, other sources say that the "Underground Great Wall" project began in 1985. See Hui Zhang, "Nuclear Modernization in China," in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will, a project of the Women's International League for Peace and Freedom, March 2012), p. 18.

Second Artillery may use underground facilities for “command posts; communications sites; storage for important weapons and equipment; and protection for personnel.”³⁵⁴

The existence of these tunnels raises further questions about the size of China’s nuclear arsenal which, as noted above, is a matter of considerable debate. According to Mr. Stokes, the PLA’s recent “[e]xpansion of underground facilities directly supporting handling and storage of nuclear weapons, components, and fissile material could indicate an increase in warhead inventory.”³⁵⁵ Without speculating upon the current size of China’s nuclear arsenal, Phillip A. Karber, adjunct professor at Georgetown University, testified to the Commission that the network of underground tunnels could be of sufficient size to accommodate several thousand warheads, based on indications about Chinese nuclear storage requirements.³⁵⁶ Other analysts have observed that while the magnitude of China’s tunnel complex may not necessarily indicate greater warhead holdings, it would certainly produce a “shell game” effect that would complicate targeting by potential adversaries.³⁵⁷

Fissile Materials

Unlike the United States and Russia, China does not disclose key information about its fissile material holdings. China has never officially declared that it ceased production of highly enriched uranium or plutonium, according to testimony to the Commission by Henry Sokolski, executive director of the Nonproliferation Policy Education Center.³⁵⁸ Much of the arms control community, however, believes that China stopped highly enriched uranium production by about 1987 and plutonium production by about 1990.³⁵⁹ Based on a series of assumptions that all of China’s fissile material production sites are known, along with their periods of operation and their output, observers have postulated China’s total fissile material production. Further assumptions about how much of this material China expended in various applications, such as nuclear weapons tests, have led to estimates about their current fissile material inventories.³⁶⁰ (Figure 3, below, demonstrates one of the most widely cited estimates.)

Figure 3: China’s Fissile Material Quantity, 2012

	Total production (tons, est.)	Remaining stock (tons, est.)
Highly Enriched Uranium	20±4	16±4
Weapons Plutonium	2±0.5	1.8±0.5

Source: International Panel of Fissile Materials, *Global Fissile Material Report 2011: Nuclear Weapon and Fissile Material Stockpiles and Production* (Princeton, NJ: Program on Science and Global Security, January 2012), pp. 10, 18. <http://fissilematerials.org/library/gfmr11.pdf>.

Confirmation of these assumptions would increase the utility of such estimates. As Mr. Sokolski testified:

*Without knowledge of the operating history and power of China's plutonium-production reactors and the capacities of its uranium enrichment plants, any estimates of China's fissile material stocks will necessarily have great uncertainties. China, unfortunately, keeps nearly all information about its stocks of fissile materials . . . secret.*³⁶¹

Theoretically, if China converted all of its assumed military-grade fissile materials into weapons, it could produce anywhere from 1,000 to 1,660 total nuclear weapons, depending on assumptions.* This ceiling greatly exceeds most currently accepted western estimates of China's arsenal³⁶² but demonstrates that China has the capacity to expand its stockpile. A variety of other factors complicate fissile material-based analysis of China's stockpile. For example, according to Mr. Stokes, "Warheads appear to have been managed separately from China's civilian fissile material protection, control and accounting system," and the entity or entities that manage China's fissile materials remain unknown.³⁶³ Finally, both Dr. Schneider and Dr. Karber testified to the Commission that, given China's current and planned nuclear energy programs, the availability of fissile material will not significantly constrain China's future nuclear warhead production.³⁶⁴

International Context

Like other nuclear powers, China's actions or positions in the nuclear realm do not occur in a vacuum. Dr. Saunders testified that U.S. and Chinese nuclear modernization programs are "an interactive strategic game," wherein the actions of one side influence the actions of the other.³⁶⁵ These interactions will clearly affect the future of China's nuclear modernization (described in the "Implications for the United States" subsection, below). However, the U.S.-China nuclear dyad will also have broader implications in East Asia and beyond. For example, any Chinese efforts to ensure a retaliatory capability against a notional U.S. nuclear strike would necessarily affect Indian and Russian perceptions about the potency of their own deterrent capabilities vis-à-vis China.³⁶⁶ Any Chinese obstruction to cooperative missile defense systems could encourage other nations facing a perceived nuclear threat to seek their own nuclear capabilities in lieu of such a shield.†

*For an estimate of 1,000 total, see Hui Zhang, "Nuclear Modernization in China," in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will, a project of the Women's International League for Peace and Freedom, March 2012), p. 24. <http://reachingcriticalwill.org/images/documents/Publications/modernization/assuring-destruction-forever.pdf>. Another estimate holds that China could produce from 450 to 600 plutonium warheads and from 640 to 1,060 uranium warheads. See Hans Kristensen, "No, China Does Not Have 3,000 Nuclear Weapons," *FAS [Federation of American Scientists] Strategic Security Blog*, December 3, 2012. <http://www.fas.org/blog/ssp/2011/12/chinanukes.php>.

†China's 2010 defense white paper states that "China maintains that the global missile defense program will be detrimental to international strategic balance and stability, will undermine international and regional security, and will have a negative impact on the process of nuclear disarmament. China holds that no state should deploy overseas missile defense systems that have strategic missile defense capabilities or potential, or engage in any such international collaboration." Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011). China tested its own missile defense system in January 2010. BBC News, "China 'successfully tests missile interceptor,'" January 12, 2010. <http://news.bbc.co.uk/2/hi/asia-pacific/8453370.stm>.

China is party to many of the major international agreements and regimes regarding nuclear weapons and materials. Some of the most salient include the Nonproliferation Treaty, which China signed in 1992; the Comprehensive Nuclear Test Ban Treaty, which China has signed but not ratified; and the Nuclear Suppliers Group, of which China became a member in 2004.³⁶⁷ China has expressed support for a Fissile Material Cutoff Treaty, but questions remain as to whether China would actually agree to negotiate (or ultimately ratify) such an agreement.³⁶⁸ China remains outside of the major arms limitation or reduction treaties, which the United States historically approached jointly with Russia. General Cartwright testified that, with respect to nuclear arms control, “[w]e need as a nation to stop thinking bilaterally.” Noting the trend of drastic reductions in the U.S. and Russian nuclear arsenals, he raised the question of how long China ought to remain outside of such negotiations, concluding that “the longer we put this off, the more problematic it’s going to be to have a multilateral approach.”³⁶⁹ To date, China has not formally expressed interest in joining these treaties.

One of the particularly relevant U.S.-Russia agreements in light of China’s military modernization is the Intermediate-Range Nuclear Forces Treaty.³⁷⁰ This 1987 agreement eliminates from U.S. and Russian arsenals all conventional and nuclear ground-launched ballistic and cruise missiles with 500 to 5,500 km ranges. However, some of China’s most dynamic missile programs, such as the DF-21 and its variants, perform within this range. Along with other issues, this has reportedly caused periodic Russian discontent with the treaty and generated calls from Russian and U.S. observers since 2007 to multilateralize the agreement.³⁷¹ The issue appears to be gaining heightened attention with the United States as China demonstrates an increasingly muscular missile force.³⁷² A 2012 RAND Corporation study identified the expansion of the treaty to include China (and others such as India and Pakistan) as a desirable outcome but predicted a “low probability of Chinese receptiveness to engage in negotiations” on the matter.³⁷³

Nuclear proliferation issues have substantial impact internationally. China’s proliferation record has improved gradually since the late 1980s and early 1990s, although export enforcement capacity and sometimes permissive interpretations of the country’s international commitments remain a concern.³⁷⁴ Chinese entities continue to serve as hubs for trade in controlled items,³⁷⁵ though transactions may be profit driven rather than manifestations of state policy or deliberate inaction by enforcement entities. Regarding interpretation issues, China recently caused protests with the announcement that it had reached a deal to sell two plutonium-producing, heavy water nuclear reactors to Pakistan. The deal, publicized in 2010, followed similar transfers in 1991 and 2003. China defends the most recent transfer as permissible on account of being “grandfathered” under the terms of the 2003 deal. Virtually all western nonproliferation analysts, however, view the arrangement as a violation of China’s voluntary commitments under the Nuclear Suppliers Group, which China joined in 2004.³⁷⁶

Implications for the United States

The steady modernization of China's nuclear forces, combined with the ambiguity of some of its policies and positions, raises questions about its nuclear plans. China is on the cusp, perhaps within two years, according to U.S. Department of Defense estimates,³⁷⁷ of finally attaining a true "nuclear triad" of land-based ballistic missiles, submarine-launched ballistic missiles, and air-dropped nuclear bombs. New intercontinental ballistic missile programs such as the DF-31A and eventually perhaps the DF-41 will similarly contribute to the range, reliability, reach, accuracy, and penetrability of China's nuclear forces. Other aspects of China's nuclear ambitions are less clear. Though China is the only original nuclear weapons state that is increasing its arsenal,³⁷⁸ some analysts argue that China will generally retire legacy weaponry as new systems come online, thus maintaining a modest stockpile.³⁷⁹ Others warn that China's arsenal could grow substantially over the next decade.³⁸⁰ Exacerbating this uncertainty is the fact that, as Dr. Saunders testified, "China provides no official data on the current or projected size of its nuclear force, the number and capabilities of its delivery systems, or its overall modernization plans."³⁸¹ In place of this information, observers rely heavily on estimates and projections and, "[a]t a minimum, we [analysts and policy-makers] risk confusing ourselves by emphasizing only the most optimistic assumptions," according to Mr. Sokolski.³⁸²

Chinese strategists' approach to, and views upon, nuclear escalation are potentially problematic. According to a 2008 RAND Corporation study, "Chinese military writings on escalation and escalation management appear to be undertheorized and still under development."³⁸³ To the extent that Chinese views on the subject have gelled, they may clash with views firmly entrenched within the U.S. defense establishment. Lonnie Henley, then Defense Intelligence Officer for East Asia and Pacific at the U.S. Defense Intelligence Agency, has observed that "[i]t is difficult to overstate how prominent the concept of *the initiative* is in Chinese writings ... there seems a clear risk that such strong emphasis on gaining the initiative may lead China to over-react to a developing crisis, creating a cycle of reaction and escalation" (emphasis added).³⁸⁴ Similarly problematic is China's emphasis on the concept of escalating as a means to deescalate.³⁸⁵ As the RAND Corporation study concludes, "It is unclear whether Chinese strategists recognize the inherent tension between their concept of using nuclear counterstrikes for deescalation and war termination and the risks of inadvertent escalation."³⁸⁶

Matters of escalation are particularly salient as the U.S. defense establishment debates how to contend with rapid improvements in China's conventional military capabilities. While details remain scarce about the U.S.'s emerging AirSea Battle concept, particularly as it relates to a potential conflict with China, the U.S. Department of Defense's overarching Joint Operational Access Concept specifically identifies the need to "attack enemy antiaccess/area-denial defenses in depth rather than rolling back those defenses from the perimeter."³⁸⁷ However, concepts of operations that include, for example, attacks on Chinese intelligence, surveil-

lance, and reconnaissance systems or command and control nodes, sometimes located in China's interior, may quickly and inadvertently approach China's thresholds for nuclear use³⁸⁸ (as discussed above, China's "No First Use" pledge must be viewed with caution). On the one hand, the RAND Corporation study cited above hypothesized that China would "not likely resort to nuclear weapons, even when faced with probable defeat in a limited conventional conflict."³⁸⁹ However, according to Dr. Schneider, there are some indications that "China is most likely to initiate the use of nuclear weapons if it is being defeated in warfare—such as during a Taiwan scenario or because of the scale of damage from conventional precision guided munitions."³⁹⁰

Even carefully calibrated attacks may lead to escalatory outcomes. As the RAND Corporation notes, "Conventional strikes on Chinese nuclear weapon assets may be a critical threshold for the PLA that would lead to either horizontal or vertical escalation of a conflict—including crossing the nuclear firebreak."³⁹¹ However, conventional strikes on conventional assets could even have implications for China's security in its retaliatory capability. For example, according to one analysis, the Second Artillery has both conventional and nuclear missions, but "[t]he separation of command and control links between the two sides of the force is unclear."³⁹² An attack on the conventional side that had a real or perceived effect on the nuclear side could lead to damaging consequences.

Finally, much remains unknown about how China's top leadership would approach the use of nuclear weapons in a crisis and the extent to which they have been exposed to thinking or training about escalation. According to Dr. Saunders:

*We know little about what China's top civilian leaders in the Politburo Standing Committee—the actors who would decide whether China should employ nuclear weapons—think about the employment of nuclear weapons or the role of nuclear weapons in crisis situations. The fact that these leaders have little military experience and have likely not been exposed to academic thinking about nuclear weapons (and nuclear dangers) may be grounds for additional concern.*³⁹³

Mr. Henley has speculated that rising Chinese leaders may be exposed to some form of training in crisis management or even escalation control, perhaps from the Central Party School, though U.S. observers lack visibility into the matter.³⁹⁴

Conclusions

- Numerous uncertainties remain about China's nuclear warhead holdings. Outside assessments from western observers, which generally range from about 100 to 500 warheads, but cluster around 240, rely heavily upon assumptions. Observers from Taiwan and particularly Russia place these figures substantially higher. Consistent with its emphasis upon secrecy, China has not provided official confirmation of these estimates. Defensible projections of China's fissile material stocks suggest that the PLA could hold greater quantities of warheads, or obtain additional warheads, if so inclined.

- China's military doctrine prioritizes highly the security of its nuclear stockpiles and assurance of its nuclear command and control architecture. However, the potential for new warhead management procedures for China's nuclear arsenal raises questions about which entities are authorized to launch these weapons. According to some analysts, what appear to be occasional disconnects between China's civil and military leadership introduce uncertainties about the integrity of China's command authority procedures and whether the PLA might approach important decisions independent of the country's civilian leadership.
- China's public statements about its nuclear policies are consistently vague. China's proclaimed nuclear strategy is one that maintains deterrence by guaranteeing the ability to retaliate to a first strike. Although the characteristics of China's nuclear arsenal and associated doctrinal materials generally support this claim, the situations that would merit retaliation and the actions that constitute a first strike remain undefined. China's leadership is aware of, and values, this ambiguity. The Chinese defense establishment's fixation on the concepts of "active defense" and "gaining the initiative" in warfare introduce the possibility of escalation into, or within, the nuclear domain.
- The PLA continues to modernize and expand its nuclear stockpile. China is now on the cusp of attaining a credible nuclear triad of land-based intercontinental ballistic missiles, submarine-launched ballistic missiles, and air-dropped nuclear bombs. Chinese strategists view mobility in each modality as central to effectiveness. The dominant, land-based leg of China's triad also utilizes extensive subterranean storage and distribution infrastructure to ensure survivability against a strike.
- China remains outside of the major arms limitation and control conventions, such as the New Strategic Arms Reduction Treaty and the Intermediate Range Nuclear Forces Treaty, which the United States historically approached bilaterally with Russia. Substantial drawdown commitments from Washington and Moscow in recent years, as well as China's use of weapons prohibited under these treaties, have raised questions about Beijing's diplomatic posture toward nuclear restrictions.

RECOMMENDATIONS

China's Cyber Activities

The Commission recommends that:

- Congress require the Department of Defense to report to Congress on the extent to which its current procurement regulations and contracting procedures allow it to exclude the acquisition of any foreign-produced equipment from any department system where there is concern as to the potential impact of cyber vulnerabilities.
- Relevant Congressional committees conduct an in-depth assessment of Chinese cyber espionage practices and their implications and report the findings in an unclassified format.
- Congress conduct a review of existing legal penalties for companies found to engage in, or benefit from, industrial espionage.

China's Nuclear Developments

The Commission recommends that:

- Committees of jurisdiction seek input from relevant U.S. government agencies and international organizations to assess disparities in estimates of the size and disposition of China's nuclear forces.
- Congress require the U.S. Department of State to detail current and planned efforts to integrate China into existing and future nuclear arms reduction, limitation, and control discussions and agreements. Committees of jurisdiction within Congress should request periodic updates on these efforts.

ENDNOTES FOR CHAPTER 2

1. Pang Li, "China to Name its First Aircraft Carrier 'Liaoning,'" *China Internet Information Center*, September 10, 2012. http://www.china.org.cn/china/2012-09/10/content_26481340.htm.
2. For details on the process through which the PLA Navy acquired the *Varyag*, see Ian Storey and You Ji, "China's Aircraft Carrier Ambitions: Seeking Truth from Rumors," *Naval War College Review* LVII:1 (Winter 2004): 82–83. <http://www.usnwc.edu/getattachment/ffc60b3e-d2e6-4142-9b71-6dfa247051f2/China-s-Aircraft-Carrier-Ambitions-Seeking-Truth->
3. *People's Daily*, "Zhongguo hangmu pingtai dishi ci hai shi chuhang" (China's Aircraft Carrier Platform Departs on its Tenth Sea Trial), August 28, 2012. <http://pic.people.com.cn/n/2012/0828/c162940-18847281.html>; China Internet Information Center, "Aircraft Carrier Home After Longest Trial," August 1, 2012. http://www.china.org.cn/china/2012-08/01/content_26085073.htm.
4. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 7; Office of Naval Intelligence, *A Modern Navy with Chinese Characteristics* (Washington, DC: Office of Naval Intelligence, 2009), p. 19.
5. Gabe Collins and Andrew Erickson, "The 'Flying Shark' Prepares to Roam the Seas: Strategic pros and cons of China's aircraft carrier program," *China SignPost*, May 18, 2011. <http://www.chinasignpost.com/2011/05/the-%E2%80%99flying-shark%E2%80%99-prepares-to-roam-the-seas-strategic-pros-and-cons-of-china%E2%80%99s-aircraft-carrier-program/>; Xinhua, "Zhongguo shou sou hangmu ni jinnian fuyi zui zao 2017 nian xingcheng zhandouli" (China's First Aircraft Carrier to be Commissioned this Year and Combat Ready in 2017 at the Earliest), August 21, 2012. http://news.xinhuanet.com/photo/2012-08/21/c_123612018.htm.
6. J. Michael Cole, "First Chinese Aircraft Carrier Might Soon Embark on its Third Trial at Sea," *Taipei Times*, December 21, 2011. <http://www.taipetimes.com/News/taiwan/archives/2011/12/21/2003521271>; Thomas Harding, "First satellite image of Chinese aircraft carrier reveals absence of key component," *Telegraph* (United Kingdom), December 15, 2011. <http://www.telegraph.co.uk/news/worldnews/asia/china/8959279/First-satellite-image-of-Chinese-aircraft-carrier-reveals-absence-of-key-component.html>; David Axe, "China Carrier Preps for Flight Ops?" *Diplomat* (Tokyo), March 19, 2012. <http://thediplomat.com/flashpoints-blog/2012/03/19/china-carrier-preps-for-flight-ops/>.
7. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 22.
8. *China Daily* (Beijing), "China's aircraft carrier to spur investment," September 27, 2012. http://www.china.org.cn/business/2012-09/27/content_26647155.htm.
9. Xinhua, "Zhongguo meiyou 3–5 ge hangmu zhandouqun shi shuo bu guo qu de" (Not Having 3–5 Chinese Aircraft Carrier Battle Groups is Insufficient), July 31, 2012. http://news.xinhuanet.com/globe/2012-07/31/c_131737507.htm. See also Yang Yi, "Aircraft Carrier Protects Peace," *China Daily* (Beijing), September 25, 2012. OSC ID: 20120925968037. <http://www.opensource.gov>; Tao Shelan, "China's First Aircraft Carrier Enters Service: A Road That Must Be Taken in Going From Being A Major Country to Becoming a Power," *Zhongquo Xinwin She* (Beijing), September 25, 2012. OSC ID: 20120925075004. <http://www.opensource.gov>.
10. Gabe Collins and Andrew Erickson, "Flying Shark Gaining Altitude: How Might New J–15 Strike Fighter Improve China's Maritime Air Warfare Ability?" *China SignPost*, June 8, 2011. <http://www.chinasignpost.com/2011/06/flying-shark%E2%80%9D-gaining-altitude-how-might-new-j-15-strike-fighter-improve-china%E2%80%99s-maritime-air-warfare-ability/>.
11. Greg Waldron, "Images emerge of possible Chinese carrier-borne AEW&C [Airborne Early Warning & Control] testbed," *Flight Global*, July 30, 2012. <http://www.flightglobal.com/news/articles/pictures-images-emerge-of-possible-chinese-carrier-borne-awc-testbed-374858/>; Daniel Kostecka, "From the Sea: PLA Doctrine and the Employment of Sea-Based Airpower," *Naval War College Review* 64: 3 (Summer 2011):13; *Ta Kung Pao* online (Hong Kong), "Converted Yun-7 Early Warning Aircraft May Deploy on Future China-Made Aircraft Carriers," September, 3, 2012. OSC ID: CPP20120903704025. <http://www.opensource.gov>.
12. For more information on the J–20 fighter, see pages 155–6 of the Commission's 2011 *Annual Report to Congress*.
13. TheAviationist.com, "China's 5th Generation Stealth Fighter Performing Combat Maneuver Tests Over Chengdu," February 28, 2012. <http://theaviationist.com>.

com/2012/02/28/chinas-5th-generation-stealth-fighter-performing-combat-maneuver-tests-over-chengdu/.

14. David Majumdar, "Chengdu J-20 Could Enter Service by 2018," *Flight Global*, May 18, 2012. <http://www.flightglobal.com/news/articles/chengdu-j-20-could-enter-service-by-2018-372082/>.

15. *Want China Times* (Taiwan), "J-20 Fighter Designed for South China Sea Conflict: Global Times," June 13, 2012. OSC ID: CPP20120613968123. <http://www.opensource.gov>.

16. Eloise Lee and Robert Johnson, "China's J-20 and the American F-22 Raptor—You Are Not Seeing Double," *Business Insider*, June 4, 2012. <http://www.businessinsider.com/the-similarities-between-the-j-20-heads-up-display-and-that-on-the-f-22-are-striking-2012-6?op=1>; James Andrew Lewis, "Does China's New J-20 Stealth Fighter Have American Technology?" (Washington, DC: *Center for Strategic and International Studies Commentary*, January 26, 2011). <http://csis.org/publication/does-chinas-new-j-20-stealth-fighter-have-american-technology>; and Jeremy Page, "Stealth-Espionage Claims Dispute in China," *Wall Street Journal*, January 26, 2011. <http://online.wsj.com/article/SB10001424052748704013604576103873339685848.html>.

17. TheAviationist.com, "Photo evidence: Maiden flight for the second China's J-20 stealth fighter prototype," May 16, 2012. <http://theaviationist.com/2012/05/16/photo-evidence-maiden-flight-for-the-second-chinas-j-20-stealth-fighter-prototype/>.

18. Peh Shing Huei, "China's Stealth Jet Tests a Subtle Message to Philippines?" *Straits Times* (Singapore), May 14, 2012. OSC ID: SEP20120514032006. <http://www.opensource.gov>.

19. This aircraft has also been referred to as the J-21. Some also suggest the aircraft could be manufactured for export under the designator F-60. Bill Gertz, "Beijing's Raptor Knockoff," *Washington Free Beacon*, July 17, 2012. <http://freebeacon.com/beijings-raptor-knockoff/>; Tamir Eshel, "A New Stealth Fighter Unveiled in China," *Defense Update*, September 16, 2012. <http://defense-update.com/20120916-new-chinese-fighter-f60-j31.html>.

20. *Chosun Ilbo* (Seoul), "China Developing 2nd Stealth Fighter Jet," March 22, 2012. OSC ID: KPP20120322971059. <http://www.opensource.gov>; J. Michael Cole, "China Developing a 2nd Stealth Fighter?" *Diplomat* (Tokyo), August 6, 2012. <http://thediplomat.com/flashpoints-blog/2012/08/06/china-developing-a-2nd-stealth-fighter/>.

21. J. Michael Cole, "China Developing a 2nd Stealth Fighter?" *Diplomat* (Tokyo), August 6, 2012. <http://thediplomat.com/flashpoints-blog/2012/08/06/china-developing-a-2nd-stealth-fighter/>.

22. Andrew Erickson and Gabe Collins, "Double Vision: Making Sense of China's Second 'Stealth' Fighter Prototype," *China Real Time*, September 18, 2012. <http://blogs.wsj.com/chinarealtime/2012/09/18/double-vision-making-sense-of-chinas-second-stealth-fighter-prototype/>.

23. David Axe, "Is China's New Stealth Fighter Headed to Sea?" *Danger Room*, September 17, 2012. <http://www.wired.com/dangerroom/2012/09/chinas-stealth-fighter-carrier/>; Andrew Erickson and Gabe Collins, "Double Vision: Making Sense of China's Second 'Stealth' Fighter Prototype," *China Real Time*, September 18, 2012. <http://blogs.wsj.com/chinarealtime/2012/09/18/double-vision-making-sense-of-chinas-second-stealth-fighter-prototype/>.

24. For more information on China's space program, see chapter 2, section 3, "The Implications of China's Civil and Military Space Activities," in U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011). http://www.uscc.gov/annual_report/2011/Chapter2.3.pdf.

25. Jonathan Amos, "Chinese Spacecraft Dock in Orbit," BBC, November 2, 2011. <http://www.bbc.co.uk/news/science-environment-15562928>.

26. *New York Times*, "China: Spacecraft Docks with Orbiting Module," June 19, 2012. <http://www.nytimes.com/2012/06/19/world/asia/china-spacecraft-docks-with-orbiting-module.html>.

27. *The Week*, "Is China's Space Program a Threat to America's?" June 25, 2012. <http://theweek.com/article/index/229763/is-chinas-space-program-a-threat-to-americas>.

28. Brian Spegele, "Chinese Hit New Space Heights," *Wall Street Journal*, June 18, 2012. <http://online.wsj.com/article/SB10001424052702303703004577473850707372174.html>.

29. Senate Armed Services Committee, *Hearing on Current and Future Worldwide Threats*, testimony of director of the Defense Intelligence Agency Ronald L. Burgess Jr., 112th Cong., 2nd sess., February 16, 2012.

30. Associated Press, "China Adds 2 More Satellites to Global Positioning Network Set to Rival America's GPS," *Washington Post*, September 19, 2012. <http://www.washingtonpost.com/business/china-adds-2-more-satellites-to-global-positioning->

network-set-to-rival-americas-gps/2012/09/19/8f9a432a-0232-11e2-9132-f2750cd65f97_story.html; Xinhua, "1st LD-Writethru: China Launches Another Satellite for Independent Navigation System," October 25, 2012. OSC ID: CPP20121025968458. <http://www.opensource.gov>.

31. Bill Gertz, "Manchu Missile Launch," *Washington Free Beacon*, August 15, 2012. <http://freebeacon.com/manchu-missile-launch/>; Robert Foster, "China's DF-41 test sparks nuclear build-up concerns," *Jane's Defence Weekly* 49:34 (August 22, 2012):6; and Xinhua, "China: Missile tests targeted at no specific country," August 31, 2012. <http://english.peopledaily.com.cn/90786/7930833.html>.

32. U.S. China Economic and Security Review Commission, *Hearing on Developments in China's Cyber and Nuclear Capabilities*, testimony of Mark B. Schneider, March 26, 2012, citing Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China* (Washington, DC: Department of Defense, 2011), p. 3.

33. Bill Gertz, "Ready To Launch," *Washington Free Beacon*, August 21, 2012. <http://freebeacon.com/ready-to-launch/print/>.

34. Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists* 67:6 (November/December 2011): 83-84.

35. Bill Gertz, "Chinese Missile Tests Continue: China conducts third long-range missile test in 4 weeks," *Washington Free Beacon*, August 23, 2012. <http://freebeacon.com/chinese-missile-tests-continue/>; Bill Gertz, "China Missile Tests Continue: China conducts fourth flight test of mobile ICBM [intercontinental ballistic missile]," *Washington Free Beacon*, September 4, 2012. <http://freebeacon.com/chinese-missile-tests-continue-2/>.

36. Wendell Minnick, "China Ramps Up Missile Threat With DF-16," *Defense News*, March 21, 2011. <http://www.defensenews.com/article/20110321/DEFBEAT06/103210308/China-Ramps-Up-Missile-Threat-DF-16>; Rich Chang and J. Michael Cole, "China aiming 200 more missiles at Taiwan: MND [Ministry of National Defense]," *Taipei Times*, September 4, 2012. <http://www.taipetimes.com/News/front/archives/2012/09/04/2003541913>; and Open Source Center, "Photos Purportedly Show Full View of 'DF-16' Missile in Launch Position," September 12, 2012. OSC ID: CPP20120912680001001. <http://www.opensource.gov>.

37. Liang Pengfei and Cai Ruijin, "Second Artillery Has Completed the Comprehensive Transformation From a 'Force in Mountain Valleys' to a 'Force on Wheels,' and Its Precision Strike Capability Has Increased Greatly," *Jiefangjun Bao (PLA Daily)* (Beijing), August 27, 2012. OSC ID: CPP20120827787009. <http://www.opensource.gov>; Choi Chi-Yuk, "Nuclear Arsenal Is Fully Mobile," *South China Morning Post* (Hong Kong), August 28, 2012. OSC ID: CPP20120829716013. <http://www.opensource.gov>.

38. SinoDefence.com, "Zhi-10 Attack Helicopter," <http://www.sinodefence.com/airforce/helicopter/z10.asp>.

39. International Institute for Strategic Studies, *The Military Balance 2012* (London, UK: Routledge, 2012). p. 235.

40. Department of Justice, "United Technologies Subsidiary Pleads Guilty to Criminal Charges for Helping China Develop New Attack Helicopter" (Washington, DC: June 28, 2012). <http://www.justice.gov/opa/pr/2012/June/12-nsd-824.html>.

41. Department of Justice, "United Technologies Subsidiary Pleads Guilty to Criminal Charges for Helping China Develop New Attack Helicopter" (Washington, DC: June 28, 2012). <http://www.justice.gov/opa/pr/2012/June/12-nsd-824.html>.

42. Department of Justice, "United Technologies Subsidiary Pleads Guilty to Criminal Charges for Helping China Develop New Attack Helicopter" (Washington, DC: June 28, 2012). <http://www.justice.gov/opa/pr/2012/June/12-nsd-824.html>.

43. Michael S. Schmidt, "Military Contractors Are Fined Over Aid to China," *New York Times*, June 28, 2012. <http://www.nytimes.com/2012/06/29/business/global/arms-contractor-pleads-guilty-on-china-exports.html>.

44. Xinhua, "China's military attack helicopter independently developed: DM [Defense Ministry] spokesman," July 27, 2012. http://eng.mod.gov.cn/Press/2012-07/27/content_4387389.htm.

45. Keith B. Richburg, "China Military Spending to Top \$100 Billion in 2012, Alarming Neighbors," *Washington Post*, March 4, 2012. http://www.washingtonpost.com/world/china-military-spending-to-top-100-billion-this-year/2012/03/04/gIQAJRnypR_story.html.

46. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 160. http://www.uscc.gov/annual_report/2011/Chapter2.1.pdf.

47. *Economist*, "The Dragon's New Teeth," April 7, 2012. <http://www.economist.com/node/21552193>; Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012*

(Washington, DC: Department of Defense, 2012), p. 6; and David Majumdar, “Chengdu J-20 Could Enter Service by 2018,” *Flight Global*, May 18, 2012. <http://www.flightglobal.com/news/articles/chengdu-j-20-could-enter-service-by-2018-372082/>.

48. Keith B. Richburg, “China Military Spending to Top \$100 Billion in 2012, Alarming Neighbors,” *Washington Post*, March 4, 2012. http://www.washingtonpost.com/world/china-military-spending-to-top-100-billion-this-year/2012/03/04/gIQAJRnypR_story.html.

49. Xinhua, “View military budget increase objectively, says China,” March 30, 2012. http://eng.mod.gov.cn/Press/2012-03/30/content_4354986.htm.

50. Chris Buckley, “China domestic security spending rises to \$111 billion,” Reuters, March 5, 2012. <http://www.reuters.com/article/2012/03/05/us-china-parliament-security-idUSTRE82403J20120305>.

51. Chris Buckley, “Exclusive: China considers downgrading domestic security tsar in next line-up,” Reuters, August 29, 2012. <http://www.reuters.com/article/2012/08/29/us-china-politics-security-idUSBRE87S1F020120829>; Jerome Alan Cohen, “Courts with Chinese Characteristics,” *Foreign Affairs*, October 11, 2012. <http://www.foreignaffairs.com/articles/138178/jerome-alan-cohen/courts-with-chinese-characteristics>.

52. For information on developments in the South China Sea, see chapter 3, section 1, of this Report.

53. Keith Zhai, “China’s Foreign Minister Tells UN Japan is Stealing Diaoyu Islands,” *South China Morning Post* (Hong Kong), September 29, 2012. <http://www.scmp.com/news/china/article/1049829/chinas-foreign-minister-tells-un-japan-stealing-diaoyu-islands>.

54. Keith Zhai, “China’s Foreign Minister Tells UN Japan is Stealing Diaoyu Islands,” *South China Morning Post* (Hong Kong), September 29, 2012. <http://www.scmp.com/news/china/article/1049829/chinas-foreign-minister-tells-un-japan-stealing-diaoyu-islands>.

55. Zhao Shengnan, Qin Zhongwei, and Wu Jiao, “Xi Slams Diaoyu ‘Purchase,’” *China Daily* (Beijing), September 20, 2012. <http://english.peopledaily.com.cn/90883/7954579.html>.

56. Takashi Hirokawa and Isabel Reynolds, “Noda May Fail to Meet Hu at APEC [Asia Pacific Economic Cooperation] Amid Japan-China Tension,” Bloomberg, September 7, 2012. <http://www.businessweek.com/news/2012-09-07/noda-may-fail-to-meet-hu-at-apec-amid-japan-china-tension>.

57. Brian Spegele and Takashi Nakamichi, “Anti-Japan Protests Mount in China,” *Wall Street Journal*, September 16, 2012. <http://online.wsj.com/article/SB10000872396390443720204578000092842756154.html>.

58. Brian Spegele and Takashi Nakamichi, “Anti-Japan Protests Mount in China,” *Wall Street Journal*, September 16, 2012. <http://online.wsj.com/article/SB10000872396390443720204578000092842756154.html>.

59. Martin Fackler, “Chinese Ships Enter Japanese-Controlled Water to Protest Sale of Islands,” *New York Times*, September 14, 2012. <http://www.nytimes.com/2012/09/15/world/asia/chinese-ships-enter-waters-japan-controls.html>.

60. Martin Fackler, “Chinese Ships Enter Japanese-Controlled Water to Protest Sale of Islands,” *New York Times*, September 14, 2012. <http://www.nytimes.com/2012/09/15/world/asia/chinese-ships-enter-waters-japan-controls.html>.

61. Martin Fackler, “Chinese Ships Enter Japanese-Controlled Water to Protest Sale of Islands,” *New York Times*, September 14, 2012. <http://www.nytimes.com/2012/09/15/world/asia/chinese-ships-enter-waters-japan-controls.html>.

62. Xinhua, “China Continues Patrol Around Diaoyu Islands,” September 19, 2012. http://www.china.org.cn/china/2012-09/19/content_26563647.htm.

63. Minnie Chan, “China Vows to Protect 2,000 Fishing Boats Heading Towards Diaoyus,” *South China Morning Post* (Hong Kong), September 18, 2012. <http://www.scmp.com/news/china/article/1039353/china-vows-protect-2000-fishing-boats-heading-towards-diaoyus>.

64. Reuters, “China Surveillance Ships Enter Waters Near Disputed Islands,” September 23, 2012. <http://www.reuters.com/article/2012/09/24/us-china-japan-islands-idUSBRE88M0H120120924>.

65. Jane Perlez, “China Alters Its Strategy in Diplomatic Crisis With Japan,” *New York Times*, September 28, 2012. <http://www.nytimes.com/2012/09/29/world/asia/china-alters-its-strategy-in-dispute-with-japan.html?pagewanted=all>.

66. *Taipei Times*, “Ma to lay out peace initiative on Pengjia trip,” September 7, 2012. <http://www.taipetimes.com/News/front/archives/2012/09/07/2003542156>.

67. *Taipei Times*, “Taiwanese flotilla sails to Diaoyutais,” September 25, 2012. <http://www.taipetimes.com/News/front/archives/2012/09/25/2003543597>.

68. Reuters, "Tokyo Governor Seeks to Buy Islands Disputed with China," April 17, 2012. <http://www.reuters.com/article/2012/04/17/japan-china-islands-idUSL3E8FH3E520120417>.

69. Jane Perlez, "China Accuses Japan of Stealing After Purchase of Groups of Disputed Islands," *New York Times*, September 11, 2012. <http://www.nytimes.com/2012/09/12/world/asia/china-accuses-japan-of-stealing-disputed-islands.html>.

70. Department of State, "Remarks with Vietnamese Foreign Minister Pham Gia Khien" (Washington, DC: October 30, 2010). <http://www.state.gov/secretary/rm/2010/10/150189.htm>.

71. Xinhua, "China to Send 12th Fleet to Somali Waters," June 28, 2012. http://news.xinhuanet.com/english/china/2012-06/28/c_131682225.htm; Associated Press, "China Aligns with India, Japan on Piracy Patrols," July 3, 2012. <http://www.guardian.co.uk/world/feedarticle/10318243>.

72. Chen Dianhong and Mi Jinguo, "11th Chinese Naval Escort Taskforce Returns Home After Visiting Israel," *PLA [People's Liberation Army] Daily*, August 21, 2012. <http://english.peopledaily.com.cn/90786/7918352.html>.

73. RFERL.org, "Chinese Naval Boats Enter Black Sea For First Time," July 31, 2012. <http://www.rferl.org/content/chinese-naval-boats-in-black-sea-for-first-time/24662169.html>.

74. Chen Dianhong and Mi Jinguo, "11th Chinese Naval Escort Taskforce Arrives in Israel for Visit," *PLA [People's Liberation Army] Daily*, August 15, 2012. <http://english.peopledaily.com.cn/90786/7910429.html>.

75. Xinhua, "Chinese Navy Vessel Starts Second Global Voyage," April 16, 2012. OSC ID: CPP 20120416968213. <http://www.opensource.gov>; *China Daily* (Beijing), "Naval Training Ship Going Round the Globe," April 17, 2012. http://www.china.org.cn/china/2012-04/17/content_25160837.htm.

76. *Jiefangjun Bao (PLA Daily)*, "Zheng He' Passes Through Panama Canal," July 11, 2012. OSC ID: CPP 20120711702002. <http://www.opensource.gov>; Qin Zhongwei and Zhang Xiaomin, "Sailing in the wake of Zheng He's voyage," *China Daily* (Beijing), August 1, 2012. http://www.chinadaily.com.cn/china/2012-08/01/content_15636872.htm.

77. Sujan Dutta, "Calcutta hotline to China border for peace," *Telegraph* (Calcutta), September 19, 2012. http://www.telegraphindia.com/1120920/jsp/nation/story_15997163.jsp#.UFzUbcUiwsc; Vinay Kumar, "Joint military exercises with China soon," *Hindu* (Chennai), September 4, 2012. <http://www.thehindu.com/news/national/article3858014.ece?homepage=true>.

78. Associated Press, "India and China Agree to Resume Joint Military Exercises," *New York Times*, September 4, 2012. <http://www.nytimes.com/2012/09/05/world/asia/india-and-china-agree-to-resume-joint-military-exercises.html>.

79. Dean Cheng, "Sino-Russian Naval Exercises: Shape of Things to Come?" *American Leadership*, April 25, 2012. <http://blog.heritage.org/2012/04/25/sino-russian-naval-exercises-shape-of-things-to-come/>; J. Michael Cole, "China joins Russia in naval exercise," *Taipei Times*, April 2, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/02/2003529315>.

80. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 31.

81. BBC News, "China and Russia launch naval exercises in the Yellow Sea," April 22, 2012. <http://www.bbc.co.uk/news/world-asia-17803624>.

82. Xinhua, "Haishang Lianhe -2012 Zhong E Haishang Lian Yan Shi Bing Yanlian Shilu" (Maritime Collaboration 2012—Sino-Russian Joint Exercise at Sea Military Exercise Record), April 26, 2012. http://news.xinhuanet.com/mil/2012-04/26c_123039372.htm.

83. Qian Xiaohu, "Sino-Russian Maritime Joint Military Exercise Officially Begins," *Jiefangjun Bao (PLA Daily)*, April 22, 2012. OSC ID: CPP20120423787015. <http://www.opensource.gov>.

84. Noah Shachtman, "China, Russia Team Up at Sea," *Danger Room*, April 27, 2012. <http://www.wired.com/dangerroom/2012/04/chinas-navy>; Yu Bin, "China-Russia Relations: Succession, Syria . . . and the Search for Putin's Soul," *Comparative Connections* (Honolulu), May 2012. http://csis.org/files/publication/1201qchina_russia.pdf.

85. Wang Yisheng, Feng Lu, and Li Dezhong, "Theater Organizes 'Joint—2012' Centralized Campaign Training," *Jinan Qianwei Bao (Jinan Military Region Committee Newspaper)*, July 5, 2012. OSC ID: CPP20120807678001. <http://www.opensource.gov>; Liu Shilong, Feng Lu, and Tao Shelan, "PLA Jinan Theater Organized Joint Training Pilot Projects for Three Consecutive Years, Its Innovations Results Were Introduced to All PLA Forces," *Zhongguo Xinwen She* (Beijing), June 30, 2012. OSC ID: CPP20120703090005. <http://www.opensource.gov>

86. Mei Changwei and Li Dongxing, "The Battlefield Diary of an Operation and Training Section Chief," *PLA Daily*, August 7, 2012. OSC ID: CPP20120807787011. <http://www.opensource.gov>.

87. Liu Shilong, Feng Lu, and Tao Shelan, "PLA Jinan Theater Organized Joint Training Pilot Projects for Three Consecutive Years, Its Innovations Results Were Introduced to All PLA Forces," *Zhongguo Xinwen She* (Beijing), June 30, 2012. OSC ID: CPP20120703090005. <http://www.opensource.gov>.

88. Xinhua, "Successful SCO Summit," June 8, 2012. http://news.xinhuanet.com/english/china/2012-06/08/c_131640001.htm.

89. Xinhua, "Successful SCO Summit," June 8, 2012. http://news.xinhuanet.com/english/china/2012-06/08/c_131640001.htm; Xinhua, "China to Provide 150 mln Yuan Grant to Afghanistan," June 8, 2012. http://www.china.org.cn/world/2012-06/08/content_25600972.htm.

90. Xinhua, "Iranian President Arrives in Beijing for SCO Summit," June 5, 2012. <http://english.sina.com/china/2012/0605/473666.html>.

91. Fan Yongqiang, "Ci Guowei talks about the achievements of 'Peace Mission 2012' joint military exercise," *PLA Daily*, June 15, 2012. http://eng.chinamil.com.cn/special-reports/2012-06/15/content_4897152.htm.

92. Interfax, "SCO Peace Mission 2012 Exercises Start in Tajikistan," June 8, 2012. OSC ID: CEP20120608964027. <http://www.opensource.gov>.

93. *PLA Daily*, "About Peace Mission 2012." http://eng.chinamil.com.cn/special-reports/node_54180.htm; Roger McDermott, "Uzbekistan Snubs SCO Peace Mission 2012," *Eurasia Daily Monitor* 9:16 (June 19, 2012). http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=39512.

94. Roger McDermott, "Beijing-Moscow Axis Drives Preparations for Peace Mission 2012," *Eurasia Daily Monitor* 9:182 (May 1, 2012). http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=39317.

95. Lu Desheng, Lu Zhiqiang, and Zhang Yingxiang, "A Look at the Highlights of the 'Peace Mission—2012' Military Exercise," June 18, 2012. OSC ID: CPP20120618787011. <http://www.opensource.gov>; Open Source Center, "Peace Mission—2012' SCO Joint Antiterror Military Exercise," June 28, 2012. OSC ID: FEA20120628029042. <http://www.opensource.gov>.

96. Daniel M. Hartnett, "Looking Good on Paper: PLA Participation in the PEACE MISSION—2010 Multilateral Military Exercise," forthcoming from National Bureau of Asian Research, Seattle, WA.

97. Ella Syafputri, "Indonesia, Chinese Armed Forces Stage Anti-Terror Exercise," *ANTARA*, July 3, 2012. OSC ID: SEP20120705067002. <http://www.opensource.gov>; Qiu Quanlin, "China, Thailand Conduct Anti-Terrorism Maritime Exercise," *China Daily* online, May, 25, 2012. OSC ID: CPP20120525968278. <http://www.opensource.gov>.

98. Zhang Wei, "'Zheng He' Oceaongoing Training Warship Sets Sail for Round-The-World Tour," *Jiefangjun Bao (PLA Daily)* (Beijing) online, April 16, 2012. OSC ID: CPP20120417702005. <http://www.opensource.gov>.

99. Ananth Krishnan, "PLA holds ground-air combat military drill in Tibet," *Hindu* (Chennai), August 17, 2012. <http://www.thehindu.com/news/international/article3781168.ece>; Bijoy Das, "PLA Conducts Missile Tests in Tibet" (New Delhi, India: Institute for Defence Studies and Analyses, July 30, 2012). <http://www.idsa.in/idsacomments/PLAConductsMissileTestsInTibetBijoyDas300712>; and Rajat Pandit and Saibal Dasgupta, "China 'warns' India with border drill," *Times of India* (Mumbai), March 23, 2012. http://articles.timesofindia.indiatimes.com/2012-03-23/india/31229503_1_chabua-airbases-actual-control.

100. Xu Tianran, "Jets Training over Tibet," *Global Times* (Beijing), March 22, 2012. OSC ID: CPP 201203222722002. <http://www.opensource.gov>; Liu Yinghua, "Chengdu MAC [Military Area Command] Troops Explore Fighting and Training Methods for Highland Joint Operations," *Jiefangjun Bao (PLA Daily)* (Beijing) online, August 15, 2012. OSC ID: CPP20120816702004. <http://www.opensource.gov>.

101. Japan Ministry of Defense, *Defense of Japan 2012*, Part 1, Chapter 1, Section 3: China; Amando Doronila, "China Holds War Game," *Philippine Daily Inquirer*, July 13, 2012. OSC ID: SEP20120713001010. <http://www.opensource.gov>; J. Michael Cole, "Taiwan monitors Chinese naval moves," *Taipei Times*, May 10, 2012. <http://www.taipetimes.com/News/front/archives/2012/05/10/2003532432>; and Zhao Shengnan, "Navy Plans Drill Near Zhoushan," *China Daily* online, July 10, 2012. OSC ID: CPP20120710968042. <http://www.opensource.gov>.

102. Viola Gienger, "U.S., China to Hold Annual Defense Talks Next Week in Beijing," *Bloomberg*, December 5, 2011. <http://www.businessweek.com/news/2011-12-05/u-s-china-to-hold-annual-defense-talks-next-week-in-beijing.html>.

103. Viola Gienger, "U.S., China to Hold Annual Defense Talks Next Week in Beijing," Bloomberg, December 5, 2011. <http://www.businessweek.com/news/2011-12-05/u-s-china-to-hold-annual-defense-talks-next-week-in-beijing.html>.

104. Michael Wines, "U.S. and China Meet in Annual Military Review," *New York Times*, December 7, 2011. <http://www.nytimes.com/2011/12/08/world/asia/us-and-china-meet-in-annual-military-review.html>.

105. Jeremy Page, "U.S. Tries to Reassure China on Its Military Shift in Asia," *Wall Street Journal*, December 9, 2011. <http://online.wsj.com/article/SB10001424052970204319004577085512406149228.html>.

106. Jeremy Page, "U.S. Tries to Reassure China on Its Military Shift in Asia," *Wall Street Journal*, December 9, 2011. <http://online.wsj.com/article/SB10001424052970204319004577085512406149228.html>.

107. The White House, "Press Briefing by Press Secretary Jay Carney, National Security Advisor Tom Donilon, and Deputy National Security Advisor for Strategic Communications Ben Rhodes" (Washington, DC: November 19, 2011), <http://www.whitehouse.gov/the-press-office/2011/11/19/press-briefing-press-secretary-jay-carney-national-security-advisor-tom->.

108. Hillary Clinton, "America's Pacific Century" (speech at East-West Center, Honolulu, HI, November 10, 2011); Hillary Clinton, "America's Pacific Century," *Foreign Policy*, November 2011. <http://www.foreignpolicy.com/issues/189/contents/>.

109. Michael D. Swaine, "Chinese Leadership and Elite Responses to the U.S. Pacific Pivot," *China Leadership Monitor* 38 (Summer 2012). <http://www.hoover.org/publications/china-leadership-monitor/article/124546>.

110. Ministry of Foreign Affairs of the People's Republic of China, "Foreign Ministry Spokesperson Liu Weimin's Regular Press Conference on May 31, 2012" (Beijing, China: June 1, 2012), <http://www.fmprc.gov.cn/eng/xwfw/s2510/2511/t939538.htm>.

111. *People's Daily*, "US stirs up conflict among Asian countries," July 18, 2012, http://www.china.org.cn/opinion/2012-07/18/content_25938512.htm.

112. Cheryl Pellerin, "Panetta: U.S.-China Relationship One of World's Most Critical," *American Forces Press Service*, May 7, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=116234>.

113. Tan Yingzi, "West Point Cadets Greet Liang in Mandarin," *China Daily* (Beijing), May 12, 2012. http://www.chinadaily.com.cn/cndy/2012-05/12/content_15275513.htm.

114. William Lowther, "Chinese Defense Minister Signals Change in US Ties," *Taipei Times*, May 9, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/05/09/2003532366>.

115. Zhi Linfei and Wang Fengfeng, "Liang Guanglie Holds Talks with U.S. Defense Secretary Panetta," Xinhua, May 8, 2012. OSC ID: CPP20120508003006. <http://www.opensource.gov>.

116. U.S. Department of Defense, "Joint Press Briefing with Secretary Panetta and Gen. Liang from the Pentagon" (Washington, DC: May 7, 2012). <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=5027>.

117. U.S. Department of Defense, "Joint Press Briefing with Secretary Panetta and Gen. Liang from the Pentagon" (Washington, DC: May 7, 2012). <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=5027>.

118. William Lowther, "Chinese Defense Minister Signals Change in US Ties," *Taipei Times*, May 9, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/05/09/2003532366>.

119. Associated Press, "US Defense Secretary to Visit China Soon Amid Disputes," August 30, 2012. http://news.bostonherald.com/news/international/asia_pacific/view/20120830us_defense_secretary_to_visit_china_soon_amid_disputes/srv=home&position=recent.

120. U.S. Pacific Command Public Affairs, "Locklear Hopes for Increased U.S., China Military Collaboration," July 11, 2012. http://www.pacom.mil/media/news/2012/07/11-locklear-hopes-for-increased-us_china-military-collaboration.shtml.

121. Xinhua, "U.S. Pacific Commander Pledges to Work on U.S.-China Military Ties," June 16, 2012. OSC ID: CPP20120616968004. <http://www.opensource.gov>; Xinhua, "U.S. Pacific Commander Hails China Visit as New Start in Normalizing Military Ties," July 12, 2012. http://news.xinhuanet.com/english/world/2012-07/12/c_131709699.htm.

122. Xinhua, "U.S. Pacific Commander Hails China Visit as New Start in Normalizing Military Ties," July 12, 2012. http://news.xinhuanet.com/english/world/2012-07/12/c_131709699.htm.

123. Donna Miles, "Locklear: China Visit Represents Positive Step," *American Forces Press Service*, July 11, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117074>.

124. Donna Miles, "Locklear: China Visit Represents Positive Step," *American Forces Press Service*, July 11, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117074>.

125. Xinhua, "U.S. Pacific Commander Hails China Visit as New Start in Normalizing Military Ties," July 12, 2012. http://news.xinhuanet.com/english/world/2012-07/12/c_131709699.htm.

126. Donna Miles, "Locklear: China Visit Represents Positive Step," *American Forces Press Service*, July 11, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117074>.

127. Jane Perlez, "U.S. Reaches Out to China, but Not for Naval Maneuvers," *New York Times*, June 29, 2012. <http://www.nytimes.com/2012/06/30/world/asia/us-reaches-out-to-china-but-not-for-naval-maneuvers.html>.

128. Donna Miles, "Locklear: China Visit Represents Positive Step," *American Forces Press Service*, July 11, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117074>.

129. IISS.org, "The Shangri-La Dialogue." (London, United Kingdom: International Institute for Strategic Studies, October 2, 2012). <http://www.iiss.org/conferences/the-shangri-la-dialogue/about/>.

130. Kenji Minemura, "Shangri-La Dialogue: Impatient China 'Absent' From Key Regional Security Summit," *Asahi Shimbun* (Japan), June 3, 2012. <http://ajw.asahi.com/article/asia/china/AJ201206030024>.

131. Josh Rogin, "Why Didn't China Show Up for Shangri-La?" *Foreign Policy*, June 1, 2012. http://thecable.foreignpolicy.com/posts/2012/06/01/why_didn_t_the_chinese_show_up_for_shangri_la.

132. Ralph A. Cossa, "US 1, China 0," *PacNet* 35 (Honolulu, Hawaii: Pacific Forum CSIS, June 6, 2012). <http://csis.org/files/publication/Pac1235.pdf>.

133. Josh Rogin, "Why Didn't China Show Up for Shangri-La?" *Foreign Policy*, June 1, 2012. http://thecable.foreignpolicy.com/posts/2012/06/01/why_didn_t_the_chinese_show_up_for_shangri_la.

134. Josh Rogin, "Why Didn't China Show Up for Shangri-La?" *Foreign Policy*, June 1, 2012. http://thecable.foreignpolicy.com/posts/2012/06/01/why_didn_t_the_chinese_show_up_for_shangri_la.

135. Wendell Minnick and Marcus Weisgerber, "Shangri-La Talks to Tackle South China Sea Crisis," *Defense News*, May 27, 2012. <http://www.defensenews.com/article/2012/05/27/DEFREG03/305270002/Shangri-La-Talks-Tackle-South-China-Sea-Crisis>.

136. Huy Duong, "Negotiating the South China Sea," *Diplomat* (Tokyo), July 20, 2012. <http://thediplomat.com/asean-beat/2011/07/20/negotiating-the-south-china-sea/>.

137. Xinhua, "Senior Chinese Officer Stresses Importance of Developing New-Type Military Relationship with U.S.," August 26, 2012. <http://english.sina.com/china/2012/0825/499977.html>; David S. Cloud, "China wary of U.S. military moves in the Asia-Pacific," *Los Angeles Times*, September 16, 2012. <http://articles.latimes.com/2012/sep/16/world/la-fg-panetta-asia-20120916>.

138. Dong Fangyu, "Chinese Military Delegation Visits US," *China Daily* (Beijing), August 21, 2012. OSC ID: CPP20120821968110 <http://www.opensource.gov>; Choi Chi-yuk, "Analysis: Lieutenant General Cai Yingting's United States visit signals promotion," *South China Morning Post* (Hong Kong), August 23, 2012. <http://www.scmp.com/news/china/article/1021302/analysis-lieutenant-general-cai-yingtings-united-states-visit-signals>.

139. Thom Shanker, "U.S. Accord With Japan Over Missile Defense Draws Criticism in China," *New York Times*, September 17, 2012. http://www.nytimes.com/2012/09/18/world/asia/u-s-and-japan-agree-on-missile-defense-system.html?_r=1; Dan De Luce, "China, Japan, New Zealand on Panetta's Trip Itinerary," *Defense News*, September 14, 2012. <http://www.defensenews.com/article/20120914/DEFREG02/309140001/China-Japan-New-Zealand-Panetta-8217-s-Trip-Itinerary?odyssey=tab|topnews|text|FRONTPAGE>.

140. Thom Shanker and Ian Johnson, "In China, Panetta Says American Focus on Asia Is No Threat," *New York Times*, September 18, 2012. <http://www.nytimes.com/2012/09/20/world/asia/panetta-meets-with-xi-easing-doubts-on-chinese-leader.html>.

141. Gopal Ratnam, "Panetta Extends China Trip to Meet Xi Jinping and Visit Port," *Bloomberg*, September 17, 2012. <http://www.bloomberg.com/news/2012-09-17/panetta-extends-china-trip-to-meet-xi-jinping-and-visit-port.html>; Karen Parrish, "Panetta Arrives in China for Three-day Visit," *American Forces Press Service*, September 17, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117884>; and U.S. Department of Defense, "SecDef in Qingdao, China Sept 20, 2012" (Washington, DC: *Secretary of Defense Photostream*, September 20, 2012. <http://www.flickr.com/photos/secdef/sets/72157631583645102/>).

142. Karen Parrish, "Panetta: Navy Will Invite China to Pacific Rim Exercise," *American Forces Press Service*, September 18, 2012, <http://www.defense.gov/news/newsarticle.aspx?id=117902>; Xinhua, "Chinese, U.S. defense chiefs hold talks," Xinhua, September 18, 2012, http://news.xinhuanet.com/english/china/2012-09/18/c_131857212.htm.

143. Tom Shanker and Ian Johnson, "In China, Panetta Says U.S. Focus on Asia Is No Threat," *New York Times*, September 18, 2012, http://www.nytimes.com/2012/09/20/world/asia/panetta-meets-with-xi-easing-doubts-on-chinese-leader.html?_r=0.

144. Shi Yingying and Zhao Shengnan, "Patrol Vessel Heads to Hawaii for Joint Exercises," *China Daily.com*, August 25, 2012. http://www.chinadaily.com.cn/china/2012-08/25/content_15705038.htm; Stephanie Young, "East Meets West in historic exercise," *Coast Guard Compass*, September 12, 2012. <http://coastguard.dodlive.mil/2012/09/east-meets-west-in-historic-exercise/>.

145. Shi Yingying and Zhao Shengnan, "Patrol Vessel Heads to Hawaii for Joint Exercises," *China Daily.com*, August 25, 2012. http://www.chinadaily.com.cn/china/2012-08/25/content_15705038.htm.

146. *American Forces Press Service*, "U.S., China Team Up for Counterpiracy Exercise," September 18, 2012. <http://www.defense.gov/news/newsarticle.aspx?id=117909>.

147. See chapter 6 of this Report on "China's Political Transitions in 2012."

148. Teddy Ng, "PLA Marching to a Different Beat?" *South China Morning Post* (Hong Kong), April 24, 2012. OSC ID: CPP20120424572012. <http://www.Opensource.gov>; Ching Cheong, "China Shakes Up Its Military," *Straits Times* (Singapore), September 7, 2012. OSC ID: SEP20120907027003. <http://www.Opensource.gov>.

149. James Mulvenon, "The Bo Xilai Affair and the PLA," *China Leadership Monitor* 38 (Summer 2012): 9.

150. John Garnaut, "Rotting from Within," *Foreign Policy*, April 16, 2012. http://www.foreignpolicy.com/articles/2012/04/16/rotting_from_within?page=full.

151. Edward Wong and Jonathan Ansfield, "Party Bristles at Military's Push for More Sway in China," *New York Times*, August 7, 2012. http://www.nytimes.com/2012/08/08/world/asia/chinas-military-seeks-more-sway-worrying-communist-party.html?_r=2&pagewanted=all; Minnie Chan, "PLA Newspaper Presses Need for Party Loyalty," *South China Morning Post* (Hong Kong), June 9, 2012. OSC ID: CPP20120609718013. <http://www.Opensource.gov>.

152. Jeremy Page, "China Passes Over Bo Allies in Military Shake-Up," *Wall Street Journal*, October 25, 2012. <http://online.wsj.com/article/SB10001424052970203697404578077844219771274.html>; Kathrin Hille, "China 'princeling' generals hit by Bo purge," *Financial Times*, May 7, 2012. <http://www.ft.com/intl/cms/s/0/4a932e72-9298-11e1-9e0a-00144feab49a.html#axzz2APVCxxqt>.

153. Cao Zhi, "Central Military Commission Holds General Promotion Ceremony, Hu Jintao Gives Order Certificates and Extends Congratulations to the Promoted Senior Military and Police Officers," Xinhua, July 30, 2012. OSC ID: CPP 20120730004002. <http://www.Opensource.gov>; Chia Lei, "Central Military Commission Promotes Six Officers to the Rank of General; All Were Born in the 1950s and Had Rich Grassroots Force Commanding Experience," *Ta Kung Pao* online (Hong Kong), July 31, 2012. OSC ID: CPP20120731787006. <http://www.Opensource.gov>; and *Want China Times* (Taipei), "Son-in-law of former Chinese president promoted to general," August 1, 2012. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120801000011&cid=1101&MainCatID=11>. For biographical details about these six officers, see James Mulvenon, "Say Hello to the New Guys," *China Leadership Monitor* 39 (Fall 2012).

154. *Economist*, "Guarding the guardians," June 30, 2012. <http://www.economist.com/node/21557760>; Chris Buckley, "Exclusive: China considers downgrading domestic security tsar in next line-up," Reuters, August 29, 2012. <http://www.reuters.com/article/2012/08/29/us-china-politics-security/idUSBRE87S1F020120829>; and John Garnaut, "Xi plans to crack down on security," *Sydney Morning Herald* (Australia), September 15, 2012. <http://www.smh.com.au/world/xi-plans-to-crack-down-on-security-20120914-25xhm.html>.

155. Minnie Chan, "Meng Jianzhu expected to be made security tsar at national congress," *South China Morning Post* (Hong Kong), October 7, 2012. <http://www.scmp.com/news/china/article/1055546/meng-jianzhu-expected-made-security-tsar-national-congress>; Emmanuel Puig, "The importance of domestic security apparatus in China's leadership transition" (Paris, France: European Union Institute for Security Studies, September 27, 2012). <http://www.iss.europa.eu/publications/detail/article/the-importance-of-domestic-security-apparatus-in-chinas-leadership-transition/>.

156. James Mulvenon and Leigh Ann Ragland, "Liu Yuan: Archetype of a 'Xi Jinping Man' in the PLA?" *China Leadership Monitor* 36 (Winter 2012): 5.

157. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 182–197. http://www.uscc.gov/annual_report/2011/Chapter2.2.pdf.

158. Leon Panetta, “Shangri-La Security Dialogue” (June 2, 2012). <http://www.defense.gov/speeches/speech.aspx?speechid=1681>.

159. Xinhua, “Chinese Defense Ministry Comments on U.S. Asia-Pacific Deployment,” June 28, 2012. OSC ID: CPP20120628968250. <http://www.opensource.gov/>; Xinhua, “China Says More U.S. Forces in Asia-Pacific Inappropriate,” June 4, 2012. OSC ID: CPP20120604968168. <http://www.opensource.gov/>.

160. Qiu Wei, “Fresh US Presence in Australia ‘Directed at China’,” *Global Times* (Beijing), March 20, 2012. OSC ID: CPP20120321722002. <http://www.opensource.gov/>.

161. U.S.-China Economic and Security Review Commission, *Hearing on Developments in China’s Cyber and Nuclear Capabilities*, opening statement of James Cartwright, March 26, 2012.

162. Jimmy Goodrich, “Chinese Civilian Cybersecurity: Stakeholders, Strategies, and Policy,” in Jon Lindsay, ed., *China and Cybersecurity: Political, Economic, and Strategic Dimensions* (San Diego, CA: Report from Workshops held at the University of California, April 2012), pp. 5–7. <http://igcc.ucsd.edu/assets/001/503568.pdf>. (Note: this only addresses China’s civilian cybersecurity bureaucracy.)

163. U.S.-China Economic and Security Review Commission, *2013 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2010), pp. 225–6. http://www.uscc.gov/annual_report/2010/annual_report_full_10.pdf.

164. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 56–67. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf. For a more thorough description of these plans and programs, particularly as they relate to innovation, see chapter 5, “Assessing China’s Efforts to Become an Innovative Society,” in this Report.

165. For a list of China’s intelligence collection priorities, see Defense Security Service, *Targeting U.S. Technologies* (Washington, DC: 2011), p. 30. www.dss.mil/counterintel/2011-unclassified-trends.pdf; Office of the U.S. National Counterintelligence Executive, *Foreign Spies Stealing US Economic Secrets in Cyberspace: Report to Congress of Foreign Economic Collection and Industrial Espionage, 2009–2011* (Washington, DC: October 2011), pp. 8–11. http://www.ncix.gov/publications/reports/fecie_all/Foreign_Economic_Collection_2011.pdf.

166. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 22.

167. U.S.-China Economic and Security Review Commission, *Hearing on China’s Military and Security Activities Abroad*, testimony of Daniel M. Hartnett, March 4, 2009; Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), p. 17. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

168. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 6.

169. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 19–21. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

170. Senate Armed Services Committee, *Advance Policy Questions for Admiral Samuel J. Locklear III, U.S. Navy, Nominee to be Commander, U.S. Pacific Command*, 112th Cong., 2nd sess., February 9, 2012, p. 17. <http://www.armed-services.senate.gov/statemnt/2012/02%20February/Locklear%2002-09-12.pdf>.

171. Dai Qingmin, “Lun Wangdian Yiti Zhan” (On Integrating Network Warfare and Electronic Warfare), *Zhongguo Junshi Kexue* (China Military Science), February 1, 2002, pp. 112–117.

172. Minnie Chan, “PLA Eyes Talent Pool to Expand Capability,” *South China Morning Post* (Hong Kong), April 20, 2011 <http://www.scmp.com/portal/site/SCMP/menuitem.2af62ecb329d3d7733492d9253a0a0a0/?vgnnextoid=f0d7cc9cc2e6f210VgnVCM100000360a0a0aRCRD&ss=china&s=news>.

173. Che Yajun and Xue Xinglin, eds., “Zhanchang Huanjing yu Xinxihua Zhanzheng” (The Battlefield Environment and Informatized Warfare) (Beijing, China: National Defense University Press, 2010).

174. James Mulvenon, "PLA Computer Network Operations," in Roy Kamphausen, David Lai, and Andrew Scobel, eds., *Beyond the Strait: PLA Missions Other Than Taiwan* (Carlisle, PA: U.S. Army Strategic Studies Institute, 2009), pp. 253–85; Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012). http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf; Bryan Krekel et al., *Capability of the People's Republic of China to Conduct Cyber Warfare and Computer Network Exploitation* (Falls Church, VA: Northrop Grumman Corporation, 2009). http://www.uscc.gov/researchpapers/2009/Northrop_Grumman_PRC_Cyber_Paper_FINAL_Approved%20Report_16Oct2009.pdf; Mark A. Stokes et al., "The Chinese People's Liberation Army Signals Intelligence and Cyber Reconnaissance Infrastructure" (Washington, DC: Project 2049 Institute, November 11, 2011). http://project2049.net/documents/pla_third_department_sigint_cyber_stokes_lin_hsiao.pdf; Mark Stokes and L.C. Russell Hsiao, "Leadership Transitions in the Second Artillery Force at the 18th Party Congress: Implications for Roles and Missions" (Washington, DC: Project 2049 Institute AsiaEye, May 7, 2012). <http://blog.project2049.net/2012/05/leadership-transitions-in-second.html>; Nichole Perlroth, "Traveling Light in a Time of Digital Thievery," *New York Times*, February 10, 2012. www.nytimes.com/2012/02/11/technology/electronic-security-a-worry-in-an-age-of-digital-espionage.html; U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2010), p. 237. http://www.uscc.gov/annual_report/2010/annual_report_full_10.pdf; David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects* (Berkeley, CA: University of California UP, 2002), esp. p. 129; iDefense Security Intelligence Team, *Development, Capacity and Motivations of the Chinese Hacker Community* (Reston, VA: iDefense, October 24, 2008) [*Caveat lector*]; and Phil Muncaster, "China Arrests 9,000 Cyber-Criminals," *Register* (United Kingdom), October 16, 2012. http://www.theregister.co.uk/2012/10/16/china_police_arrest_thousands_online_crime/print.html.

175. The Cyber Hub, "Cyber Power Index," undated. <http://www.cyberhub.com/Home/About>.

176. China.org.cn, "China becomes top victim of cyber attacks," March 20, 2012. http://www.china.org.cn/china/2012-03/20/content_24937159.htm. Of note, China's Ministry of Defense began citing these findings within days. See Yamei Wang, "China is victim of cyber attacks: spokesman," Xinhua, March 29, 2012. http://news.xinhuanet.com/english/china/2012-03/29/c_131497134.htm. Figures for the first half of 2012 are available in Cao Yin, "Sharp rise in online sabotage," *China Daily*, October 15, 2012. http://usa.chinadaily.com.cn/china/2012-10/15/content_15816273.htm. Notably, an industry source in China asserted in September that security products and services in China account for only 1 percent of total IT spending. C. Custer, "Here's Why Your Data Isn't Safe in China: Investment in Security Just 1% of IT Industry Investment," *TechInAsia*, September 4, 2012. <http://www.techinasia.com/data-safe-china-investment-security-1-industry-investment/>.

177. A Google study, however, identified a "low" level of phishing websites hosted in China. See Niels Provos, "Safe Browsing—Protecting Web Users for 5 Years and Counting," *Google Online Security Blog*, June 19, 2012. <http://googleonlinesecurity.blogspot.com/2012/06/safe-browsing-protecting-web-users-for.html>.

178. Microsoft Security Intelligence Report, "China," (Redmond, WA: Microsoft, July through December 2011), vol. 12, p. 6. <http://www.microsoft.com/security/sir/threat/default.aspx#china>.

179. Paul Mozur, "China Web Suffers Temporary Blackout," *Wall Street Journal*, April 12, 2012. <http://online.wsj.com/article/SB10001424052702304356604577340220581079482.html>; Paul Mozur, "New Clarity on China Internet Outage," *Wall Street Journal China Real Time Report*, April 13, 2012. <http://blogs.wsj.com/chinarealtime/2012/04/13/new-clarity-on-china-internet-outage/>.

180. U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office: Washington, DC: 2010), p. 229. http://www.uscc.gov/annual_report/2010/annual_report_full_10.pdf; China Internet Network Information Center, "Zhongguo Hulanwangluo Fazhan Zhuangkuang Tongji Baogao" (Statistical Report on Internet Development in China) (Beijing, China: July 2012), p. 10. See also Michael Kan, "China's Internet Population Reaches 538 Million," *PCWorld*, July 19, 2012. http://www.pcworld.com/businesscenter/article/259482/chinas_internet_population_reaches_538_million.html.

181. Michael Shirer (Public Relations director, Global Corporate Communications, IDC) interview with Commission staff, July 24, 2012.

182. David Belson, ed., *The State of the Internet* (Singapore: Akami Technologies, 2012), vol. 5, no. 1, p. 6.

183. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 56–67. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

184. For example, David A. Fulghum, “China Cyber-skills Are Improving but Still Don’t Top Russia and Israel,” *Aviation Week Ares Blog*, March 28, 2012. <http://www.aviationweek.com/Blogs.aspx?plckPostId=Blog:27ec4a53-dcc8-42d0-bd3a-01329aef79a7Post:a5aa328c-9f63-416f-9701-f82d59426269>; Devlin Barrett, “Report: Eastern European Hackers More Sophisticated Than Asian Counterparts,” *Wall Street Journal* Digits Web Log, September 18, 2012. <http://blogs.wsj.com/digits/2012/09/18/report-eastern-european-hackers-more-sophisticated-than-asian-counterparts/>.

185. Phil Muncaster, “Chinese coders beat all-comers,” *Register* (United Kingdom), April 12, 2012. http://www.theregister.co.uk/2012/04/12/chinese_coders_best_in_world/. For a real-time update of the statistics discussed in this article, see Interviewstreet, “Interviewstreet Challenge Main Leader Board,” undated. <https://www.interviewstreet.com/challenges/dashboard/#leaderboard/default/1/>.

186. Separate teams, often with different skill levels, contribute to the same exploitations. Bryan Krekel et al., *Capability of the People’s Republic of China to Conduct Cyber Warfare and Computer Network Exploitation* (Falls Church, VA: Northrop Grumman Corporation, 2009). http://www.uscc.gov/researchpapers/2009/NorthropGrumman_PRC_Cyber_Paper_FINAL_Approved%20Report_16Oct2009.pdf. Anecdotaly, certain PLA groups may not have the best tradecraft among Chinese actors. According to one report, a PLA officer “employed the same server used in cyberspying operations to communicate with his mistress.” Michael Riley and John Walcott, “China-Based Hacking of 760 Companies Shows Cyber Cold War,” *Bloomberg*, December 14, 2011. <http://www.bloomberg.com/news/2011-12-13/china-based-hacking-of-760-companies-reflects-undeclared-global-cyber-war.html>. Also, according to a Japanese media report, “An e-mail address used by a former member of China’s People’s Liberation Army was used as a destination to receive information stolen in cyber-attacks on both houses of the Diet [Japan’s bicameral legislature] in the summer of 2011. *Yomiuri Shimbun* (Tokyo) “Ex-PLA man tied to Diet cyber-attacks/Stolen data possibly sent to his e-mail,” July 11, 2012. <http://www.yomiuri.co.jp/dy/national/T120710004836.htm>.

187. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Richard Bejtlich, March 26, 2012; U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, testimony of Nart Villeneuve, March 26, 2012.

188. For explanations of how state-sponsored activities differ from traditional cybercrime, see U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Nart Villeneuve, March 26, 2012; Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 95–103. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

189. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Nart Villeneuve, March 26, 2012.

190. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Richard Bejtlich, March 26, 2012.

191. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, testimony of James E. Cartwright, March 26, 2012.

192. As the Commission reported in 2010, “The Defense Department explained the lower figures as resulting from measures taken to mitigate threats before they reach the threshold that merits an incident log entry. Specifically, the department cited ‘greater visibility of threat activity, vulnerability, and ultimately risk by leaders at all levels across [the Department of Defense]’ in addition to greater resources, enhanced perimeter defenses, and the establishment of U.S. Cyber Command.” See U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office: Washington, DC: 2010), p. 237. http://www.uscc.gov/annual_report/2010/annual_report_full_10.pdf.

193. U.S. Senate Committee on Armed Services, *Hearing To Receive Testimony on U.S. Strategic Command and U.S. Cyber Command In Review of the Defense Authorization Request for Fiscal Year 2013 and The Future Years Defense Program*,

testimony of Commander of the U.S. Cyber Command and Director, National Security Agency/Chief, Central Security Service Keith B. Alexander, U.S. Army, 112th Cong., 2nd sess., March 27, 2012. <http://www.armed-services.senate.gov/Transcripts/2012/03%20March/12-19%20-%203-27-12.pdf>. See also Jim Wolf, "US cyber warrior accuses China of targeting Pentagon," Reuters, September 27, 2012. <http://www.reuters.com/article/2012/09/28/usa-cybersecurity-china-idUSL1E8KRL0E20120928>.

194. F35.com, "Frequently Asked Questions," undated. <https://f35.com/the-f-35/faqs.aspx#faq21>.

195. David Fulghum, Bill Sweetman, and Amy Butler, "Internet Hacking Drives Up Pentagon Costs," *Aviation Week & Space Technology*, February 6, 2012. http://www.aviationweek.com/Article.aspx?id=article-xml/AW_02_06_2012_p30-419987.xml#.

196. Siobhan Gorman, August Cole, and Yochi Dreazen, "Computer Spies Breach Fighter-Jet Project," *Wall Street Journal*, April 21, 2009. <http://online.wsj.com/article/SB124027491029837401.html>; Kelly Jackson Higgins, "More Victims Of Chinese Hacking Attacks Come Forward," *Dark Reading*, January 14, 2010. <http://www.darkreading.com/security/attacks-breaches/222301032/index.html>; Graham Cluley, "Strike three: Speculation rises that another US military contractor has been hit by hackers," *Sophos Naked Security*, June 2, 2011. <http://nakedsecurity.sophos.com/2011/06/02/strike-three-speculation-rises-that-another-us-military-contractor-hit-by-hackers/>; and Jason Healey, "The F-35's Cyber Death Spiral?" (Washington, DC: Atlantic Council, *New Atlanticist*, March 29, 2012). <http://www.acus.org/new-atlanticist/f-35s-cyber-death-spiral>.

197. House Committee on Science, Space, and Technology, Subcommittee on Investigations and Oversight, *Hearing on NASA Cybersecurity: An Examination of the Agency's Information Security*, written testimony of Inspector General Paul K. Martin, 112th Cong., 2nd sess., February 29, 2012. http://oig.nasa.gov/congressional/FINAL_written_statement_for_%20IT_%20hearing_February_26_edit_.pdf.

198. Bill Gertz, "White House Hack Attack," *Washington Free Beacon*, September 30, 2012. <http://freebeacon.com/white-house-hack-attack/>.

199. Jim Kuhnhen, "White House says it thwarted cyberattack," *Military Times*, October 1, 2012. <http://militarytimes.com/news/2012/10/ap-white-house-says-it-thwarted-cyberattack-100112/>.

200. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 10. Cyber espionage is just one element of China's multipronged industrial espionage efforts. See Office of the National Counterintelligence Executive, *Foreign Spies Stealing US Economic Secrets in Cyberspace: Report to Congress of Foreign Economic Collection and Industrial Espionage, 2009-2011* (Washington, DC: October 2011), pp. ii, 4. http://www.ncix.gov/publications/reports/fecie_all/Foreign_Economic_Collection_2011.pdf.

201. Office of the National Counterintelligence Executive, *Foreign Spies Stealing US Economic Secrets in Cyberspace: Report to Congress of Foreign Economic Collection and Industrial Espionage, 2009-2011* (Washington, DC: October 2011). pp. ii, 4. http://www.ncix.gov/publications/reports/fecie_all/Foreign_Economic_Collection_2011.pdf; see also an instructive interpretation by Mike McConnell, Michael Chertoff, and William Lynn, "China's Cyber Thievery Is National Policy—And Must Be Challenged," *Wall Street Journal* (opinion), January 27, 2012. <http://online.wsj.com/article/SB10001424052970203718504577178832338032176.html>.

202. For a discussion on the extent to which the Chinese government controls the Chinese economy, see U.S.-China Economic and Security Review Commission, *Hearing on Chinese State-Owned and State-Controlled Enterprises*, testimony of Andrew Szamosszegi, February 15, 2012.

203. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Richard Bejtlich, March 26, 2012; see also Gregg Keizer, "Elite hacker gang has unlimited supply of zero-day bugs," *Computerworld*, September 7, 2012. http://www.computerworld.com/s/article/9231051/Elite_hacker_gang_has_unlimited_supply_of_zero_day_bugs.

204. Michael A. Riley and Sophia Pearson, "China-Based Hackers Target Law Firms to Get Secret Deal Data," *Bloomberg*, January 31, 2012. <http://www.bloomberg.com/news/2012-01-31/china-based-hackers-target-law-firms.html>.

205. Michael Riley and John Walcott, "China-Based Hacking of 760 Companies Shows Cyber Cold War," *Bloomberg*, December 14, 2011. <http://www.bloomberg.com/news/2011-12-13/china-based-hacking-of-760-companies-reflects-undeclared-global-cyber-war.html>.

206. Siobhan Gorman, "China Hackers Hit U.S. Chamber," *Wall Street Journal*, December 21, 2011. <http://online.wsj.com/article/SB1000142405297020405840457710541568535300.html>; For several additional examples, see Michael Riley and Dune

Lawrence, "Hackers Linked to China's Army Seen From EU to D.C.," Bloomberg, July 26, 2012. <http://www.bloomberg.com/news/2012-07-26/china-hackers-hit-eu-point-man-and-d-c-with-byzantine-candor.html>; and an informative discussion on "watering hole attacks" in Brian Krebs, "Espionage Hackers Target 'Watering Hole' Sites," KrebsOnSecurity.com, September 25, 2012. <http://krebsonsecurity.com/tag/watering-hole-attack/>.

207. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Richard Bejtlich, March 26, 2012.

208. Mark Chandler, "Cisco Suggests Huawei Release Court Report on Intellectual Property Misuse," Cisco the Platform Web Log, October 1, 2012. <http://blogs.cisco.com/news/cisco-suggests-huawei-release-court-report-on-intellectual-property-misuse/>.

209. Michael A. Riley and Sophia Pearson, "China-Based Hackers Target Law Firms to Get Secret Deal Data," Bloomberg, January 31, 2012. <http://www.bloomberg.com/news/2012-01-31/china-based-hackers-target-law-firms.html>.

210. Adam Segal, "Chinese hacking may slow, but . . .," *SC Magazine*, March 1, 2012. <http://www.scmagazine.com/chinese-hacking-may-slow-but/article/228651/>; Mandiant, *M Trends: The Advanced Persistent Threat* (Alexandria, VA: January 2010), pp. 10, 20.

211. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Nart Villeneuve, March 26, 2012.

212. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Nart Villeneuve, March 26, 2012.

213. Nart Villeneuve and David Sancho, *The "Lurid" Downloader* (Cupertino, CA: Trend Micro, 2012), p. 4. http://www.trendmicro.com/cloud-content/us/pdfs/security-intelligence/white-papers/wp_dissecting-lurid-apt.pdf.

214. Forward-Looking Threat Research Team, *LuckyCat Redux: Inside an APT [Advanced Persistent Threat] Campaign with Multiple Targets in India and Japan* (Cupertino, CA: Trend Micro, 2012). http://www.trendmicro.com/cloud-content/us/pdfs/security-intelligence/white-papers/wp_luckycat_redux.pdf.

215. Nichole Perloth, "Case Based in China Puts a Face on Persistent Hacking," *New York Times*, March 29, 2012. <http://www.nytimes.com/2012/03/30/technology/hacking-in-asia-is-linked-to-chinese-ex-graduate-student.html>.

216. The RSA incident, recently confirmed to be a Chinese operation, is the best example. For a brief summary of this exploitation, see U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), chapter 2, section 1, "Military and Security Year in Review," pp. 174–5. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf; Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012). pp. 40–1. <http://www.uscc.gov/RFP/2012/USCC%20Report%20Chinese%20CapabilitiesforComputer%20NetworkOperationsandCyberEspionage.pdf>; and U.S. Senate Committee on Armed Services, *Hearing To Receive Testimony on U.S. Strategic Command and U.S. Cyber Command In Review of the Defense Authorization Request for Fiscal Year 2013 and The Future Years Defense Program*, testimony of Commander of the U.S. Cyber Command and Director, National Security Agency/Chief, Central Security Service Keith B. Alexander, U.S. Army, 112 Cong., 2nd sess., March 27, 2012. <http://www.armed-services.senate.gov/Transcripts/2012/03%20March/12-19%20-%20203-27-12.pdf>.

217. Jamie Blasco, "Sykipot variant hijacks DOD [Department of Defense] and Windows smart cards," AlienVault Labs, January 12, 2012. <http://labs.alienvault.com/labs/index.php/2012/when-the-apt-owns-your-smart-cards-and-certs/>; Lucian Constantin, "Sykipot Trojan hijacks DoD [Department of Defense] smart cards," *ComputerWorld*, January 13, 2012. http://www.computerworld.com/s/article/9223423/Sykipot_Trojan_hijacks_DoD_smart_cards; Jamie Blasco, "Sykipot is back," AlienVault Labs, July 2, 2012. <http://labs.alienvault.com/labs/index.php/2012/sykipot-is-back/>; Lucian Constantin, "Sykipot malware used in attacks on aerospace industry," *ComputerWorld*, July 4, 2012. http://www.computerworld.com/s/article/9228789/Sykipot_malware_used_in_attacks_on_aerospace_industry; and Andrew Tilghman, "Chinese virus targets DoD [Department of Defense] Common Access Card," *ArmyTimes*, January 18, 2012. <http://www.armytimes.com/news/2012/01/military-common-access-card-chinese-virus-011812w/>.

218. Manu Pubby, "China hackers enter Navy computers, plant bug to extract sensitive data," *Indian Express* (New Delhi), July 1, 2012. <http://www.indianexpress.com/news/china-hackers-enter-navy-computers-plant-bug-to-extract-sensitive-data/968897/0>.

219. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of James E. Cartwright, March 26, 2012.

220. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Richard Bejtlich, March 26, 2012.
221. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Nart Villeneuve, March 26, 2012.
222. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Richard Bejtlich, March 26, 2012.
223. Eric Grosse, "Security warnings for suspected state-sponsored attacks," *Google Online Security Blog*, June 5, 2012. <http://googleonlinesecurity.blogspot.com/2012/06/security-warnings-for-suspected-state.html>.
224. Jon Russell, "Stealth SMS [short message service] payment malware identified in Chinese Android app stores, 500,000 devices infected," *TheNextWeb*, August 19, 2012. <http://thenextweb.com/asia/2012/08/19/stealth-sms-payment-malware-identified-chinese-app-stores-500000-android-devices-infected/>.
225. Ken Dilanian, "New security flaw discovered in smartphones," *LA Times*, February 24, 2012. <http://articles.latimes.com/2012/feb/24/business/la-fi-smartphone-hacking-20120224>.
226. For example, the Commission's 2011 Annual Report discusses an incident wherein a program aired by a state broadcaster allegedly showed a PLA-related attack against a Falun Gong website. See U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), chapter 2, section 1, "Military and Security Year in Review," pp. 177–8. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf.
227. *Guardian* (United Kingdom), "Cyber-attack cripples US website covering Bo Xilai scandal," April 20, 2012. <http://www.guardian.co.uk/technology/2012/apr/20/cyber-attack-boxun-com-bo-xilai>; Isaac Stone Fish, "Inside Boxun, China's media muckraker," *Foreign Policy*, April 26, 2012. http://blog.foreignpolicy.com/posts/2012/04/26/inside_boxun_chinas_media_muckraker. "Patriotic" hacking is another plausible explanation.
228. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), p. 83. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.
229. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), pp. 84–5. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.
230. Dan Kaufman, "An analytical framework for cyber security" (Washington, DC: Defense Advanced Research Projects Agency, November 2011), Slide 6. www.darpa.mil/WorkArea/DownloadAsset.aspx?id=2147484449.
231. U.S. Senate Committee on Armed Services, *Inquiry into Counterfeit Electronic Parts in the Department of Defense Supply Chain* (Washington, DC: May 21, 2012), pp. ii, vi. <http://www.armed-services.senate.gov/Publications/Counterfeit%20Electronic%20Parts.pdf>.
232. U.S. Senate Committee on Armed Services, *Inquiry into Counterfeit Electronic Parts in the Department of Defense Supply Chain* (Washington, DC: May 21, 2012), p. vi. <http://www.armed-services.senate.gov/Publications/Counterfeit%20Electronic%20Parts.pdf>.
233. U.S. Government Accountability Office, *DoD [Department of Defense] Supply Chain: Suspect Counterfeit Electronic Parts Can Be Found on Internet Purchasing Platforms* (Washington, DC: February 2012). <http://gao.gov/assets/590/588736.pdf>.
234. U.S. Government Accountability Office, *IT Supply Chain: National Security-Related Agencies Need to Better Address Risks* (Washington, DC: March 2012), p. 21. <http://www.gao.gov/assets/590/589568.pdf>.
235. House Committee on Oversight and Government Reform, *Hearing on Cybersecurity: Assessing the Nation's Ability to Address the Growing Cyber Threat*, testimony of Acting Deputy Under Secretary, National Protection and Programs Directorate, U.S. Department of Homeland Security Greg Schaffer, 112th Cong., 1st sess., July 7, 2011. <http://www.gpo.gov/fdsys/pkg/CHRG-112hrg71615/html/CHRG-112hrg71615.htm>.
236. Cyberspace Policy Review, *Assuring a Trusted and Resilient Information and Communications Infrastructure* (Washington, DC: The White House, undated), p. 34. http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf; see also Josh Smith, "Homeland Security Official: Some Foreign-Made Electronics Compromise Cybersecurity," *National Journal*, July 7, 2011. <http://www.nationaljournal.com/tech/homeland-security-official-some-foreign-made-electronics-compromise-cyber-security-20110707>.

237. Name withheld (position withheld, U.S. Army Cyber Directorate) briefing to the U.S.-China Economic and Security Review Commission. February 7, 2012.

238. Nichole Perlroth, "Microsoft Finds PCs That Ship Pre-Infected," *New York Times Bits Blog*, September 13, 2012. <http://bits.blogs.nytimes.com/2012/09/13/microsoft-finds-pcs-that-ship-pre-infected/>.

239. Michael Riley, "Obama Invokes Cold-War Law to Unmask Chinese Telecom Spyware," *Bloomberg*, December 5, 2011. www.businessweek.com/news/2011-12-05/obama-invokes-cold-war-law-to-unmask-chinese-telecom-spyware.html.

240. Henry Samuel, "Chip and pin scam 'has netted millions from British shoppers'," *Telegraph* (United Kingdom), October 10, 2008. <http://www.telegraph.co.uk/news/uknews/law-and-order/3173346/Chip-and-pin-scam-has-netted-millions-from-British-shoppers.html>.

241. For research regarding the latter, see Sergei Skorobogatov and Christopher Woods, "In the blink of an eye: There goes your AES [advanced encryption standard] key" (unpublished paper, May 28, 2012). (Available at the Cryptology ePrint Archive: Report 2012/296). <http://eprint.iacr.org/2012/296>.

242. Michael Riley, "Obama Invokes Cold-War Law to Unmask Chinese Telecom Spyware," *Bloomberg*, December 5, 2011. www.businessweek.com/news/2011-12-05/obama-invokes-cold-war-law-to-unmask-chinese-telecom-spyware.html.

243. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Richard Bejtlich, March 26, 2012.

244. Ryan Naraine, "Malware found in Lenovo software package," *ZDNet*, November 19, 2008. <http://www.zdnet.com/blog/security/malware-found-in-lenovo-software-package/2203>.

245. Steve Stecklow, "Special Report: Chinese firm helps Iran spy on citizens," *Reuters*, March 22, 2012. <http://www.reuters.com/article/2012/03/22/us-iran-telecoms-idUSBRE82L0B820120322>; Steve Stecklow, "Exclusive: China's ZTE planned U.S. computer sale to Iran," *Reuters*, April 10, 2012. <http://www.reuters.com/article/2012/04/10/us-zte-iran-aryacell-idUSBRE8390T720120410>.

246. Steve Stecklow, "Exclusive: U.S. probes China's ZTE over tech sales to Iran," *Reuters*, May 25, 2012. <http://www.reuters.com/article/2012/05/25/us-zte-usa-investigation-idUSBRE8400W420120525>; Steve Stecklow and Melanie Lee, "FBI probes China's ZTE over Iran tech deals: report," *Reuters*, July 13, 2012. <http://www.reuters.com/article/2012/07/13/us-zte-fbi-idUSBRE86C00S20120713>; and David Ingram, "Analysis: U.S. criminal inquiry puts much at risk for ZTE," *Reuters*, July 15, 2012. <http://www.reuters.com/article/2012/07/15/us-zte-us-investigation-idUSBRE86E01P20120715>.

247. Andrew Higgins, "Chinese company ensnared in kickback scandal in Philippines," *Washington Post*, June 24, 2012. http://www.washingtonpost.com/world/asia_pacific/chinese-company-ensnared-in-kickback-scandal-in-philippines/2012/06/24/gJQAjdYizV_story.html.

248. Branko Spasojevic, "ZTE Score: Privilege of Escalation in a Nutshell," *Symantec Security Response*, May 23, 2012. <http://www.symantec.com/connect/blogs/zte-score-privilege-escalation-nutshell>; Jeremy Wagstaff and Lee Chyen Yee, "ZTE confirms security hole in U.S. phone," *Reuters*, May 18, 2012. <http://www.reuters.com/article/2012/05/18/us-zte-phone-idUSBRE84H08J20120518>.

249. Phil Muncaster, "ZTE and Huawei execs get ten years for bribery," *Register* (United Kingdom), June 12, 2012. http://www.theregister.co.uk/2012/06/12/zte_huawei_bribery_algeria/.

250. Maggie Lu Yueyang, "Australia Bars Huawei From Broadband Project," *New York Times*, March 26, 2012. <http://www.nytimes.com/2012/03/27/technology/australia-bars-huawei-from-broadband-project.html>.

251. Lucian Constantin, "Hackers Reveal Critical Vulnerabilities in Huawei Routers at Defcon," *PCWorld*, July 30, 2012. <http://www.pcworld.com/article/260060/hackers-reveal-critical-vulnerabilities-in-huawei-routers-at-defcon.html>.

252. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael O. McCarthy, June 14, 2012.

253. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael O. McCarthy, June 14, 2012.

254. U.S.-China Economic and Security Review Commission, *Hearing on the Evolving U.S.-China Trade and Investment Relationship*, written testimony of Michael O. McCarthy, June 14, 2012.

255. House of Representatives, Permanent Select Committee on Intelligence, Report by Chairman Mike Rogers and Ranking Member C. A. Dutch Ruppersberger, *Investigative Report of the U.S. National Security Issues Posed by Chinese Tele-*

communications Companies Huawei and ZTE, 112th Cong., 2nd Sess., October 8, 2012, pp. v–vi.

256. BBC News, “MI5 warns over China spy threat,” December 2, 2007. <http://news.bbc.co.uk/2/hi/africa/7123970.stm>; Sophie Borland, “MI5 warns firms over China’s internet,” *Telegraph* (United Kingdom), April 12, 2008. <http://www.telegraph.co.uk/news/worldnews/1571172/MI5-warns-firms-over-Chinas-internet-spying.html>; and John F. Burns, “Britain Warned Businesses of Threat of Chinese Spying,” *New York Times*, January 31, 2010. <http://www.nytimes.com/2010/02/01/world/europe/01spy.html>.

257. Gordon Corera, “MI5 fighting ‘astonishing’ level of cyber-attacks,” BBC News, June 25, 2012. <http://www.bbc.co.uk/news/uk-18586681>.

258. Justin McCurry, “Japan anxious over defence data as China denies hacking weapons maker,” *Guardian* (United Kingdom), September 20, 2011. <http://www.guardian.co.uk/world/2011/sep/20/china-denies-hacking-attack-japan>; Martin Fackler, “Virus Infects Computers in Japan’s Parliament,” *New York Times*, October 25, 2011. <http://www.nytimes.com/2011/10/26/world/asia/virus-infects-computers-in-japans-parliament.html>.

259. *Yomiuri Shimbun* (Tokyo), “Ex-PLA man tied to Diet cyber-attacks/Stolen data possibly sent to his e-mail,” July 11, 2012. <http://www.yomiuri.co.jp/dy/national/T120710004836.htm>.

260. Joseph Yeh, “Chinese cyber-attacks worse than feared: NSB [National Security Bureau],” *China Post* (Taiwan), September 28, 2012. <http://www.chinapost.com.tw/business/company-focus/2012/09/55801/Chinese-cyber-attacks.htm>.

261. Raju Gopalakrishnan, “Fighters, radar, marine patrols top Asia’s military wish-list,” Reuters, February 16, 2012. <http://www.reuters.com/article/2012/02/16/us-asia-defence-idUSTRE81F0DO20120216>.

262. Adam Segal, “The Danger of Patriotic Geeks,” *Diplomat* (Tokyo), February 29, 2012. <http://thediplomat.com/2012/02/29/the-danger-of-patriotic-geeks/>.

263. Jason Lewis, “How spies used Facebook to steal Nato chiefs’ details,” *Telegraph* (United Kingdom), March 10, 2012. <http://www.telegraph.co.uk/technology/9136029/How-spies-used-Facebook-to-steal-Nato-chiefs-details.html>.

264. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* (Washington, DC: Department of Defense, 2012), pp. 9–10.

265. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* (Washington, DC: Department of Defense, 2012), pp. 9–10.

266. For other examples of China’s preference to use UN or UN-created mechanisms, see references to a cyber-focused group modeled on the International Atomic Energy Agency and discussions in the context of the UN Governmental Group of Experts in *Bilateral Discussions on Cooperation in Cybersecurity* (Beijing, China: China Institutes of Contemporary International Relations (CICIR)/Center for Strategic and International Studies (CSIS), June 2012). <http://www.cicir.ac.cn/chinese/newsView.aspx?nid=3878>.

267. Information Office of the State Council of the People’s Republic of China, *The Internet in China* (Beijing, China: June 8, 2010). http://english.gov.cn/2010-06/08/content_1622956.htm.

268. Stephen Olson and Clyde Prestowitz, *The Evolving Role of China in International Institutions* (Washington, DC: The Economic Strategy Institute, January 2011), p. 4. <http://www.uscc.gov/researchpapers/2011/TheEvolvingRoleofChinainInternationalInstitutions.pdf>.

269. Leon E. Panetta, “Defending the Nation from Cyber Attack” (Business Executives for National Security, New York, New York, October 11, 2012). <http://www.defense.gov/speeches/speech.aspx?speechid=1728>.

270. Eric Beidel, “Cyber Intrusions Into Air Force Computers Take Weeks to Detect,” *National Defense Magazine*, February 24, 2012. <http://www.nationaldefensemagazine.org/blog/Lists/Posts/Post.aspx?ID=688>.

271. Bryan Krekel et al., *Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage* (Falls Church, VA: Northrop Grumman Corporation, March 7, 2012), p. 10. http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

272. House Committee on Homeland Security, Subcommittee on Counterterrorism and Intelligence, *Hearing on Economic Espionage: A Foreign Intelligence Threat to American Jobs and Homeland Security*, testimony of Assistant Director, Counterintelligence Division, Federal Bureau of Investigation, C. Frank Figliuzzi, 112th Cong., 2nd sess., June 28, 2012. <http://homeland.house.gov/sites/homeland.house.gov/files/Testimony%20Figliuzzi.pdf>.

273. House of Representatives, Permanent Select Committee on Intelligence, *Hearing on National Security Threats Posed by Chinese Telecom Companies Working in the U.S.*, Statement by Representative Michael Rogers, 112th Cong., 2nd sess., September 13, 2012.

274. On the challenges of accounting for cyber espionage and crime costs, see Peter Maass and Megha Rajagopalan, "Does Cybercrime Really Cost \$1 Trillion?" (New York: ProPublica, August 1, 2012). <http://www.propublica.org/article/does-cybercrime-really-cost-1-trillion>; Constantine von Hoffman, "Norton '12 Cybercrime Report Magically Makes \$278B in Damages Disappear," CIO.com, September 6, 2012. <http://blogs.cio.com/security/17375/norton-12-cybercrime-report-magically-makes-278b-damages-disappear>.

275. Michael A. Riley and Ashlee Vance, "China Corporate Espionage Boom Knocks Wind Out of U.S.," Bloomberg, March 15, 2012. <http://www.bloomberg.com/news/2012-03-15/china-corporate-espionage-boom-knocks-wind-out-of-u-s-companies.html>. See also Zachary Fryer-Biggs, "Passive Defenses Not Enough: U.S. Cyber Commander," *DefenseNews*, September 14, 2011. <http://www.defensenews.com/article/20110914/DEFSECT04/109140315/Passive-Defenses-Not-Enough-U-S-Cyber-Commander>.

276. Senate Armed Services Committee, *Hearing to Receive Testimony on the Current and Future Worldwide Threats to the National Security of the United States*, testimony of U.S. Director of National Intelligence James R. Clapper, Jr., 112th Cong., 2nd sess., February 16, 2012. <http://armed-services.senate.gov/Transcripts/2012/02%20February/12-03%20-%202-16-12.pdf>.

277. Senate Judiciary Committee, Subcommittee on Crime and Terrorism, *Hearing on Cyber Security: Responding To The Threat Of Cyber Crime And Terrorism*, testimony of Assistant Director, Cyber Division, Federal Bureau of Investigation Gordon M. Snow, 112th Cong., 1st sess., April 12, 2011. <http://www.gpo.gov/fdsys/pkg/CHRG-112shrg71412/pdf/CHRG-112shrg71412.pdf>.

278. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Jason Healey, March 26, 2012.

279. Securities and Exchange Commission, "CF [corporate finance] Disclosure Guidance: Topic No. 2 (Cybersecurity)" (Washington, DC: October 13, 2011). <http://www.sec.gov/divisions/corpfin/guidance/cfguidance-topic2.htm>; Andrea Shalal-Esa, "Scores of U.S. firms keep quiet about cyber attacks," Reuters, June 13, 2012. <http://www.reuters.com/article/2012/06/13/net-us-media-tech-summit-cyber-disclosur-idUSBRE85C1E320120613>; and U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Richard Bejtlich, March 26, 2012.

280. Adam Segal, "Chinese Computer Games," *Foreign Affairs*, March/April 2012.

281. Mikael Ricknäs, "Chinese operators hope to standardize a segmented Internet," *ComputerWorld*, June 18, 2012. http://www.computerworld.com/s/article/9228200/Chinese_operators_hope_to_standardize_a_segmented_Internet.

282. Evan S. Medeiros, "'Minding the Gap': Assessing the Trajectory of the PLA's Second Artillery," in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People's Liberation Army: Exploring the Contours of China's Military* (Carlisle, PA: U.S. Army Strategic Studies Institute, September 2007), p. 145. www.strategicstudiesinstitute.army.mil/pdf/files/pub784.pdf.

283. This includes both conventional and nuclear missile launch brigades. The International Institute for Strategic Studies, *The Military Balance 2012* (Routledge: London, 2012), p. 233.

284. Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009); see also the discussion of "vertical command" in Kenneth Allen and Maryanne Kivlehan-Wise, "Implementing PLA Second Artillery Doctrinal Reforms," in James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs* (Alexandria, VA: Center for Naval Analysis, 2005), p. 168.

285. Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: U.S. Army Strategic Studies Institute, May 2007), p. 20. (Note: The author is a Commission member.)

286. Shirley Kan, "U.S.-China Military Contacts: Issues for Congress" (Washington, DC: Congressional Research Service, July 6, 2010), p. 11 (Table 1 n). <http://www.au.af.mil/au/awc/awcgate/crs/r132496.pdf>.

287. Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009).

288. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 10.

289. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

290. Mark A. Stokes, "Securing Nuclear Arsenals for the Next Half Century: A Chinese Case Study" (paper presented at the Nonproliferation Policy Education Center conference on "Securing Nuclear Arsenals for the Next Half Century: What Does History Recommend?" Washington, DC, February 27, 2012). <http://npolicy.org/article.php?aid=1157&rtid=6>.

291. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of James E. Cartwright, March 26, 2012.

292. Mark A. Stokes, "Securing Nuclear Arsenals for the Next Half Century: A Chinese Case Study" (paper presented at the Nonproliferation Policy Education Center conference on "Securing Nuclear Arsenals for the Next Half Century: What Does History Recommend?" Washington, DC, February 27, 2012). <http://npolicy.org/article.php?aid=1157&rtid=6>.

293. The "Great Proletarian Cultural Revolution," or "Cultural Revolution," was a "complex social upheaval that began as a struggle between Mao Zedong and other top party leaders for dominance of the Chinese Communist Party." Jonathan Spence, *The Search for Modern China* (New York: W.W. Norton and Company, 2001), p. 791. On the promotion of unitary control, see Mark A. Stokes, "Securing Nuclear Arsenals for the Next Half Century: A Chinese Case Study" (paper presented at the Nonproliferation Policy Education Center conference on "Securing Nuclear Arsenals for the Next Half Century: What Does History Recommend?" Washington, DC, February 27, 2012). <http://npolicy.org/article.php?aid=1157&rtid=6>. On the formerly primitive nature of China's nuclear controls, see Stephen Polk, "China's Nuclear Command and Control," in Lyle J. Goldstein, ed., *China's Nuclear Force Modernization* (Newport, RI: Naval War College, Center for War Studies, *Newport Papers No. 22*, 2005), p. 13.

294. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark A. Stokes, March 26, 2012.

295. Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009).

296. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark A. Stokes, March 26, 2012; and Mark A. Stokes, "China's Nuclear Warhead Storage and Handling System" (Arlington, VA: Project 2049 Institute, March 12, 2010), p. 3. http://project2049.net/documents/chinas_nuclear_warhead_storage_and_handling_system.pdf.

297. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 24. For more information about China's emergent nuclear ballistic missile submarine capability, see the "Arsenal" subsection.

298. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012; and Paul H.B. Godwin, "China's Emerging Military Doctrine: A role for Nuclear Submarines?" in Andrew S. Erickson et al., eds., *China's Future Nuclear Submarine Force* (Annapolis, MD: China Maritime Studies Institute/Naval Institute Press, 2007), p. 46. This raises questions about the extent to which Chinese submarines on deterrent patrols would report through the traditional PLA Navy chain of command or whether they would have a more direct line to the Central Military Commission, mirroring the arrangement of the Second Artillery, as suggested in China's 2002 defense white paper. Information Office of the State Council, *China's National Defense in 2002* (Beijing, China: December 2002).

299. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

300. Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009). A more nuanced description of Second Artillery readiness is described in Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: U.S. Army Strategic Studies Institute, May 2007), p. 20.; Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011).

301. Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011).

302. Information Office of the State Council, *China's National Defense in 2006* (Beijing, China: December 2006); Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009); and Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011).

303. One analyst asserts that “while Beijing does not disclose the specific number of its ‘minimum need,’ a nuclear force with approximately 10 warheads reaching a target country may be considered enough to inflict ‘unacceptable damages.’” See Hui Zhang, “Nuclear Modernization in China,” in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will, a project of the Women’s International League for Peace and Freedom, March 2012), p. 18.

304. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 25.

305. Evan S. Medeiros, “Minding the Gap: Assessing the Trajectory of the PLA’s Second Artillery,” in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military* (Carlisle, PA: U.S. Army Strategic Studies Institute, September 2007), p. 155. www.strategicstudiesinstitute.army.mil/pdffiles/pub784.pdf; Michael Mazza and Dan Blumenthal, “China’s Strategic Forces in the 21st Century: The PLA’s Changing Nuclear Doctrine and Force Posture” (Washington, DC: Nonproliferation Policy Education Center, April 6, 2011), pp. 7–8. http://www.npolicy.org/article_file/Chinas_Strategic_Forces.pdf. (Note: one of the authors is a Commission member.)

306. M. Taylor Fravel and Evan S. Medeiros, “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure,” *International Security* 45: 2 (Fall 2010): 51, 57–66.

307. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

308. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), p. 62; Evan S. Medeiros, “Minding the Gap: Assessing the Trajectory of the PLA’s Second Artillery,” in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military* (Carlisle, PA: U.S. Army Strategic Studies Institute, September 2007), p. 150. www.strategicstudiesinstitute.army.mil/pdffiles/pub784.pdf; and M. Taylor Fravel and Evan S. Medeiros, “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure,” *International Security* 45: 2 (Fall 2010): 48–87.

309. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

310. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012; M. Taylor Fravel and Evan S. Medeiros, “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure,” *International Security* 45: 2 (Fall 2010): 79–80.

311. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

312. Information Office of the State Council, *China’s National Defense in 2010* (Beijing, China: March 2011).

313. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 35.

314. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 25; U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

315. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

316. Evan S. Medeiros, “Minding the Gap: Assessing the Trajectory of the PLA’s Second Artillery,” in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military* (Carlisle, PA: U.S. Army Strategic Studies Institute, September 2007), p. 157. www.strategicstudiesinstitute.army.mil/pdffiles/pub784.pdf.

317. For a full discussion of China’s “active defense strategy,” see chapter 2, section 2: “China’s ‘Area Control Military Strategy,’” especially pp. 184–7, in U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2010). http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf.

318. House Committee on Armed Forces, *Hearing on the Status of United States Strategic Forces*, testimony of Commissioner of the Congressional Commission on the Strategic Posture of the United States Dr. Keith B. Payne, 112 Cong., 1st sess., March 2, 2011. <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg65112/html/CHRG-112hhrg65112.htm>.

319. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012. For a description of how Chinese defense planners' fixation with gaining the initiative may cause escalation, see the "Implications for the United States" subsection.

320. Mark A. Stokes, "China's Nuclear Warhead Storage and Handling System" (Arlington, VA: Project 2049 Institute, March 12, 2010), p. 3. http://project2049.net/documents/chinas_nuclear_warhead_storage_and_handling_system.pdf.

321. M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security* 45: 2 (Fall 2010): 52.

322. Kenneth Allen and Maryanne Kivlehan-Wise, "Implementing PLA Second Artillery Doctrinal Reforms," in James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs* (Arlington, VA: Center for Naval Analysis, 2005), p. 168.

323. See Hui Zhang, "Nuclear Modernization in China," in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will, a project of the Women's International League for Peace and Freedom, March 2012), p. 24.

324. Republic of China, *National Defense Report* (Taipei: Ministry of National Defense, 2011), p. 82. http://2011mndreport.mnd.gov.tw/en/pdf/100report_english.pdf.

325. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012.

326. Michael S. Chase, "Chinese Nuclear Force Modernization: How Much is Enough?" *China Brief* 12: 8 (April 12, 2012). [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=39259](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=39259).

327. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 29.

328. The *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* does not distinguish between the DF-5 and the DF-5A.

329. Senate Committee on Armed Services, *Hearing on the Current and Future Worldwide Threats to the National Security of the United States*, testimony of Director of the Defense Intelligence Agency Lieutenant General Ronald L. Burgess, Jr. (U.S. Army), 112 Cong., 1st sess., March 10, 2011. <http://www.gpo.gov/fdsys/pkg/CHRG-112shrg71354/html/CHRG-112shrg71354.htm>. See also National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat* (Dayton, OH: April 2009), p. 3.

330. According to the *Military and Security Developments Involving the People's Republic of China 2011* report, "China may also be developing a new road-mobile ICBM [intercontinental ballistic missile], possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV)." Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 3. See also U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012.

331. Bill Gertz, "Manchu Missile Launch," *Washington Free Beacon*, August 15, 2012. <http://freebeacon.com/manchu-missile-launch/>; Robert Foster, "China's DF-41 test sparks nuclear build-up concerns," *Jane's Defence Weekly* 49:34 (August 22, 2012): 6; Xinhua, "China: Missile tests targeted at no specific country," August 31, 2012. <http://english.peopledaily.com.cn/90786/7930833.html>. Other sources, which confirmed the test, suggested that it was of a missile other than the DF-41. Minnie Chan, "China Is Developing a 'Super-Missile,'" *South China Morning Post* (Hong Kong), August 24, 2012. <http://www.scmp.com/portal/site/SCMP/menuitem.2af62ecb329d3d7733492d9253a0a0a0/?vgnnextoid=b5867b1d82459310VgnVCM100000360a0a0aRCRD&ss=china&s=news>; Tian Jianwei and Liu Yang, "Widely Circulating of Reports on China Testing Most Powerful DF-41 Missile Shake Up the United States," *Huanqiu Shibao* (Beijing), August 22, 2012. OSC ID: CPP20120824702009. <http://www.opensource.gov>.

332. U.S. China Economic and Security Review Commission, *Hearing on Developments in China's Cyber and Nuclear Capabilities*, testimony of Mark B. Schneider, March 26, 2012, citing Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China* (Washington, DC: Department of Defense, 2011), p. 3.

333. Bill Gertz, "Chinese Missile Tests Continue: China conducts third long-range missile test in 4 weeks," *Washington Free Beacon*, August 23, 2012. <http://freebeacon.com/chinese-missile-tests-continue/>; Bill Gertz, "China Missile Tests Continue: China conducts fourth flight test of mobile ICBM," *Washington Free Beacon*, September 4, 2012. <http://http://freebeacon.com/chinese-missile-tests-continue-2/>. The DF-5A intercontinental ballistic missile has comprised China's primary nuclear deterrent since its deployment in 1981; the DF-31A is a newer-generation intercontinental ballistic missile that is being deployed to augment the DF-5A. See U.S.-China Economic and Security Review Commission, *Hearing on Developments in China's Cyber and Nuclear Capabilities*, testimony of Philip C. Saunders, March 26, 2012; Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists* 67:6 (November/December 2011): 82-83.

334. Liang Pengfei and Cai Ruijin, "Second Artillery Has Completed the Comprehensive Transformation From a 'Force in Mountain Valleys' to a 'Force on Wheels,' and Its Precision Strike Capability Has Increased Greatly," *Jiefangjun Bao* (Beijing), August 27, 2012. OSC ID: CPP20120827787009. <http://www.opensource.gov>; and Choi Chi-Yuk, "Nuclear Arsenal Is Fully Mobile," *South China Morning Post* (Hong Kong), August 28, 2012. OSC ID: CPP20120829716013. <http://www.opensource.gov>.

335. China's conventional missile forces, also operated by the Second Artillery, alone pose a formidable threat to the U.S. military's presence in East Asia. See Chapter 2, Section 1: "China's Growing Air and Conventional Missile Capabilities," in U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2010), pp. 88-90. http://www.uscc.gov/annual-report/2010/Chapter2_Section_1%28page73%29.pdf.

336. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 33.

337. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), pp. 34-5. For a reference to how China's advancements in the space domain also contribute to its nuclear deterrent posture, see Mark A. Stokes with Dean Cheng, *China's Evolving Space Capabilities: Implications for U.S. Interests* (Arlington, VA: Project 2049 Institute, April 26, 2012), p. 40. http://www.uscc.gov/RFP/2012/USCC_China-Space-Program-Report_April-2012.pdf.

338. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), pp. 34-5.

339. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012.

340. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 7.

341. Paul H.B. Godwin, "China's Emerging Military Doctrine: A Role for Nuclear Submarines?" in Andrew S. Erickson et al., eds., *China's Future Nuclear Submarine Force* (Annapolis, MD: China Maritime Studies Institute/Naval Institute Press 2007), p. 46.

342. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010* (Washington, DC: Department of Defense, 2010), p. 3; Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 24.

343. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), pp. 7, 23-4.

344. J. Michael Cole, "MND [Ministry of National Defense] closely monitoring Chinese missile tests," *Taipei Times*, January 10, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/01/10/2003522879>; Open Source Center, "China-Taiwan Highlights: Cross-Strait S&T [Science and Technology], Mil Issues," January 10, 2012. OSC ID: CPP20120110569001.

345. Bill Gertz, "Ready To Launch," *Washington Free Beacon*, August 21, 2012. <http://freebeacon.com/ready-to-launch/print/>.

346. Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2011," *Bulletin of the Atomic Scientists* 67: 81 (2011): 86. <http://bos.sagepub.com/content/67/6/81.full.pdf>.

347. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat* (Dayton, OH: April 2009), p. 29; Ian Easton, "The Assassin Under the Radar: China's DH-10 Cruise Missile Program" (Arlington, VA: Project 2049 Institute, October 1, 2009), pp. 3-4. http://project2049.net/documents/assassin_under_radar_china_cruise_missile.pdf.

348. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 29.

349. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: Department of Defense, 2012), p. 42.

350. Air transport of nuclear warheads is used only in "extreme circumstances." See Mark A. Stokes, "China's Nuclear Warhead Storage and Handling System" (Arlington, VA: Project 2049 Institute, March 12, 2010). p. 3. http://project2049.net/documents/chinas_nuclear_warhead_storage_and_handling_system.pdf.

351. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 36; U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012.

352. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 36.

353. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 36.

354. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: Department of Defense, 2011), p. 36. For a more detailed description, see People's Liberation Army Second Artillery Force, *The Science of Second Artillery Campaigns* (Beijing, China: PLA Press, 2004).

355. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark A. Stokes, March 26, 2012.

356. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012.

357. James M. Acton, "The 'Underground Great Wall': An Alternative Explanation" (Washington, DC: Carnegie Endowment for International Peace, October 26, 2011). <http://carnegieendowment.org/2011/10/26/underground-great-wall-alternative-explanation/67ry>.

358. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Henry Sokolski, March 26, 2012.

359. Hui Zhang, "China's HEU [highly enriched uranium] and Plutonium Production and Stocks," *Science & Global Security* 19 (2011): 69. <http://belfercenter.ksg.harvard.edu/files/huizhangSGS2011.pdf>.

360. For a sophisticated analysis, see Hui Zhang, "China's HEU [highly enriched uranium] and Plutonium Production and Stocks," *Science & Global Security* 19 (2011). <http://belfercenter.ksg.harvard.edu/files/huizhangSGS2011.pdf>.

361. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Henry Sokolski, March 26, 2012.

362. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Henry Sokolski, March 26, 2012; Christopher P. Twomey, "Asia's Complex Strategic Environment: Nuclear multipolarity and other dangers," *Asia Policy* 11 (Seattle, WA: National Bureau of Asian Research, January 2011): 59 (n 18).

363. Mark A. Stokes, "Securing Nuclear Arsenals for the Next Half Century: A Chinese Case Study" (paper presented at the Nonproliferation Policy Education Center conference on "Securing Nuclear Arsenals for the Next Half Century: What Does History Recommend?" Washington, DC, February 27, 2012). <http://npolicy.org/article.php?aid=1157&rtid=6>.

364. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26,

2012; U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012.

365. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

366. Christopher P. Twomey, "Asia's Complex Strategic Environment: Nuclear multipolarity and other dangers," *Asia Policy* 11 (Seattle, WA: National Bureau of Asian Research, January 2011), pp. 74–5.

367. For a detailed list of China's nuclear- and nonproliferation-related commitments, see Chapter 2, Section 1: "China's Nonproliferation Policies and Practices," in U.S.-China Economic and Security Review Commission, *2008 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2008), pp. 127–9. http://www.uscc.gov/annual_report/2008/chapter2_section_1.pdf; Shirley A. Kan, "China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues" (Washington, DC: Congressional Research Service, April 25, 2012), pp. 1–2. For a recent narrative describing China's evolving approach to nonproliferation, see Chin-Hao Huang, "Bridging the gap: Analysis of China's export controls against international standards" (United Kingdom: Foreign and Commonwealth Office Counter-Proliferation Programme, April 2012). http://ukinchina.fco.gov.uk/resources/en/pdf/695414882/Huang_Chinese_export_controls_report.

368. China may seek to preserve the option to produce more fissile materials in response to U.S. missile defense developments, the weaponization of space, or the possibility of a potential conventional military capability gap vis-à-vis the United States. See Hui Zhang, "Nuclear Modernization in China," in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will: a project of the Women's International League for Peace and Freedom, March 2012), p. 24; Michael D. Swaine, *America's Challenge: Engaging a rising China in the twenty-first century* (Washington, DC: Carnegie Endowment for International Peace, 2011), p. 234.

369. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of James E. Cartwright, March 26, 2012.

370. U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Phillip A. Karber, March 26, 2012; U.S.-China Economic and Security Review Commission, *Hearing on China's Cyber and Nuclear Capabilities*, testimony of Henry Sokolski, March 26, 2012.

371. *Agentstvo Voyennykh Novostey* (Moscow), "Failure By Others To Join Nuclear Forces Treaty Leads To Misbalance Of Forces," October 26, 2007. OSC ID: CEP20071026950167. <http://www.opensource.gov>; Vesti TV (Moscow), "Russian chief of staff, deputy foreign minister discuss US ABM [antiballistic missile], CFE [Conventional Forces in Europe] treaty," December 15, 2007. OSC ID: CEP20071217950415. <http://www.opensource.gov>; Interfax (Moscow), "INF [Intermediate Range Nuclear Forces] Treaty Must Be Multilateral—Lavrov (Part 2)," February 12, 2008. OSC ID: CEP20080212950151. <http://www.opensource.gov>; and ITAR-TASS (Moscow), "RF [Russian Federation], US To Discuss Future Of INF [Intermediate Range Nuclear Forces] Treaty After Signing START [Strategic Arms Reduction Treaty]," February 17, 2010. OSC ID: CEP20100217950317. <http://www.opensource.gov>.

372. Martin Andrew, "China's Conventional Cruise and Ballistic Missile Force Modernization and Deployment," *China Brief* 10: 1 (Washington, DC: The Jamestown Foundation, January 7, 2010). [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=35881](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=35881); Arms Control Association, "The Intermediate-Range Nuclear Forces (INF) Treaty at a Glance" (Washington, DC: updated February 2008). <http://www.armscontrol.org/factsheets/INFtreaty>; Thomas Wright, "Outlaw of the Sea," *Foreign Affairs*, August 7, 2012. <http://www.foreignaffairs.com/articles/137815/thomas-wright/outlaw-of-the-sea#>; and Michael Mazza and Dan Blumenthal, "China's Strategic Forces in the 21st Century: The PLA's Changing Nuclear Doctrine and Force Posture" (Washington, DC: Nonproliferation Policy Education Center, April 6, 2011), p. 14. http://www.npolicy.org/article_file/Chinas_Strategic_Forces.pdf.

373. David W. Kearns, Jr., *Facing the Missile Challenge: U.S. Strategy and the Future of the INF [Intermediate Range Nuclear Forces] Treaty* (Santa Monica, CA: RAND Corporation, 2012) pp. 119–22.

374. Michael D. Swaine, *America's Challenge: Engaging a rising China in the twenty-first century* (Washington, DC: Carnegie Endowment for International Peace, 2011), pp. 233–5.

375. For a recent alleged example, see David Ingram, "U.S. indicts Iranian, Chinese for nuclear export plot," Reuters, July 13, 2012. <http://www.reuters.com/article/2012/07/13/us-iran-uranium-indictments-idUSBRE86C0ZA20120713>.

376. Ashley J. Tellis, “The China-Pakistan Nuclear ‘Deal’: Separating Fact from Fiction” (Washington, DC: Carnegie Endowment for International Peace, July 16, 2010). http://www.carnegieendowment.org/files/china_pak_nuke1.pdf.

377. Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2012* (Washington, DC: Department of Defense, 2012), pp. 7, 23–4. This refers to China’s emerging ballistic missile submarine capability. The U.S. Department of Defense has not commented publicly on the status of China’s nuclear bombers.

378. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Mark A. Stokes, March 26, 2012.

379. See Hui Zhang, “Nuclear Modernization in China,” in Ray Acheson, ed., *Assuring Destruction Forever: Nuclear Weapon Modernization Around the World* (New York: Reaching Critical Will: a project of the Women’s International League for Peace and Freedom, March 2012), pp. 17–21.

380. Dr. Schneider cited one estimate that China’s arsenal could grow to reach 600 to 1,000 weapons over the next decade. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012.

381. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

382. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Henry Sokolski, March 26, 2012.

383. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation 2008), p. 49.

384. Lonnie D. Henley, “War Control: Chinese Concepts of Escalation Management,” in Andrew Scobell and Larry M. Wortzel, eds., *Shaping China’s Security Environment: The Role of the People’s Liberation Army* (Carlisle, PA: U.S. Army War College, October 2006), pp. 90–1. See also Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), pp. 57, 77.

385. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), pp. 65–6. See also Michael S. Chase, “Chinese Nuclear Force Modernization: How Much is Enough?” *China Brief* 12: 8 (Washington, DC: The Jamestown Foundation, April 12, 2012). [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=39259](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=39259).

386. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), p. 79.

387. For a reference to misperceptions about, and the scarcity of information on (regarding classification issues), the AirSea Battle Concept, see Philip DuPree and Jordan Thomas, “Air-Sea Battle: Clearing the Fog,” *Armed Forces Journal*, May 2012. <http://www.armedforcesjournal.com/2012/05/10318204>. On the AirSea Battle concept as a supporting element of the Joint Operational Access Concept, see press conference on the “Joint Operational Access Concept (JOAC),” remarks by Lt. Gen. George Flynn, director, Joint Force Development (Washington, DC, January 20, 2012). <http://www.jcs.mil/speech.aspx?id=1676>. And for the Joint Operational Access Concept itself, see Office of the Joint Chiefs of Staff, *Joint Operational Access Concept* (Washington, DC: Department of Defense, January 17, 2012), p. iii.

388. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, testimony of Phillip C. Saunders, March 26, 2012.

389. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), p. 61.

390. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012.

391. Forrest E. Morgan et al., *Dangerous Thresholds: Managing Escalation in the 21st Century* (Santa Monica, CA: RAND Corporation, 2008), p. 67.

392. Christopher P. Twomey, “Asia’s Complex Strategic Environment: Nuclear multipolarity and other dangers,” *Asia Policy* 11 (Seattle, WA: National Bureau of Asian Research, January 2011), p. 64.

393. U.S.-China Economic and Security Review Commission, *Hearing on China’s Cyber and Nuclear Capabilities*, written testimony of Phillip C. Saunders, March 26, 2012.

394. Lonnie D. Henley, “War Control: Chinese Concepts of Escalation Management,” in Andrew Scobell and Larry M. Wortzel, eds., *Shaping China’s Security En-*

Environment: The Role of the People's Liberation Army (Carlisle, PA: U.S. Army War College, October 2006), p. 98.

CHAPTER 3

CHINA IN ASIA

SECTION 1: CHINA AND THE SOUTH CHINA SEA

Introduction

Drawing on witness testimony from Commission hearings, the Commission's trip to China and the Philippines in May 2012, and research conducted throughout the year, this section of the Annual Report will discuss developments in the South China Sea in 2012, focusing specifically on Chinese claims, actors, and objectives. It will also review developments with other claimants, prospects for dispute management and resolution, and implications for the United States.

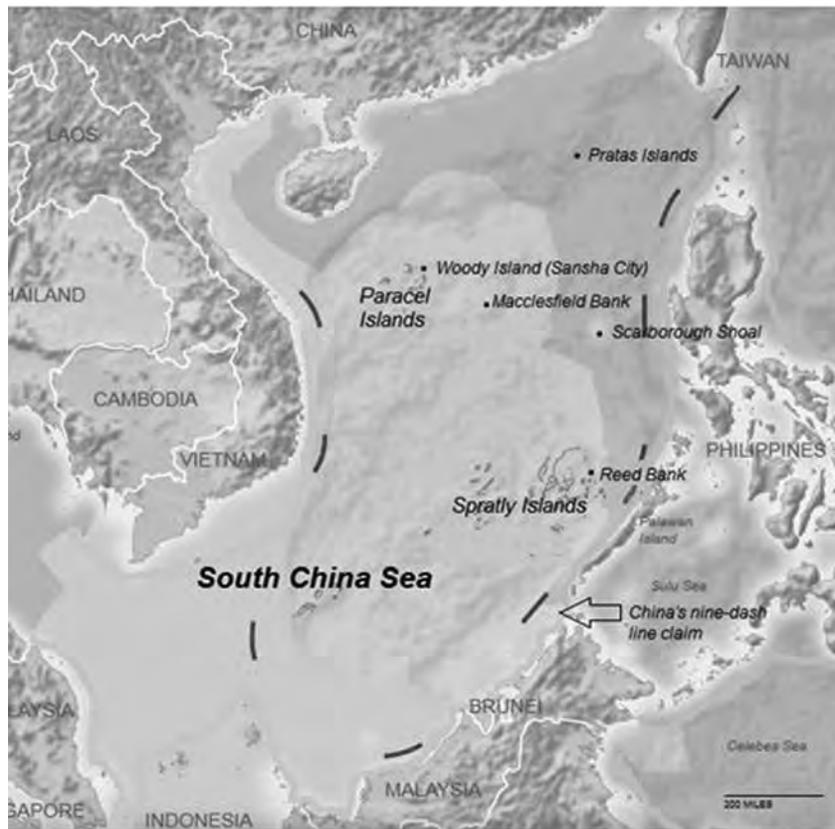
Ongoing territorial disputes in the South China Sea grew more contentious in 2012, with claimants—especially China—becoming more vocal and active in asserting their positions.* The disputes are driven by competition for territorial sovereignty and control of resources like oil, natural gas, and fish. Governments of the various claimants have consistently called for peaceful resolution of the disputes, but little progress has been made to that end. China has firmly rejected the use of multilateral dispute resolution mechanisms and has proven to be uncompromising in resolving its disputes bilaterally. While China's maturing naval forces underpin its confidence and capabilities in the South China Sea, nonmilitary Chinese actors have been the major players in the disputes. In particular, fishing vessels, civilian maritime law enforcement agencies, energy companies, and local governments in coastal provinces play important roles in establishing and strengthening China's claims. As Beijing acts to delay the resolution of the disputes to which it is party, these actors consolidate China's claims farther and farther from its coast.

* Brunei Darussalam (Brunei), the People's Republic of China (China), Malaysia, the Republic of the Philippines (the Philippines), the Republic of China (Taiwan), and the Socialist Republic of Vietnam (Vietnam) each claim sovereignty or jurisdiction over parts of the South China Sea. Many of these claims overlap and are disputed by the various claimants (of the major island groups in the South China Sea, China, Taiwan, and Vietnam claim the Paracel Islands; Brunei, China, the Philippines, Malaysia, Taiwan, and Vietnam claim all or part of the Spratly Islands; China and Taiwan claim the Pratas Islands; and China, Taiwan, and the Philippines claim the Macclesfield Bank and surrounding areas, in whole or in part). Indonesia considers itself a neutral party in the disputes, although it does have a jurisdictional claim in the southern part of the South China Sea that overlaps with China's claim. U.S. China-Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2010), pp. 132–137; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), pp. 166–172; and Ristian Atriandi Supriyanto, "Indonesia's South China Sea Dilemma: Between Neutrality and Self-Interest," *RSIS Commentaries* 126 (July 2012). http://www.rsis.edu.sg/publications/Perspective/RSIS126_2012.pdf.

In response, Southeast Asian claimants, most notably the Republic of the Philippines (referred to as “the Philippines” hereafter) and Vietnam, have acted to strengthen their own claims. The United States also has repeatedly indicated its interest that the disputes be managed and resolved peacefully (although it does not take a position on the merits of the various claims). At the same time, the United States has elevated its security commitments to some of the Southeast Asian claimants. As both China and the United States have enhanced their focus on the region, key differences in their respective interests and policies have emerged.

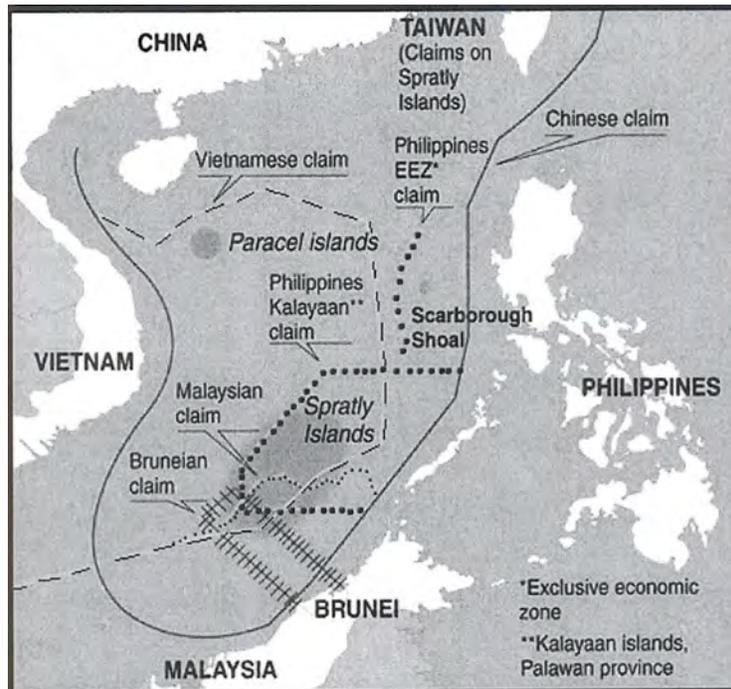
Overview of the South China Sea Disputes

Figure 1: The South China Sea



Source: *New York Times*, “Territorial Claims in the South China Sea,” <http://www.nytimes.com/interactive/2012/05/31/world/asia/Territorial-Claims-in-South-China-Sea.html?ref=southchinasea>, amended by the U.S.-China Economic and Security Review Commission. Locations of various features are not exact.

Figure 2: South China Sea Claims



Source: Tina G. Santos, "Philippines lodges 7th protest with China over Scarborough Shoal," *Philippine Daily Inquirer*, May 23, 2012. <http://globalnation.inquirer.net/37625/philippines-lodges-7th-protest-with-china-over-scarborough-shoal>, amended by the U.S.-China Economic and Security Review Commission. Locations of various features are not exact.

The resource-rich and strategically important South China Sea is the locus of several disputes over sovereignty and jurisdiction (see figures 1 and 2, above). Historically, the large Paracel and Spratly island groups have been focal points in the disputes, and for decades the countries involved have sought to consolidate their claims by occupying land features in these island groups.* The Paracel Islands, in the South China Sea's northwest, are claimed and occupied by China and are also claimed by Taiwan and Vietnam. The Spratly Islands, in the South China Sea's southeast, are claimed in whole or in part by Brunei, China, the Philippines, Malaysia, Taiwan, and Vietnam.†¹ In 2012, China, the Philippines, Taiwan, and

*A 2002 Declaration on the Conduct of Parties in the South China Sea adopted by China and the Association of Southeast Asian Nations (ASEAN) encourages claimants to, among other things, exercise self-restraint in occupying any previously unoccupied land features in disputed waters so as to not escalate ongoing disputes. Since 2002, the claimants have largely honored this provision of the declaration, although some claimants have strengthened their presence on their previously occupied land features. The Official Website of the Association of Southeast Asian Nations, "Declaration on the Conduct of Parties in the South China Sea." <http://www.aseansec.org/13163.htm>.

†The Spratly Islands consist of approximately 230 features, most of which are small islands, islets, and reefs. China, Taiwan, and Vietnam each claim all of the islands, the Philippines claims 53, and Malaysia claims 12. Brunei claims two underwater formations that are not technically islands. Reports vary on the number of features occupied by each claimant. It appears that China occupies five to ten of these features; the Philippines, eight; Malaysia, four or five;

Continued

Vietnam took steps to advance their claims to these islands. In a notable development, China also became more vocal and assertive about its claims to Macclesfield Bank, located northwest of the Spratly Islands. Included in China's claim to this island group is the Scarborough Shoal, also claimed by the Philippines, which became a flashpoint in the spring and summer of 2012 when Chinese and Philippine vessels (including fishing boats and civilian maritime law enforcement vessels from both countries, as well as a Philippine naval vessel) engaged in a protracted standoff there. (The Scarborough Shoal standoff is discussed in detail below.)

The United Nations Convention on the Law of the Sea (UNCLOS) addresses maritime territorial and jurisdictional issues, and it establishes guidelines and mechanisms for the resolution of maritime disputes. All of the claimants to the South China Sea disputes have ratified and purport to adhere to UNCLOS and frequently invoke UNCLOS when asserting their respective claims.² However, according to Richard Cronin, director of the Stimson Center's Southeast Asia program, "Beijing 'cherry picks' the parts [of UNCLOS] that are advantageous to it and opposes the rest."³ UNCLOS specifies up to four main sovereign territorial or jurisdictional zones to which coastal states are entitled. A coastal state is entitled to "territorial seas" within a 12 nautical mile zone extending out from its coastline, over which the state has complete sovereignty. Within the territorial seas and extending out an additional 12 nautical miles is the "contiguous zone," in which a coastal state can take measures to prevent and punish the infringement of laws within its territorial seas.⁴ A coastal state is also entitled to an "exclusive economic zone" (EEZ), a 200-nautical-mile zone extending from its coastline within which that state can exercise jurisdiction ("sovereign rights") to explore and exploit resources, but not full sovereignty.⁵ Finally, if a state's continental shelf extends beyond its 200-mile EEZ, it can submit a proposal for an outer limit to its continental shelf to an UNCLOS governing body, which will provide recommendations on its delimitation.*⁶

Under UNCLOS, land features that can sustain human habitation or economic activity are entitled to EEZs and perhaps continental shelves. Consequently, islands (like some of the Spratlys and Paracels) have the potential to generate a substantial amount of territory for the state that claims them.⁷ According to UNCLOS,

Taiwan, one; and Vietnam, 22 to 27. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition Over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 34. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf; International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 38. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>; Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 48. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives—China-and-the>; and Joshua P. Rowan, "The U.S.-Japan Security Alliance, ASEAN, and the South China Sea Disputes," *Asian Survey* 45:3 (2005): 419–429. <http://community.middlebury.edu/~scs/docs/Rowan,%20US-Japan,%20ASEAN,%20%26%20CS%20Dispute,%20Asian%20Survey.pdf>.

*According to UNCLOS, "[T]he continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin." Under certain circumstances, continental shelves may be deemed to extend past a country's EEZ. United Nations Convention on the Law of the Sea, "Part 6: Continental Shelf." http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclosindx.htm.

land features that are submerged at high tide or that cannot sustain human habitation or economic activity are not entitled to an EEZ (small features that are not submerged at high tide but that cannot sustain human habitation or economic activity are entitled to territorial seas out to 12 nautical miles). This adds additional uncertainty to China's claim, because several of the land features claimed by China as "islands" do not qualify as islands, according to UNCLOS.⁸

China's Claims in the South China Sea

To justify its claims and further its interests in the South China Sea, China invokes national laws, UNCLOS, historical precedent, and its nine-dash line. Soon after the founding of the People's Republic of China (PRC) in 1949, Chinese Premier Zhou Enlai laid the foundation for contemporary China's claims by declaring sovereignty over the Paracel and Spratly island groups.⁹ Subsequent laws passed by the National People's Congress of the PRC have codified these claims, including a 1992 Law on the Territorial Sea and Contiguous Zone that claims sovereignty over the Spratlys and Paracels, as well as the Pratas Islands and Macclesfield Bank.^{* 10} Some of China's domestic laws reflect various provisions of UNCLOS, integrating concepts like EEZs into national law.¹¹ From the 1970s onward, Chinese documents and officials have declared Chinese claims in the South China Sea with language such as "China has indisputable sovereignty over [the South China Sea or specific island groups] and adjacent waters."¹²

China justifies many of its maritime claims by invoking vaguely defined "historic rights." Wu Shicun, president of China's National Institute for South China Sea Studies, emphasized at a July 2012 conference in Washington, DC, that China's territorial claims are based in large part on the historical precedent of "first discovery, first mapping, first naming, and first living."^{† 13} Peter Dutton, director of the U.S. Naval War College's China Maritime Studies Institute, notes that "China has well documented contact with the islands in the South China Sea for many centuries through fishermen, traders, and the occasional government official."¹⁴ However, scholars disagree about what constitutes a historic right,¹⁵ and no Chinese law provides a specific definition of historic rights and how they are applied.^{‡ 16} As a result, the Chinese government invokes historic rights to specific islands or areas inconsistently and sometimes only as disputes arise. During the Scarborough Shoal stand-

* The Pratas Islands (known as the Dongsha Islands in Chinese), in the northeastern South China Sea, are contested by China and Taiwan. Macclesfield Bank (known as the Zhongsha Islands in Chinese) and surrounding areas are contested by China, Taiwan, and the Philippines. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 45. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives—China-and-the>

† The principle of strengthening claims by "naming" is reflected in a China State Oceanic Administration October 2012 announcement that China would give official names to 1,664 currently unnamed islands and islets in its claimed territory by August 2013. Xinhua, "China to name territorial islands," October 16, 2012. http://www.china.org.cn/china/Off_the_Wire/2012-10/16/content_26813067.htm.

‡ China's 1998 "Exclusive Economic Zone and Continental Shelf Act" declares China's rights related to its EEZ and continental shelf but notes that the act's provisions do not affect "the historical rights of the People's Republic of China." Standing Committee of the Ninth National People's Congress of the People's Republic of China, "Exclusive Economic Zone and Continental Shelf Act," Article 14, June 26, 1998. http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/chn_1998_eez_act.pdf.

off, China's Ministry of Foreign Affairs published a document titled *Ten Questions Regarding Huangyan Island [Scarborough Shoal]*, which justifies China's sovereignty over the shoal, meticulously detailing China's discovery and administration of the area since the thirteenth century.¹⁷

China also lays out its claims in its ambiguous nine-dash line (see figure 1). This broken line, encompassing nearly the entire South China Sea, first appeared as an 11-dash line in official Republic of China (now Taiwan) maps in 1947 (see the textbox, below, for a discussion of Taiwan's claims in the South China Sea).¹⁸ The PRC, which adopted the line after taking power in 1949, submitted the map to an adjudicating body set up by UNCLOS in May 2009 but did not include a specific definition of the line, its location, or what it signifies.¹⁹ Scholars in China and elsewhere debate the meaning of the line. Some expansive interpretations assume that everything within the line is sovereign Chinese territory; more limited interpretations suggest that the line represents the outermost limits of territorial seas, EEZs, or continental shelves generated by China's South China Sea islands.²⁰ Lyle J. Goldstein, associate professor at the U.S. Naval War College's China Maritime Studies Institute, testified to the Commission that several Chinese strategists have privately indicated that the nine-dash line is "completely ridiculous and wholly indefensible."²¹ Nonetheless Beijing staunchly defends the line.²²

Taiwan and the South China Sea Disputes

Taiwan and China have almost identical claims in the South China Sea. Both China and Taiwan claim to have historic and legal rights in the South China Sea and, as mentioned above, both now illustrate their claims with the nine-dash line.²³ China and Taiwan exert control over different areas of the South China Sea. Taiwan controls the largest of the Spratly Islands, Taiping Island, as well as the Pratas Islands (known in Chinese as the Dongsha Islands), located southwest of Taiwan,²⁴ while China controls the Paracel Islands and five to ten features in the Spratly Islands.²⁵ Taipei refuses to cooperate with China in advancing its claims,²⁶ and in 2012 Taipei continued to consolidate its claims to the Pratas Islands and Taiping Island. In addition to some high-profile visits to the islands by scholars and policymakers, Taiwan's legislators resolved to enhance the combat capabilities of coast guard troops stationed on Taiping Island.²⁷ Following the resolution, in September, the Taiwan Coast Guard staged live-fire drills to simulate defense against forces attempting to land on Taiping Island.²⁸ (See chap. 3, sec. 2, of this Report for a further discussion of Taiwan's maritime territorial disputes.)

Taiwan and the South China Sea Disputes—*Continued*

Taiwan's ability to defend its claims is limited, however. The capacity of Taiwan's maritime forces to defend or consolidate Taiwan's claimed territory throughout the South China Sea is much weaker than that of China's People's Liberation Army (PLA).²⁹ Moreover, because it is not officially recognized by any of the other claimants, Taiwan is unable to participate in bilateral or multilateral negotiations to settle its maritime disputes.³⁰ Although Taiwan participates in Track II dialogues on the South China Sea, Southeast Asian claimants are reluctant to hold official talks with Taiwan on issues related to the disputes for fear of angering Beijing.³¹

China's unorthodox interpretation of international rights in an EEZ further complicates the disputes. Beijing asserts that in addition to jurisdictional rights (like those to explore and exploit resources), China has the right to restrict military activity in its EEZ.³² This position distinguishes between "passage," which is permissible, and "navigation," which is unacceptable. According to Professor Dutton:

*When pressed to explain the distinction between 'passage' and 'navigation,' ... senior Chinese officials have stated that the Chinese government has not objected to the passing of U.S. Navy vessels through the Chinese EEZ en route to another destination. However, when such vessels conduct exercises, gather intelligence or other militarily useful data, or undertake activities other than mere passage, these officials argue, they are in violation of international and Chinese domestic law.*³³

This position runs counter to the spirit of UNCLOS, which aims to preserve freedom of navigation within EEZs, and common international practice. In particular, China's interpretation is diametrically opposed to that of the United States, as evidenced by several confrontations between Chinese and U.S. government vessels in and around China's EEZ from 2001 to 2009.* While China's restrictions on foreign military vessels operating in its waters are particu-

*In March 2001 and again in September 2002, a PLA Navy frigate and reconnaissance aircraft passed the USS *Bowditch*, an unarmed U.S. hydrographic survey vessel, within threateningly close proximity in the international waters of the Yellow Sea. The USS *Sumner* met similar confrontations in January 2003. In October 2006, a PLA Navy attack submarine surfaced dangerously close to the USS *Kitty Hawk* aircraft carrier and her escort warships near Okinawa, Japan. In March 2009, five coordinated Chinese vessels harassed the USNS *Impeccable*, an unarmed oceanographic survey vessel, over the course of several days while the ship was conducting routine operations in the international waters of the Yellow Sea and South China Sea. In May 2009, the USNS *Victorious*, an unarmed ocean surveillance ship, conducted an authorized undersea listening operation that was threatened over a period of several hours by Chinese vessels, forcing the *Victorious* to make a sudden and dangerous stop. David Bennett, "China's Offshore Active Defense and the People's Liberation Army Navy," *Global Security Studies* 1:1 (Spring 2010): 132, 126. <http://globalsecuritystudies.com/Bennett%20China.pdf>; Barbara Starr, "Chinese boats harassed U.S. ship, officials say," CNN, May 5, 2009. <http://edition.cnn.com/2009/WORLD/asiapcf/05/05/china.maritime.harassment/index.html>; John Tkacik, Jr., "Time for Washington to Take a Realistic Look at China Policy," (Washington, DC: The Heritage Foundation, *Backgrounder* #1717, December 22, 2003). <http://www.heritage.org/research/reports/2003/12/time-for-washington-to-take-a-realistic-look-at-china-policy>; and Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 53. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives—China-and-the>.

larly significant due to the expansiveness of its maritime claims, it is one of several coastal countries, including Malaysia and Vietnam, that in some way restrict passage of foreign military vessels in their respective EEZs.³⁴

Taken together, China's methods of justification express an ambiguous position. Several countries have asked Beijing to clarify its maritime territorial claims, but Beijing continues to make only vague statements on the subject.³⁵ Some analysts believe that Beijing intentionally cultivates ambiguity surrounding its claims.³⁶ By failing to clearly articulate its position, Beijing is able to delay the resolution of its disputes while consolidating its presence in contested areas, maximizing its flexibility in dealing with disputes. According to M. Taylor Fravel, associate professor of political science at the Massachusetts Institute of Technology, Beijing has pursued a delaying strategy to manage its South China Sea claims since 1950. He asserts that "China's strategy for managing its claims in the South China Sea has emphasized delaying settlement of the underlying disputes with the occupation of contested features at particular points in time to strengthen its position."³⁷

Despite the advantages of cultivating ambiguity externally, Beijing's lack of clarity on its position could pose internal problems going forward. Absent a coherent and consistent policy on China's territorial claims, it appears that policymakers and stakeholders are not in agreement on the objectives or future direction of China's policy in the South China Sea.³⁸ Beijing has reportedly been taking steps to clarify some of China's claims, including by having the Ministry of Foreign Affairs brief foreign embassies on China's position and by pursuing an interagency process to review China's representation of its claims and determine whether they should be less ambiguous.³⁹

China's Maritime Actors and Their Roles in Territorial Disputes

This subsection details the ways in which Chinese actors have strengthened their presence in the South China Sea in 2012 and discusses complementary developments related to the other claimants. The activities of the PLA, civilian maritime law enforcement agencies, fishermen, energy companies, and other local and commercial actors have fortified China's position and undermined the ability of other countries to successfully justify or enforce their claims.

The PLA

The PLA Navy seeks to develop its capabilities to "[conduct] operations in distant waters," according to China's 2010 defense white paper. As part of this strategy, China is developing a range of complementary logistics, replenishment, and sustainment options, including the construction of "composite support bases."⁴⁰ In July 2012, China's Central Military Commission, the PLA's highest organ, approved a plan to construct a military command based in Sansha City on Woody Island in the Paracels.⁴¹ Woody Island presently hosts an 8,200 foot runway that can accommodate any of the PLA's current fighter aircraft, as well as related infrastructure

such as fuel storage tanks.⁴² Neighboring islands also include PLA port facilities and reportedly house signals intelligence stations.⁴³ Expansion of Chinese port or airbase infrastructure throughout the South China Sea, in conjunction with China's emerging aircraft carrier program, helps consolidate Chinese control over the area.⁴⁴ At a minimum, enhanced intelligence, surveillance, and reconnaissance capabilities will provide the PLA with greater situational awareness regarding foreign vessels operating in disputed areas. China's efforts to this end are broadly consistent with its larger "counter-intervention" strategy (referred to as antiaccess/area denial in the West), which seeks to deny opposing militaries the ability to operate near Chinese coasts.⁴⁵

In 2012, the PLA conducted a number of exercises in and around the South China Sea. In May, PLA Air Force units on China's island province of Hainan reportedly practiced escort missions with Sukhoi-27 and Jian-10 jets, jamming aircraft, and bombers.⁴⁶ Also in May, an amphibious warship of the Zhanjiang, Guangdong-based South Sea Fleet (the arm of the PLA Navy focused on China's southeastern coast and the South China Sea) conducted exercises with a marine brigade and an airborne regiment, including delivery of landing forces and seizure of target positions.⁴⁷ In July, a land-based missile regiment of the South Sea Fleet for the first time held an actual-troop, live-ammunition drill "to project military strength by ways of railway, highway, and seaway."⁴⁸ Also in July, the PLA Navy's East Sea Fleet, responsible for areas around Taiwan and much of the East China Sea, conducted a five-day exercise in the East China Sea to simulate an amphibious assault. While the East Sea Fleet does not traditionally operate in the South China Sea, the drill demonstrates the PLA Navy's focus on developing capabilities enabling it to take disputed islands by military force[†] and was likely viewed with suspicion and concern by the Southeast Asian claimants to the South China Sea.⁴⁹

In addition to exercises, the PLA Navy has made its presence visible in and around the South China Sea in other respects. In June 2012, China's Ministry of National Defense reported that the PLA had begun conducting combat-ready patrols in and around the disputed Spratly Islands.⁵⁰ According to Dean Cheng, research fellow at The Heritage Foundation's Asian Studies Center, this represents an "alarming escalation of China's efforts to assert sovereignty over the South China Sea region."⁵¹ PLA Navy patrols in disputed waters made headlines again in July when a PLA Navy frigate ran aground 60 miles from the Philippine coast while conducting a routine patrol. Chinese and Philippine officials made statements expressing their countries' respective claims to the area where the ship ran aground, but neither country made escalatory moves following the incident.⁵² News sources in China and Taiwan also reported the establishment of a PLA missile brigade in coastal

*The exercise included a "two-dimensional landing" involving the movement of landing troops to assault boats to launch "sudden and violent attacks against the target position." Concurrently, helicopters flew commandoes to the target position to carry out infiltration operations and capture the target. Open Source Center, "JFJB [*Jiefangjun Bao*]: 'South China Sea Fleet Landing Ship Flotilla Conducts Three-Dimensional Landing Drill,'" May 12, 2012. OSC ID: 20120510702004. <http://www.opensource.gov>.

† Island landing campaigns also are relevant in the context of China's maritime territorial disputes with Japan in the East China Sea as well as China's claim over Taiwan.

Guangdong Province. When asked by a local news correspondent about the reports of the new missile brigade, the press office of China's Ministry of National Defense declined to comment; some observers linked the establishment of the missile brigade to growing tensions in the South China Sea.⁵³ In June, a PLA Navy frigate provided an unscheduled escort to four Indian naval vessels transiting the South China Sea from South Korea to the Philippines. After greeting the ships by announcing, "welcome to the South China Sea," the frigate shadowed the Indian ships for 12 hours.⁵⁴

The nature of the PLA's involvement in strategy or policy development in the South China Sea is not fully clear. As the Commission discussed in its *2011 Annual Report to Congress*, the PLA is perhaps expanding its foreign policy-making role and becoming more autonomous.⁵⁵ While the PLA has a role in shaping foreign policy as it relates to territorial issues,⁵⁶ the opacity of China's civil-military relations makes the nature and extent of this role unclear. Some observers note the apparently growing prominence (especially in Chinese state-affiliated media) of hawkish PLA personalities* as evidence that the PLA (or elements within the PLA) is interested in pursuing a more confrontational strategy in the South China Sea.[†]⁵⁷ Others posit that Beijing occasionally allows the PLA to express extreme views to this effect, perhaps to cultivate strategic ambiguity as to China's intentions.⁵⁸ However, in the case of the Scarborough Shoal standoff (discussed below), the PLA expressed a preference for diplomatic resolution. Ma Xiaotian, then deputy chief of the General Staff of the PLA, remarked in an interview that the use of military force to resolve the standoff would be a "last resort" and that the best way to resolve the conflict was through diplomatic and other civilian means.⁵⁹ In a press briefing held immediately prior to Beijing's high-profile observance of the 85th anniversary of the founding of the PLA, a Ministry of National Defense spokesman asserted, "China is opposed to military intervention" in the South China Sea.⁶⁰ Dr. Goldstein argues that "[n]ot only does there appear to be hawks and doves within the [PLA Navy] on the issue of the South China Sea, but this debate mirrors a larger debate within Chinese foreign policy and academic circles more generally."⁶¹

Despite its role as guarantor of China's maritime power, the PLA Navy has maintained a relatively low profile in the disputes. The service has not been involved in a territorial clash in the South

*Major General Zhu Chenghu and Major General Luo Yuan, both retired, advocate in Chinese media and other fora for China to take a more combative stance in enforcing its claims in the South China Sea. At a World Peace Forum event in Beijing in 2012, Major General Luo remarked about the disputes that "China's patience has been tested to its limits, and there is no room for further tolerance." Teddy Ng and Greg Torode, "Tougher line urged on South China Sea," *South China Morning Post* (Hong Kong), July 9, 2012. <http://www.scmp.com/article/1006263/tougher-line-urged-south-china-sea>; David Lague, "China's hawks gaining sway in South China sea dispute," Reuters, July 25, 2012. <http://news.yahoo.com/chinas-hawks-gaining-sway-south-china-sea-dispute-210711501.html>.

†Perceptions of a more aggressive PLA stance on the South China Sea are lent credence by the appointment of "famously hawkish" senior PLA Navy commander Wang Dengping to the position of political commissar of the PLA Navy's South Sea Fleet. Teddy Ng, "Hawkish commander heads South Sea Fleet," *South China Morning Post* (Hong Kong), July 10, 2012. <http://www.scmp.com/portal/site/SCMP/menuitem.2af62ecb329d3d7733492d9253a0a0a0/?vgnextoid=742c6e0a2ac68310VgnVCM100000360a0a0aRCRD&ss=china&s=news>.

China Sea since approximately 2005.*⁶² However, China's steady military modernization constitutes an important component of the disputes and enables nonmilitary actors to play a more assertive role in the disputes, as discussed below. China's military capabilities also have spurred some of the Southeast Asian claimants to boost their own maritime forces.

Modernization of Southeast Asian Maritime Forces

China's military modernization and the lack of transparency surrounding it drives tensions in the region and has prompted the other claimant countries to bolster their own maritime capabilities.⁶³ According to *IHS Jane's*, defense spending by Southeast Asian countries grew by 13.5 percent in 2011, to \$24.5 billion, and will likely reach \$40 billion by 2016.⁶⁴ Indonesia, the Philippines, Malaysia, Singapore, and Vietnam are all boosting spending on defense. While the modernization of Southeast Asian militaries is not entirely attributed to China's rise, the naval emphasis suggests a reaction to China.

Carlyle A. Thayer, professor at the University of South Wales in Canberra, Australia, asserts that Southeast Asian arms procurements in recent years "go beyond force modernization and include the introduction of new capabilities that can be operated at extended ranges" and that "the conventional submarine has been the new hallmark of naval acquisitions" in Southeast Asia.⁶⁵ He notes that Indonesia, Malaysia, Singapore, and Vietnam have purchased submarines and that the Philippines and Singapore have increased their investments in antisubmarine warfare capabilities.⁶⁶ (In addition, Australia plans to invest \$40 billion in its submarine program.)⁶⁷

Southeast Asian nations also are forming or strengthening security partnerships with each other and with other Asian powers, especially Australia, India, Japan, and South Korea.⁶⁸ Japan in particular has strengthened its security cooperation with Indonesia, the Philippines, Malaysia, and Singapore. Tokyo has pledged enhanced cooperation between the Japan Coast Guard and Southeast Asian coast guards, with a particular focus on the Philippine Coast Guard, to which it may transfer up to ten patrol boats.⁶⁹ In meetings with the Commission, several Philippine officials and security experts emphasized the importance of the Philippines' security relationships with Australia, Japan, and South Korea. The Philippines' emphasis on modernization of its maritime forces is relatively recent, however, and the pace of development has been slow due to budgetary constraints. The Armed Forces of the Philippines has historically focused its resources on internal security threats, namely terrorist groups.

*While the PLA has not been involved in confrontations with other claimants in the South China Sea in several years, PLA vessels were involved in the harassment of the USNS *Impeccable* in the South China Sea in March 2009. U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2009) pp. 123–125. http://www.uscc.gov/annual_report/2009/annual_report_full_09.pdf.

Modernization of Southeast Asian Maritime Forces— Continued

Although the country's defense and armed forces modernization budgets have grown in recent years, they remain small by regional standards.⁷⁰ Philippine officials told the Commission that the Philippine constitution mandates that spending on education be prioritized over defense spending.⁷¹

The United States has contributed to the development of the Philippines' maritime forces, including the Philippine Coast Guard and the Armed Forces of the Philippines. U.S. military aid to the Philippines was \$30 million in 2012, up from \$11.9 million in 2011.⁷² The United States also has a security presence in the Philippines, in accordance with a Visiting Forces Agreement that allows for joint military training and exercises, and through limited access to its former military bases in the Philippines, Subic Bay, and Clark Air Force Base.⁷³ While the U.S.'s permanent military presence in the Philippines ended with the closing of its bases in 2002, in 2012 Manila offered the United States military greater access to the country.⁷⁴ U.S. submarines make regular visits to Subic Bay; the nuclear-powered USS *North Carolina* was docked there during the Scarborough Shoal standoff.⁷⁵ Beijing likely views these kinds of military ties with concern and associates them with the Obama Administration's "pivot" or "rebalancing" to Asia. In an interview with Hong Kong news outlet *South China Morning Post*, one Chinese official remarked, "[w]hen we see the U[nited] S[tates] reasserting a presence at Subic with submarines, I fear we are seeing Washington's 'pivot' in action ... the pivot is not just words, it is already happening."⁷⁶

Civilian Maritime Law Enforcement Agencies

China employs several maritime law enforcement agencies to oversee its claimed maritime territory. These agencies (along with commercial fishermen, discussed below) are the Chinese actors most frequently involved in clashes with other claimants at sea. They are often referred to as "dragons stirring up the sea," a reference to a traditional Chinese myth (see the textbox below for a discussion of these agencies).* The two most powerful of these maritime law enforcement agencies, China Marine Surveillance and the Fisheries Law Enforcement Command, enjoy growing budgets

*This report discusses only those maritime law enforcement agencies observed to have been recently involved in China's territorial confrontations with other countries in the South China Sea. In addition to the agencies listed here, some observers identify other organizations or agencies as "dragons," including the Ministry of Foreign Affairs, the PLA, the Ministry of Environmental Protection, state-owned oil companies, the General Administration of Customs, the Search and Rescue Center, the Border Police, and the Rescue and Salvage Bureau. For an in-depth discussion of the many maritime agencies in China, see Open Source Center, "PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation," May 31, 2012. <http://www.opensource.gov>; International Crisis Group, *Asia Report 223: Stirring up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 19. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>; and Lyle J. Goldstein, "Five Dragons Stirring Up the Sea: Challenge and Opportunity in China's Improving Maritime Enforcement Capabilities" (Newport, RI: U.S. Naval War College, China Maritime Studies Institute, April 2010). http://www.usnwc.edu/Research-Gaming/China-Maritime-Studies-Institute/Publications/documents/CMSI_No5_web1.pdf.

and are expanding their fleets and capabilities. The numbers of surveillance vessels, patrol vessels, and personnel for both agencies have grown significantly since 2000.⁷⁷ By 2020, the number of China Marine Surveillance personnel is projected to swell from 9,000 to 15,000, and the number of ships is projected to rise from 280 to 520.⁷⁸ By 2015, the Fisheries Law Enforcement Command expects to add to its fleet five patrol boats more than 3,000 tons displacement (in 2010, the agency only had nine patrol vessels more than 1,000 tons displacement). The new vessels will be equipped with helicopters.⁷⁹

The maritime “dragons” compete for territory, budgetary resources, and clout. Due to an overlap in responsibilities, these agencies seek to “grab what [they] can on the sea, and divide the responsibilities between agencies afterward,” according to the International Crisis Group.⁸⁰ According to testimony from Dr. Goldstein, “China’s approach of multiple maritime enforcement agencies without any single ‘leading dragon’ has created a problematic situation of confusion, inefficiency and general weakness.”⁸¹ For this reason, there have been calls for Beijing to consolidate its “dragons” into a unified coastal police force. This has prompted competition among the agencies for administrative powers, each vying to gain influence in order to secure a leadership role after a potential merger.⁸²

China’s “Dragons” of Maritime Law Enforcement

The agencies below, all of which have been involved in enforcing China’s claims in the South China Sea, are second- or third-tier central government organizations and are subordinate to four ministries under the Chinese State Council.⁸³

China Marine Surveillance. China Marine Surveillance is a paramilitary maritime administration and law enforcement force that operates at the state, province, city, and county level.⁸⁴ It is the principal civilian actor asserting China’s rights and sovereignty in disputed waters. According to the Open Source Center, “Regular reporting on CMS [China Marine Surveillance] indicates that this agency is expanding the fastest, commands the most . . . ships and aircraft able to enforce maritime law in distant seas, and is the most active in coordinating sea and air surveillance activities.”⁸⁵ Many China Marine Surveillance vessels are equipped with advanced surveillance and transmission capabilities, including China’s Beidou global positioning system, and it appears that some China Marine Surveillance vessels are equipped with weapons.⁸⁶ A Chinese military news website reported in April 2012 that a new China Marine Surveillance vessel carries a four-barrel 14.5mm machine gun; another Chinese news outlet released photographs of China Marine Surveillance officers armed with rifles.⁸⁷ (However, other Chinese media sources have reported that China Marine Surveillance vessels are not equipped with combat weapons.⁸⁸) According to the International Crisis Group, China Marine Surveillance operates with a significant degree of autonomy from the government.⁸⁹

**China's "Dragons" of Maritime Law Enforcement—
Continued**

China Marine Surveillance vessels were involved in the USNS *Impeccable* incident in 2009 and in the 2012 standoff between China and the Philippines over Scarborough Shoal.

China Fisheries Law Enforcement Command. Under the Ministry of Agriculture, the Fisheries Law Enforcement Command was established by China's Bureau of Fisheries "to enforce China's fishery law, to coordinate the handling of fishery disputes with foreign entities, and to cope with major fishery contingencies both in rivers and lakes inside China as well as in China's [EEZ]." ⁹⁰ According to Dr. Goldstein, the command operated 2,165 vessels in 2009 and had 35,093 personnel working across the country. ⁹¹ In 2010, China Fisheries Law Enforcement Command reportedly expelled 66 foreign fishing vessels, confiscated one fishing vessel, and shielded nine Chinese fishing vessels from foreign law enforcement vessels in the South China Sea. ⁹² Some Fisheries Law Enforcement Command vessels are decommissioned PLA Navy ships, ⁹³ and observers report that at least three vessels carry arms. ⁹⁴ One vessel, the *Yuzheng 310*, commissioned in 2010, reportedly is equipped with a semiautomatic 37mm gun, twin-barrel 14.5mm shipborne machine guns, a high-pressure water cannon, and a helicopter. ⁹⁵ In April 2012, *Yuzheng 310* deployed to the Scarborough Shoal during the standoff between China and the Philippines. ⁹⁶ Vessels from the South Sea Region Fisheries and Administration Bureau, a department within the Fisheries Law Enforcement Command with responsibility for the South China Sea, escort and protect Chinese fishing boats when they operate in disputed waters and police China's claimed waters, inspecting, fining, and sometimes expelling foreign vessels. ⁹⁷

China Maritime Safety Administration. China Maritime Safety Administration is regarded as the third most powerful maritime law enforcement agency. ⁹⁸ It operates under the Ministry of Transport. According to the Maritime Safety Administration's website, its responsibilities include "monitoring maritime safety, preventing pollution from ships, certifying and inspecting maritime facilities, and administering laws for navigational support." ⁹⁹ It is currently in the midst of expanding its fleet and is acquiring several large vessels and helicopters. ¹⁰⁰ According to Michael Auslin, director of Japan studies at the American Enterprise Institute, armed Maritime Safety Administration ships regularly escort Chinese fishing vessels and have been involved in confrontations with foreign naval and coast guard vessels. ¹⁰¹

China Coast Guard. The coast guard, officially the People's Armed Police Border Defense Maritime Force, operates under the Ministry of Public Security and the Central Military Commission. ¹⁰² Coast guard vessels are some of the smallest among the civilian maritime agencies, but they are observed to be

**China's "Dragons" of Maritime Law Enforcement—
Continued**

equipped with the strongest firepower,¹⁰³ with vessels variously equipped with naval guns, high-pressure water cannons, and 14.5mm anti-aircraft machine guns.¹⁰⁴

Beijing appears to favor utilizing the maritime law enforcement agencies—not the PLA Navy—to enforce China's claims in the South China Sea. These civilian agencies can operate more flexibly, pushing boundaries and engaging in confrontational incidents without militarizing disputes. Nevertheless, as noted above, many of China's civilian vessels are armed. Dr. Goldstein testified that this is indicative of a major trend of "weaponization" in China's civilian maritime enforcement agencies.¹⁰⁵ In his testimony to the Commission, Patrick M. Cronin, senior advisor and senior director at the Center for a New American Security's Asia Pacific Security Program, characterized the agencies as a "de facto arm of naval power."¹⁰⁶ While these actors are more likely than the PLA to engage in risky behavior at sea, they can also more easily deescalate in a conflict. This situation benefits Beijing in many ways, but it is also problematic, since these agencies are not part of China's foreign policy establishment and may not be sensitive to the legal, political, and diplomatic implications of their behavior.¹⁰⁷

The relationship between the PLA and the civilian agencies is unclear. In 2008 a China Marine Surveillance official announced that the agency would become a reserve unit of the PLA Navy.¹⁰⁸ (As of 2012, however, the agency's ties to the PLA are still unclear.) The coast guard is known to have close ties to the PLA, as it is under the purview of the Central Military Commission.¹⁰⁹ The Maritime Safety Administration cooperates with the PLA Navy, China Marine Surveillance, Fisheries Law Enforcement Command, and other entities in its operations¹¹⁰ and, according to Chinese state-run media outlet Xinhua, the PLA Navy has conducted several joint exercises with the civilian maritime agencies.¹¹¹

Fishing and Fisheries Patrols

Fishing is an important driver of conflict in the South China Sea.¹¹² Comprehensive data on fishing-related conflicts are unavailable, but anecdotal accounts suggest that fishing disputes in the South China Sea are on the rise.*¹¹³ The South China Sea accounts for roughly 10 percent of global catch and supports a fishing

*Chinese fishermen also have been involved in conflicts elsewhere in the region. A few notable incidents stand out: In 2010, a Chinese fishing trawler suspected to be operating illegally in Japanese waters rammed a Japan Coast Guard vessel, sparking a diplomatic crisis that resulted in China informally restricting exports of rare earth minerals to Japan. In 2011, the captain of a Chinese fishing boat stabbed two South Korean Coast Guard officers after the vessel was discovered to be fishing illegally in South Korean territory. And in 2012, 29 Chinese fishermen were kidnapped and held for ransom by North Korean gunmen. Will Rogers, "The Role of Resources in the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 89. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf; BBC, "Chinese fishermen 'stab South Korean coast guards'," December 12, 2011. <http://www.bbc.co.uk/news/world-asia-16134647>; and Andrew Jacobs, "3 Boats Held by Gunmen, China Says," *New York Times*, May 18, 2012. <http://www.nytimes.com/2012/05/18/world/asia/chinese-fishing-boats-reported-seized-by-north-korean-gunmen.html>.

industry worth billions of dollars annually.¹¹⁴ However, with regional and global seafood consumption on the rise, fishermen in China and Southeast Asia are increasingly competing for a dwindling resource.* After decades of destructive overfishing in coastal areas, the region's fishermen have ventured farther out to sea, often to disputed waters.¹¹⁵ This has a number of environmental and food security implications for Asia. Fish protein comprises about 22 percent of the average Asian person's diet (the global average is around 16 percent).¹¹⁶ Booming populations and growing demand for seafood from expanding middle classes in East and Southeast Asia ensure that overfishing will be a lasting problem and that competition for catch will continue to rise.¹¹⁷ (See chap. 4, sec. 2, of this Report for a discussion of China's international fishing activities.)

China has taken steps to conserve fisheries since 1955. These efforts include the creation of marine protected areas, fishing agreements with Japan and Vietnam, development of aquaculture, "zero-growth" plans to control fishing capacity, and the imposition of fishing bans during spawning seasons.¹¹⁸ Beginning in 1999, China began to enforce an annual unilateral fishing ban in parts of the South China Sea from May until August. The ban covers some waters disputed by China and Vietnam, and Vietnam regularly protests that the ban is merely an opportunity for China to intercept, fine, and arrest Vietnamese fishermen in contested waters.¹¹⁹

Chinese vessels were involved in at least three major fishing-related confrontations in the South China Sea during the first half of 2012. In late February, 11 Vietnamese fishermen reported that a China Marine Surveillance vessel shot at and damaged their fishing boat in an incident near the Paracel Islands. The fishermen alleged that the Chinese tried to rob them and prevented them from seeking refuge in a storm.¹²⁰ The Chinese Foreign Ministry denied that the fishermen were assaulted, asserting instead that a China Marine Surveillance ship carrying out a routine patrol simply compelled Vietnamese ships to leave Chinese-claimed waters.¹²¹

In March, China Fisheries Law Enforcement Command personnel boarded two Vietnamese fishing boats near the Paracel Islands, detained 21 Vietnamese fishermen, and accused them of illegally fishing in Chinese waters. Although the government of Vietnam lodged a formal protest and demanded immediate and unconditional release of the fishermen, they remained in Chinese custody for over a month. Fisheries Law Enforcement Command officials reportedly demanded a fee of 70,000 renminbi (RMB) (\$11,000) from each fisherman for their release.¹²² In addition, the Chinese officials forced the fishermen to issue pledges "not to infringe on China's maritime rights, especially fishing, in its territorial waters" in the future.¹²³ The owner of one of the Vietnamese ships involved reported that the episode was the third time that Chinese authorities had detained his vessel, saying that he had paid fines to recover it on the two previous occasions.¹²⁴ That the Fisheries Law

*The United Nations Food and Agriculture Organization indicated that fish stocks in the western part of the South China Sea are either fully exploited or overexploited. Will Rogers, "The Role of Resources in the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 90. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

Enforcement Command chose to detain the fishermen marks an escalation in tension since 2011, when the Chinese patrols temporarily halted their practice of detaining Vietnamese fishing boats.¹²⁵ Although China's detention of foreign fishing boats receives a great deal of media attention, fishing disputes among the other claimant states also are common.¹²⁶

The most notable fishing incident in the South China Sea in 2012 was the two-month-long standoff between Chinese and Philippine vessels in the Scarborough Shoal. A rich, shallow fishing ground claimed by both countries, the shoal lies approximately 124 nautical miles from the Philippine province of Zambales, on the main Philippine island of Luzon, and more than 500 nautical miles from China's Hainan Province.¹²⁷ The incident began on April 8, when the Philippine Navy frigate *Gregorio del Pilar** was sent to investigate the sighting of eight Chinese fishing vessels operating in the shoal and subsequently reported finding large quantities of illegally caught fish, coral, giant clams, and live sharks onboard the boats.¹²⁸ Shortly thereafter, two unarmed China Marine Surveillance vessels arrived at the shoal and situated themselves between the fishing boats and the *Gregorio del Pilar* frigate, preventing the Philippine Navy from making any arrests or confiscating the catch.¹²⁹ After the Philippines replaced the naval frigate with a coast guard vessel two days later, China deployed an armed Fisheries Law Enforcement Command ship to the shoal.¹³⁰ For the next several weeks, a varying number of Chinese vessels were stationed or operating in and around the shoal. In general, Chinese vessels outnumbered Philippine vessels.†

In May, China announced its annual summer fishing ban in the disputed waters near the Scarborough Shoal and surrounding areas. Philippine President Benigno Aquino III approved a similar ban days later for the same territory.¹³¹ Both countries insisted that the measures were not intended to be diplomatic tools and were unrelated to the dispute.¹³² The dual fishing bans acted to moderate the standoff somewhat. The threat of bad weather from Typhoon Butchoy in June provided another opportunity to deescalate. At that time, according to the Philippine Ministry of Foreign Affairs, officials in Manila and Beijing “forged an agreement . . . for the simultaneous pull-out of all vessels inside the shoal.” The Philippines claimed to have pulled its vessels out of the shoal on June 4 per the agreement.¹³³ China, however, did not, giving observers

*The *Gregorio del Pilar* is a Philippine Navy frigate, formerly the USCGC *Hamilton*. It was acquired by the Philippines as an Excess Defense Article under the U.S. Foreign Assistance Act. The cutter was formally transferred to the Philippine government on May 13, 2011. Embassy of the Republic of the Philippines, “13/05/2011: Philippine Navy Acquires USCGC *Hamilton*” (Washington, DC: May 13, 2011). <http://www.philippineembassy-usa.org/news/1682/300/Philippine-Navy-Acquires-USCGC-Hamilton/d.phildet/>; Linda M. Johnson, “U.S. Coast Guard Transfers High Endurance Cutters *Hamilton* and *Chase* to the Philippines and Nigeria” (Washington, DC: U.S. Coast Guard Acquisition Directorate, May 2011), p. 1. <http://www.uscg.mil/acquisition/newsroom/pdf/CG9newsletterMay11.pdf>.

†Chinese vessels in and around the shoal, sometimes numbering in the 30s, included fishing boats, China Marine Surveillance and Fisheries Law Enforcement Command vessels, and small dinghies. Philippine vessels included fishing boats, the coast guard vessel *Pampanga*, and a Bureau of Fisheries and Aquatic Resources vessel. Jerome Aning and Norman Bordadora, “PH welcomes fishing ban in Panatag,” *Philippine Daily Inquirer*, May 15, 2012. <http://globalnation.inquirer.net/36917/ph-welcomes-china-fishing-ban-in-panatag>; Dona Z. Pazzibugan, “30 Chinese vessels sighted at Scarborough Shoal,” *Philippine Daily Inquirer*, July 20, 2012. <http://globalnation.inquirer.net/44945/30-chinese-vessels-sighted-at-scarborough-shoal>; and Trefor Moss, “China’s Not-So-Hard Power Strategy,” *Diplomat* (Tokyo), June 28, 2012. <http://thediplomat.com/2012/06/28/chinas-not-so-hard-power-strategy/>.

the impression that the Philippines had “blinked first” and backed down from its position. Chinese vessels remained in the vicinity of the shoal in the following months, and in August Chinese fishing vessels roped off the entrance to the shoal in an apparent effort to discourage Philippine vessels from operating there.¹³⁴ In mid-September, a Philippine Coast Guard officer reported that Chinese vessels continued to patrol waters around the shoal and to drive away Philippine fishing vessels.¹³⁵

These events highlight the significance that fishermen and fishing activities have in territorial disputes in the South China Sea. As Dr. Cronin testified to the Commission, “Fishermen do more than fish. They are civilian instruments of power that help stake out legal claims and establish national maritime rights.”*¹³⁶ In a meeting with the Commission, one Philippine Coast Guard official expressed skepticism about the economic viability of Chinese fishing operations in Scarborough Shoal, suggesting that fishermen may have been politically motivated, or otherwise incentivized, to fish there. Governments of the Chinese coastal provinces of Guangdong and Hainan reportedly have “encouraged, and in some cases forced” Chinese fishing companies and fishermen to fish farther out at sea. Provincial and local governments provide incentives like subsidies and low-interest-rate loans to fishermen in efforts to enhance capacity for fishing in more distant waters of the South China Sea.¹³⁷ “Fishing nationalism,” according to Dr. Goldstein, is a phenomenon that exists not just in China but in other claimant countries with significant fishing industries. It is evidenced by the deployment of either fishing boats or law enforcement vessels “for political purposes only peripherally related to fisheries.”¹³⁸ Whether driven by profits or nationalism, Chinese fishermen are incentivized to operate further from Chinese shores into disputed areas, their activities protected by the Fisheries Law Enforcement Command and other Chinese law enforcement agencies.¹³⁹

Scarborough Shoal: Implications for the Future

The Scarborough Shoal standoff represents a widening in the scope of China’s territorial claims in the South China Sea. At the time of the publication of this Report, Chinese vessels continue to maintain an intermittent presence near Scarborough Shoal. This is an unprecedented development in that particular region of the South China Sea; while China has long claimed the Scarborough Shoal and areas around it, it never had a sustained

*One individual, He Jianbin, head of a government-owned fishing company, advocated in a 2012 editorial in nationalistic Chinese media outlet *Global Times* that the Chinese government train and arm Chinese fishermen with the aim of creating a fishing militia. It is unclear whether Mr. He’s views are shared by policymakers. Miles Yu, “Inside China: armed fishermen,” *Washington Times*, July 18, 2012. <http://www.washingtontimes.com/news/2012/jul/18/inside-china-armed-fishermen/?page=all>.

**Scarborough Shoal: Implications for the Future—
Continued**

presence there until 2012.* Philippine officials told the Commission that they believe the standoff was part of a strategic effort by China to gradually occupy maritime space eastward from China's coast. According to these officials, the Philippines is now attempting to "hold the line" of Chinese incursions into Philippine territory at Scarborough Shoal.

On the Commission's trip to the Philippines in May 2012, while the standoff was ongoing, Philippine officials and experts suggested that China's assertive stance toward its disputes with the Philippines was intended to "test" the U.S.'s commitment to defend the Philippines. During the standoff, concerns over the possibility of military escalation of the dispute prompted Manila to call on Washington to clarify its commitment to the 1951 U.S.-Philippines Mutual Defense Treaty, in which "Each Party recognizes that 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."¹⁴⁰ (See Addendum I for the full text of the treaty.)

In 2012, Philippine officials requested that Washington clarify whether the United States understands the Mutual Defense Treaty to apply to the South China Sea.¹⁴¹ U.S. Secretary of State Hillary Clinton reaffirmed the agreement in a dialogue with the Philippine defense and foreign affairs ministers in May, but the United States has not publicly discussed how it would interpret the treaty in different scenarios.¹⁴² In a letter to the U.S. State Department in July 2011, Senator Jim Webb (VA) sought a legal clarification of U.S. commitments to the Philippines under the treaty, writing that "[r]epeated actions by Chinese government vessels against the Philippines raise serious questions about the circumstances under which our treaty commitments apply. . . . Our transparency on this matter is of great importance to our ally, the Philippines, and to the entire Southeast Asian region."^{† 143}

*The last time China made a lasting incursion into areas claimed by the Philippines was in 1995, when Manila discovered that China had occupied and constructed structures on Mischief Reef, located 135 nautical miles from the Philippine island province of Palawan, well within the Philippine EEZ. Philip Shenon, "Manila Sees China Threat on Coral Reef," *New York Times*, February 19, 1995. <http://www.nytimes.com/1995/02/19/world/manila-sees-china-threat-on-coral-reef.html>. Philippine officials told the Commission that the Philippines has records going back to 1997 indicating that the Philippine Navy prevented Chinese vessels from operating in the Scarborough Shoal on several occasions and that from May 1997 to March 1998, Philippine law enforcement officials arrested 72 Chinese fishermen in the area.

† State Department Legal Advisor Harold Koh responded to Senator Webb's letter. He reiterated U.S. public commitments to the Mutual Defense Treaty but declined to specify whether the treaty would apply to a territorial conflict, citing the hypothetical nature of the question.

Energy

For China and the other claimants, energy security plays a significant role in the South China Sea disputes. Mikkal E. Herberg, research director for the National Bureau of Asian Research's Asian Energy Security Program, testified to the Commission that energy issues have a "multiplier effect" on maritime issues between China and its regional neighbors.¹⁴⁴ Energy resources remain crucial for China's development, and Beijing is eager to diversify its supplies to diminish its reliance on imported fossil fuels and develop alternative sources of oil and natural gas.* A 1993–1994 U.S. Geological Survey report estimated reserves and undiscovered resources in the South China Sea to be 28 billion barrels of oil. Chinese estimates are higher, claiming that 105 billion barrels of oil exist beneath the Spratly and Paracel islands.¹⁴⁵ Substantial natural gas resources also have been discovered beneath the South China Sea.¹⁴⁶ However, very little exploration of subsea oil and gas resources has been carried out in the South China Sea. Nick Owen, visiting research fellow at the University of Wollongong, Australia, points out that "the number and range of speculative estimates that often appear in the public domain inspires little confidence in their accuracy."¹⁴⁷

More important than these potential energy resources, China is heavily reliant upon its energy imports shipped through the South China Sea. According to Will Rogers, fellow at the Center for a New American Security, "China perceives itself to be particularly vulnerable to energy disruptions in the South China Sea because 80 percent of its energy resources transit the Strait of Malacca."¹⁴⁸ A reliance on stable and secure South China Sea shipping routes and the prospect of new sources of oil and natural gas off the coast of China drive much of China's assertiveness in the South China Sea.¹⁴⁹

In light of these issues, China's powerful state-owned oil companies likely will play a larger role in territorial disputes as increased technical ability and a desire for resources drive them to conduct operations in the disputed waters of the South China Sea. Of China's large, state-owned oil companies, China National Offshore Oil Corporation (CNOOC) is most active in the South China Sea.¹⁵⁰ From 2008 to 2018, CNOOC plans to invest RMB 200 billion (\$31 billion) in exploration activities in the South China Sea.¹⁵¹ According to data reported by the Open Source Center, the South China Sea accounts for 34 percent of CNOOC's reserves and 31 percent of its daily production.¹⁵²

CNOOC has only drilled wells in nondisputed coastal areas in the South China Sea, although this soon may change. The company spent nearly \$1 billion on an ultra-deepwater rig,[†] *Haiyou Shiyang 981*, which appears intended to explore disputed areas of the South China Sea.^{153,154} Liu Feng, senior researcher at the state-backed

*China's dependence on imported oil likely will rise from 57 percent currently to 75 percent to 80 percent over the next two decades. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

†"Ultra-deepwater" refers to depths greater than 1,500 meters. Wood Mackenzie, "Glossary." http://www.woodmacresearch.com/cgi-bin/wmprod/portal/energy/overview.jsp?overview_title=glossaryT-Z#u.

National Institute for South China Sea Studies, affirmed that “it is just a matter of time for [CNOOC] to enter the central and southern part of the South China Sea.”¹⁵⁵ When the rig commenced operations in May, Chinese media quoted CNOOC Chairman Wang Yilin as saying that the rig was “mobile national territory” and a “strategic instrument.” He indicated that the rig would enable China to protect its sovereignty at sea.¹⁵⁶ Erica Downs, fellow at the John L. Thornton China Center at The Brookings Institution, noted in an interview that “Mr. Wang’s remarks are striking because he is linking CNOOC’s drilling to a national interest, beyond oil companies’ normal interest in energy security.”¹⁵⁷ Mr. Wang’s remarks were particularly resonant given that they were delivered as the standoff at Scarborough Shoal was ongoing.

In June 2012, CNOOC announced that it would offer nine blocks spanning 160,000 square kilometers in the South China Sea for joint operation with foreign companies. The blocks are located within Vietnam’s 200-nautical-mile EEZ and overlap with blocks issued by Vietnam Oil and Gas Group (PetroVietnam), a Vietnamese state-owned energy company.¹⁵⁸ In response to CNOOC’s announcement, both PetroVietnam and the government of Vietnam launched protests against the Chinese company.¹⁵⁹ CNOOC auctioned 26 additional offshore blocks in late August, one of which is located 31 miles from the Paracel Islands, claimed by China and Vietnam.¹⁶⁰ In years past, most of the blocks CNOOC offered for joint development were in shallow coastal areas located well within China’s EEZ.¹⁶¹ These recent developments demonstrate that CNOOC acts on behalf of the Chinese government and pursues Beijing’s political objectives in the South China Sea.

China and the Philippines could clash over subsea energy resources near Reed Bank, which is located about 80 miles west of the Philippine island province of Palawan and near China’s nine-dash line claim.¹⁶² Reed Bank sits atop the Sampaguita gas field, which holds an estimated 4.66 trillion cubic feet of natural gas, or nearly twice as much as the Philippines’ largest known gas field.¹⁶³ In 2012, the Philippines auctioned 15 offshore blocks, two of which are located near China’s nine-dash line claim. China protested the planned auction of the blocks as “unlawful.”¹⁶⁴ According to Bonnie S. Glaser, senior fellow at the Center for Strategic and International Studies, Reed Bank is a “red line” for the Philippines, and Chinese interference in projects there could escalate to violence.¹⁶⁵ There is precedent for Chinese interference in Philippine energy projects at Reed Bank; Philippine officials told the Commission that 11 Chinese incursions into Reed Bank had occurred in 2011.

Other Economic and Administrative Developments

National, provincial, and local Chinese actors regularly promote economic activity and development in the South China Sea. Efforts to support tourism, build infrastructure, expand fisheries (as previously discussed), and enhance governance over disputed areas strengthen China’s position in disputes and often exacerbate tensions between China and other claimants.¹⁶⁶ Such activity has occurred regularly over the past several years, but some developments in 2012 are of particular importance.

Most notably, in June 2012, China's State Council elevated the status of Sansha City, on Woody Island in the Paracels, from a county-level municipality to a prefecture-level city. Sansha's new status confers to it the responsibility to govern and administer China's claimed territory in the Spratly, Paracel, and Macclesfield Bank islands (including Scarborough Shoal).¹⁶⁷ With only 13 square kilometers of land territory, the 1,000-person city will have jurisdiction over 2.6 million square kilometers of territorial waters.¹⁶⁸ Sansha also will have its own local branch of the Chinese National People's Congress of the PRC, with 60 legislators.*¹⁶⁹ At Beijing's World Peace Forum in July, Dr. Wu stated that "Sansha will help China strengthen its claims over the South China Sea, and it could become a source of economic growth for Hainan Province."¹⁷⁰ Hainan Province proposed to raise Sansha's administrative status in 2007, but strong protests from Vietnam apparently prevented the change.¹⁷¹ Since the June 2012 announcement, Vietnam and the Philippines have protested Sansha's new administrative reach.¹⁷²

At the provincial level, efforts to promote tourism are ongoing but occasionally meet resistance from the national government.¹⁷³ The Hainan provincial government encourages the development of tourism in the Paracel Islands and has solicited Beijing's support for a number of projects. Beijing's support has been sporadic, and it has in the past suspended projects in response to protests from Vietnam.¹⁷⁴ It appears that proposals for tourism development in the Paracels are currently under review,¹⁷⁵ but in April 2012, a Hainan government official publicly denied that a tourism project would be carried out within the year.¹⁷⁶ According to a report by the State Ocean Administration, tourism in the Paracels will open "when the right time comes."¹⁷⁷

Prospects for Resolution

China refuses to resolve its maritime disputes multilaterally. Beijing wishes to avoid any situation in which it would have to negotiate with a coalition of countries united against China's position. China also refuses to utilize dispute resolution mechanisms offered by UNCLOS, a possibility raised by the Philippines in 2012.¹⁷⁸ Beijing is likely not confident that its expansive claims would be upheld if challenged by a group of other claimants with positions that more closely align with UNCLOS or international norms. China favors dealing with disputes bilaterally, which affords it the advantage of being an economically and militarily stronger power against one smaller country that is likely to bend to Beijing's will under pressure.¹⁷⁹ Smaller claimants, realizing this, are generally unwilling to engage in bilateral negotiations.¹⁸⁰ Approaching the disputes bilaterally with no real intention of compromising its position supports Beijing's delaying strategy.¹⁸¹

*Congressional representation at the local level of the National People's Congress, China's parliamentary body, varies depending on population and type of locality. While Sansha is technically a prefecture-level city, its delegate count is lower than most prefectures, which, under Chinese law, have a base number of 240 representatives. Electoral Law of the National People's Congress and the Local People's Congresses of the People's Republic of China, chapter 2, article 9. http://www.npc.gov.cn/englishnpc/Law/2007-12/13/content_1384080.htm.

It is unlikely that the disputes in the South China Sea will be resolved in the near term. The complexity of the disputes, coupled with claimants' reluctance to compromise, has rendered them more or less intractable. Conceding that full resolution is unattainable in the near term, the claimants have focused their efforts on developing ways to peacefully manage the disputes so as to avoid confrontations, accidents, escalation, and harm to the claimants.

China and the Association of Southeast Asian Nations (ASEAN) signed a nonbinding Declaration on the Conduct of Parties in the South China Sea, known as the Declaration of Conduct, which expresses ten principles aimed to build trust and avoid escalation in disputed areas.¹⁸² Compliance with the Declaration of Conduct has varied among the countries. The parties intend to elevate the 2002 Declaration of Conduct to a binding Code of Conduct. In 2011, ASEAN and China agreed to start negotiations on a code, however there has been little progress to date.*¹⁸³ While China-ASEAN meetings in early 2012 included discussions on principles for a future Code of Conduct, serious disagreements emerged in July at the ASEAN Regional Forum, an annual summit of foreign ministers from ASEAN, the United States, China, and other regional powers. The ASEAN-led meeting revealed deep divisions not only between China and ASEAN but also between individual ASEAN countries on the issue of the South China Sea.¹⁸⁴ For the first time in the organization's 45-year history, the ASEAN countries were unable to agree to a final communiqué for the meeting because of disagreements over how ASEAN should approach the South China Sea disputes.¹⁸⁵

Many observers attributed this failure to China pressuring the current ASEAN chair, Cambodia, to uphold China's interests and prevent ASEAN from issuing anything that could be perceived as a condemnation of Chinese activities in the South China Sea.¹⁸⁶ A statement published on the website of the Philippine Ministry of Foreign Affairs suggests as much and indicates that Cambodia prevented ASEAN from achieving consensus on language to be included in the final communiqué statement discussing the Scarborough Shoal standoff.¹⁸⁷ ASEAN countries, led by Indonesia, have since made efforts to rebuild consensus after the embarrassing breakdown at the ASEAN Regional Forum.¹⁸⁸ Given the divisions within ASEAN made evident at the July meeting, ASEAN agreement on a proposed Code of Conduct is not likely to be imminent, and a joint China-ASEAN Code of Conduct appears to be even further off.

ASEAN's failure to achieve consensus reflects the deep divisions among Southeast Asian countries regarding relations with China. Southeast Asian mainland countries like Cambodia and Laos generally support China's interests because they have strong economic dependencies on China (and, in the case of the South China Sea, they have little interest in the disputes). Some of the Southeast Asian claimants, especially the Philippines and Vietnam, are will-

* In 2011, the parties jointly issued guidelines for implementing the Declaration of Conduct, but this was seen as a symbolic gesture more than substantive progress on developing a Code of Conduct. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 31. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

ing to confront Beijing over perceived Chinese incursions into their claimed territories.¹⁸⁹ Malaysia and Brunei, however, are significantly less vocal about their claims.¹⁹⁰ The International Crisis Group conducted an interview with a senior ASEAN official who characterized Sino-Malaysian relations in the South China Sea as “China allowing Malaysia to pump oil from disputed areas in exchange for its silence on South China Sea claims.”¹⁹¹ In this way, Beijing aims to prevent the Southeast Asian claimants from presenting a united front against China in the South China Sea.

Since Secretary of State Clinton’s speech at the 2010 ASEAN Regional Forum emphasizing U.S. national interests in the South China Sea,¹⁹² the United States has increasingly articulated interest in the disputes. In response to China’s establishment of a military command in Sansha City, the U.S. Department of State issued a press release calling the move “counter to collaborative diplomatic efforts” and risking “further escalating tensions.”¹⁹³ This was the first time that the United States singled out a claimant in the disputes and indicates an evolution of a more vocal, specific U.S. official position on the disputes.

Vietnam and especially the Philippines have welcomed an enhanced U.S. presence in the South China Sea.¹⁹⁴ The United States has offered to serve as an impartial mediator in the disputes as well. China strongly protested the suggestion and remains vocal about the need for the United States to stay wholly uninvolved in matters related to the South China Sea.¹⁹⁵ Despite the Philippines’ enthusiastic endorsement of greater involvement in the disputes by the United States, the claimants are careful to balance their desires for amicable relations with China with their desires for a sustained U.S. security presence in the region.¹⁹⁶

Implications for the United States

The South China Sea disputes are one of the most important security issues in Asia. As tensions rise and claimants continue to clash at sea without adequate deescalation mechanisms in place, threats persist to stability in the region. It is in the interests of all claimants and regional stakeholders to avoid a large-scale confrontation, but provocative rhetoric and activities, regional military modernization, and a proliferation of vessels and actors in the region increase the likelihood of accidents and clashes.

The United States has significant economic and security interests in region and thus stands to gain or lose from developments in the South China Sea disputes. Dr. Cronin and Robert D. Kaplan, senior fellow at the Center for a New American Security, refer to the South China Sea as “the geographical center” of the world economy.¹⁹⁷ In terms of tonnage, about half of all globally shipped commercial goods traverse the South China Sea, and \$1.2 trillion in U.S. trade transits the South China Sea annually.¹⁹⁸ Besides direct economic interests in the South China Sea, the United States and other countries depend on this trade thoroughfare by virtue of its role in bringing raw materials from the Middle East and Africa to Asian economies whose growth is crucial to global economic health.

The United States has long upheld the principle of freedom of navigation in the Asia Pacific and especially the South China Sea. In addition to ensuring that sea lines of communication stay open,

stable, and secure for economic activity, the United States values and ensures freedom of navigation for other purposes, including humanitarian assistance and disaster relief, and other peaceful activity.¹⁹⁹ Assistant Secretary of State for East Asia and the Pacific Kurt Campbell and Secretary of Defense Leon E. Panetta emphasized the U.S.'s commitment to freedom of navigation in public statements on the South China Sea in 2012.²⁰⁰ In a written statement to the Senate Armed Services Committee prior to his confirmation as Commander of the United States Pacific Command, Samuel J. Locklear III asserted:

*The U.S. Navy is a key provider of the military presence that underlies peace and stability across the globe, including in the South China Sea. I believe it is essential for the U.S. Navy to maintain its presence and assert its freedom of navigation and overflight rights in the South China Sea in accordance with customary international law. . . . The United States should sustain our military presence in international waters and uphold its commitments to its allies and partners in order to maintain peace and stability in the region.*²⁰¹

Of the greatest concern to the United States are China's expansive claims and unorthodox view that a coastal state can restrict military activity in its EEZ. As discussed above, this view runs counter to international norms that allow for "peaceful" activity within EEZs.* Should China continue to press for acceptance of its interpretation of freedom of navigation within an EEZ, maritime security in Asia—fostered by a reliable U.S. military presence for decades—could be seriously undermined. In the context of China's expansive and arguably unlawful (according to UNCLOS) maritime territorial and jurisdictional claims, its preferred definition of EEZ rights has wide-ranging implications for freedom of movement in the South China Sea. Moreover, as Asia becomes more militarized, coastal states could be inclined to adopt more restrictive laws and regulations governing foreign military passage through maritime space, as Vietnam and Malaysia already have. Should such restrictions become customary for countries in the South China Sea or the western Pacific, the U.S. Navy's ability to exercise freedom of navigation could be challenged.

The ambiguity of China's claims and objectives in the South China Sea could pose challenges for the United States in a contingency in the region. The uncertainty of China's position, coupled with possible divisions among Chinese leaders as to the future of China's South China Sea policy, may complicate U.S. efforts to resolve a crisis. Should a dispute in the South China Sea escalate, the United States risks being drawn into the conflict. This risk is particularly salient with regard to a potential conflict involving the Philippines, a treaty ally to the United States. Should China continue its pattern of asserting its maritime claims closer to Phil-

* Article 88 of UNCLOS mandates that "[t]he high seas shall be reserved for peaceful purposes." Article 88 also applies to EEZs (pursuant to Article 58). United Nations Convention on the Law of the Sea, "Part 5: Exclusive Economic Zone." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm; United Nations Convention on the Law of the Sea, "Part 7: High Seas." https://www.un.org/depts/los/convention_agreements/texts/unclos/part7.htm.

ippine shores, Manila could call on the United States for support of some kind.

Conclusions

- Beijing's objectives in the South China Sea are to uphold what it insists is the legitimacy of China's territorial claims; to have unimpeded access to maritime resources like oil, natural gas, and fish; and to ensure control of its maritime periphery in order to guarantee the security of its sea lines of communication and deny what it views as threatening foreign military activities there.
- China appears to pursue a strategy in the South China Sea that involves delaying the resolution of its maritime disputes while growing its actual presence in contested areas and strengthening its navy and air force. The objective of this strategy is to strengthen China's position relative to the other claimants to ensure eventual resolution of disputes in China's favor.
- Beijing prefers that nonthreatening actors like civilian law enforcement agencies and commercial fishermen enforce China's claims and expand China's presence in disputed areas. The PLA Navy's maturing capabilities underpin Chinese assertiveness and foster insecurity among non-Chinese claimants.
- To the extent that China's activities in the South China Sea are meant to stabilize and secure its maritime periphery, its actions in 2012 appeared to have the opposite effect. China's assertiveness led other claimants to grow their presence in disputed areas, invest in military modernization, and look for maritime security support from the United States and its regional allies.
- China National Offshore Oil Corporation (CNOOC), one of China's state-owned oil companies, demonstrated itself to be an agent of the Chinese state in 2012. CNOOC advanced China's interests in the South China Sea by auctioning oil and gas blocks in waters disputed by Vietnam and by referring to its offshore energy infrastructure as "mobile national territory."

**Addendum I: Text of the Mutual Defense Treaty Between
the United States and the Republic of the Philippines, 1951**

The Parties to this Treaty,

Reaffirming their faith in the purposes and principles of the Charter of the United Nations and their desire to live in peace with all peoples and all Governments, and desiring to strengthen the fabric of peace in the Pacific Area,

Recalling with mutual pride the historic relationship which brought their two peoples together in a common bond of sympathy and mutual ideals to fight side-by-side against imperialist aggression during the last war,

Desiring to declare publicly and formally their sense of unity and their common determination to defend themselves against external armed attack, so that no potential aggressor could be under the illusion that either of them stands alone in the Pacific Area,

Desiring further to strengthen their present efforts for collective defense for the preservation of peace and security pending the development of a more comprehensive system of regional security in the Pacific Area,

Agreeing that nothing in this present instrument shall be considered or interpreted as in any way or sense altering or diminishing any existing agreements or understandings between the United States of America and the Republic of the Philippines,

Have agreed as follows

ARTICLE I

The Parties undertake, as set forth in the Charter of the United Nations, to settle any international disputes in which they may be involved by peaceful means in such a manner that international peace and security and justice are not endangered and to refrain in their international relations from the threat or use of force in any manner inconsistent with the purposes of the United Nations.

ARTICLE II

In order more effectively to achieve the objective of this Treaty, the Parties separately and jointly by self-help and mutual aid will maintain and develop their individual and collective capacity to resist armed attack.

ARTICLE III

The Parties, through their Foreign Ministers or their deputies, will consult together from time to time regarding the implementation of this Treaty and whenever in the opinion of either of them the territorial integrity, political independence or security of either of the Parties is threatened by external armed attack in the Pacific.

ARTICLE IV

Each Party recognizes that 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.

Any such armed attack and all measures taken as a result thereof shall be immediately reported to the Security Council of the United Nations. Such measures shall be terminated when the Security Council has taken the measures necessary to restore and maintain international peace and security.

ARTICLE V

For the purpose of Article IV, 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.

ARTICLE VI

This Treaty does not affect and shall not be interpreted as affecting in any way the rights and obligations of the Parties under the Charter of the United Nations or the responsibility of the United Nations for the maintenance of international peace and security.

ARTICLE VII

This Treaty shall be ratified by the United States of America and the Republic of the Philippines in accordance with their respective constitutional processes and will come into force when instruments of ratification thereof have been exchanged by them at Manila.

ARTICLE VIII

This Treaty shall remain in force indefinitely. Either Party may terminate it one year after notice has been given to the other Party.

IN WITNESS WHEREOF the undersigned Plenipotentiaries have signed this Treaty.

DONE in duplicate at Washington this thirtieth day of August 1951.

(1) TIAS 2529, 3 UST 3947–3952. Ratification advised by the Senate, Mar. 20, 1952; ratified by the President, Apr. 15, 1952; entered into force, Aug. 27.

(2) Instruments of ratification were exchanged Aug. 27, 1952.

SECTION 2: CHINA AND TAIWAN

Introduction

Throughout 2012, relations between the People's Republic of China (PRC) and Taiwan (officially the Republic of China, or ROC) continued to reflect the lowered tensions, increased economic exchange, and improved official relations observed since Ma Ying-jeou was first elected as president of the Republic of China in 2008. Over the past four years, both governments* have adopted more conciliatory positions regarding cross-Strait policy: Beijing has eased back from earlier efforts to pressure Taiwan and isolate it diplomatically, and Taipei has turned away from confrontational efforts to assert Taiwan sovereignty and toward efforts to pursue greater economic integration.²⁰²

However, as reported in the Commission's *2011 Annual Report to Congress*, the rapid momentum toward warmer relations seen in 2009–2010 has slowed, and this trend continued in 2012. Two primary factors are at work in this dynamic. First, for both sides, political room to maneuver has been more limited due to leadership transitions: in Taiwan, the rival Kuomintang and Democratic Progressive Party were engaged in a long campaign leading up to presidential elections in January 2012; and in the PRC, the top leadership of the Chinese Communist Party (CCP) has been involved in planning for the generational leadership change expected to take place at the 18th National Congress of the CCP in November 2012.

Second, in the words of the mainland's senior negotiator, PRC-Taiwan dialogues to date have focused on "economics first, politics later; easy first, difficult later."²⁰³ Many of the less contentious issues between the two sides—e.g., direct passenger flights and mail service, increased tourism, and educational exchanges—have been settled. Many of the thornier issues that remain touch upon sensitive questions of sovereignty and national identity, leaving negotiators on both sides to wade into the "deep water" of future cross-Strait negotiations.²⁰⁴

Cross-Strait security talks—or the lack thereof—provide one example of a "difficult later" policy area that has seen little progress in recent years. Various proposals have been raised for incremental steps to improve security relations between the two governments: For example, some academic foreign policy experts and Taiwan officials have advocated negotiations on military confidence-building

*Taipei and Beijing do not have official diplomatic relations with one another, and the ultimate status of Taiwan remains unresolved. Cross-Strait negotiations between the two governments are held under the auspices of two quasi-official organizations. Representing Taiwan is the Straits Exchange Foundation, nominally a "private intermediary body" entrusted to speak for the Taiwan government in cross-Strait matters. The corresponding body in China is the Association for Relations Across the Taiwan Straits. See U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2010), p 147.

measures, intended to improve channels of communication between PRC and Taiwan forces and to reduce the chances for miscalculations or accidents involving ships and aircraft operating in the vicinity of the Strait.²⁰⁵ In March 2010 Tsai Der-sheng, director of the ROC National Security Bureau stated to Taiwan legislators that the topic of cross-Strait military confidence-building measures was “difficult and sensitive,” and that “current conditions and timing are not yet ripe to hold talks on such an issue.”²⁰⁶ For their part, China’s leaders will likely remain cautious about new initiatives towards Taiwan during a sensitive period of leadership transition.²⁰⁷ Beijing may also fear that “calling for rapid cross-Strait political reconciliation or even engagement over matters of security would likely increase Taiwan’s apprehension” of closer relations with the mainland.²⁰⁸

Developments in Taiwan Politics

In January 2012, Taiwan held presidential and legislative elections. The Kuomintang Party ticket of incumbent President Ma Ying-Jeou and running mate Wu Den-Yih won the presidential election with 51.6 percent of the votes.²⁰⁹ The Democratic Progressive Party’s Tsai Ing-Wen and running mate Su Jia-Chyuan finished second, with 45.6 percent of the vote; and the People First Party, led by James Soong and Lin Ruey-Shiung, garnered only 2.8 percent.²¹⁰ The Kuomintang retained its majority in the Legislative Yuan, Taiwan’s 113 member legislature; however, it lost 17 seats, dropping from the 81 seats it held in the previous assembly, down to 64.²¹¹

Continued control of both the executive and legislative branches by the Kuomintang means that the immediate future will likely see a high degree of continuity in Taiwan economic, foreign, and security government policy. Some PRC officials are reportedly frustrated with Ma’s Administration, on the grounds that cross-Strait agreements have been unduly generous to Taiwan and that there has been a lack of negotiations leading toward political reintegration and eventual reunification.²¹² Negotiations on the latter point are highly unlikely in the near future due to the constraints of Taiwan’s domestic politics²¹³ as well as to the clearly expressed view of President Ma that the Republic of China is a legitimate sovereign entity that will not be subordinated to the PRC (see “Developments in Cross-Strait Diplomatic Relations,” on pages 245–246).

The election results could also contribute to further moderation of pro-independence voices within the Democratic Progressive Party and to cautious outreach between that party and officials of the PRC. In May 2012, Democratic Progressive Party spokesperson Lo Chih-Cheng became the first official from his party to visit China since 2008.²¹⁴ In late July 2012 the party announced that it was reopening its “China Affairs Department” (previously closed in 2007) as a goodwill gesture to authorities on the mainland.²¹⁵ Most notably, Hsieh Chang-Ting (Frank Hsieh), the Democratic Progressive Party’s candidate in the 2008 Taiwan presidential election, visited the PRC from October 4 to 8, making him the highest-ranking representative of the party ever to visit the mainland.²¹⁶ For their part, PRC officials have displayed a reluctant but increasing willingness to accord to the Democratic Progressive Party sta-

tus as a legitimate political party,²¹⁷ even as they remain fearful of that party's return to power.²¹⁸

Developments in Cross-Strait Diplomatic Relations

In his May 20 inaugural speech, President Ma laid out an overarching view of Taiwan's security interests and the course that he planned to pursue for Taiwan's relations with China and other countries:

*National security is crucial for the survival of the Republic of China. I believe that Taiwan's security rests on three legs. The first is the use of cross-strait rapprochement to realize peace in the Taiwan Strait. The second is the use of viable diplomacy to establish more breathing space for ourselves in the international community. And the third is the use of military strength to deter external threats. We must regard each as equally important and develop them in a balanced manner.*²¹⁹

As Taiwan and the PRC have progressed with negotiations in the first of these areas, cross-Strait rapprochement, unresolved definitions of sovereignty and the difficulty of finding mutually agreeable language to describe the complexities of Taiwan's unresolved status have continued to be sticking points. For example, PRC officials have consistently insisted on all negotiations being conducted under the framework of the "1992 Consensus," often summarized as "One China, with differing interpretations."²²⁰ In recent statements, Taiwan government representatives have referred to "One Country, Two Areas" to describe the status of China and Taiwan, rather than the formulation "One China, Two Areas" term favored by the PRC. From the official Taiwan perspective, "one China" would mean the Republic of China, rather than the People's Republic of China; therefore, use of "One Country, Two Areas" allows for Taiwan officials to sidestep questions regarding the legitimacy of the two governments.²²¹ Officials of the PRC, on the other hand, prefer to conduct negotiations under the rubric of language that implicitly identifies their "One China"—the PRC—as the sole legitimate representative of the Chinese nation.

President Ma has himself described Taiwan's status clearly in terms of being the enduring successor state to the Republic of China:*

When we speak of "one China," naturally it is the Republic of China. According to our Constitution, the sovereign territory of the Republic of China includes Taiwan and the mainland. At present, the ROC government has authority to govern only in Taiwan, Penghu, Kinmen and Matsu. In other words, over the past two decades, the two sides of the Taiwan Strait have been defined as 'one Republic of China, two areas' ... Both sides of the Taiwan Strait ought to

*The Republic of China officially dates its founding from 1912, when China's last imperial dynasty was overthrown. The ROC's Kuomintang-controlled regime fled to Taiwan at the end of China's civil war in 1949, continuing to claim that it was the rightful government of all of China. Although this claim has since been set aside, Taiwan's current government is still formally known as the Republic of China, and it continues to operate under the authority of the 1947 Republic of China Constitution.

*squarely face up to this reality, seek common ground while respecting differences, and establish a consensus regarding 'mutual non-recognition of sovereignty and mutual non-denial of authority to govern.' Only in this way can the two sides move forward with confidence.*²²²

To date, PRC officials have chosen not to adopt a confrontational posture over such language. This is likely based on a calculation that President Ma's view of Taiwan sovereignty—however unsatisfactory from Beijing's perspective—is far preferable to the traditionally pro-independence stance of the Democratic Progressive Party. In terms of relations with the mainland, President Ma has also reaffirmed commitment to the “Three Nos” of his first term (no moves toward unification, no declaration of independence for Taiwan, no military action to resolve Taiwan's status). President Ma has also stated that there is no hurry to sign a peace accord between the Republic of China and the PRC, as there must be high levels of support from the Taiwanese population before a peace accord could take place.²²³

Agreements Signed Between the PRC and Taiwan (2008–2012)

Since 2008, the governments of China and Taiwan have signed 18 major agreements* on a broad range of policy issues, to include trade, the expansion of travel links, tourism, educational exchanges, investment protection, and legal affairs.²²⁴ The centerpiece of these agreements, the June 2010 Economic Cooperation Framework Agreement (ECFA), significantly liberalized and expanded commercial intercourse between Taiwan and the PRC.²²⁵ (For further discussion of issues surrounding the ECFA, see “Further Developments in Cross-Strait Economic Relations: Effects of the ECFA” on the following page.)

Since the release of the Commission's 2011 Annual Report, the two sides have made the following additional agreements:

- *Lowered restrictions on Taiwan exports to China:* The Republic of China's economics ministry announced in May 2012 that China would now be allowed to import from Taiwan 400 items that were formerly export controlled. These previously banned items include radar, optical equipment, astronomical instruments, and precision machine tools. The original list was created in 2006 to prevent Iran and North Korea from using Taiwan as a transshipment point for goods and materials that can

* For previous Commission discussion of negotiated agreements between Taiwan and the PRC, see U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2010), chapter 3, section 2, “Taiwan,” pp. 143–146; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), chapter 3, section 3, “Taiwan,” pp. 275–277.

***Agreements Signed Between the PRC and Taiwan
(2008–2012)—Continued***

produce weapons of mass destruction. The new exports are permitted as long as the exporters can prove that North Korea or Iran will not be the final destination. However, 12 items related to semiconductor manufacturing equipment remain on the proscribed list, and violators could be subject to a five-year jail sentence.²²⁶

- *Elimination of tariffs on Taiwan exports to the PRC:* Effective January 1, 2012, PRC import tariffs were eliminated for 437 categories of goods from Taiwan—to include many products from the agricultural, automotive manufacturing, machinery, petrochemical, and fabric industries. These items were added to an earlier list of 72 Taiwan products that became tariff free on January 1, 2011.²²⁷
- *Nuclear power safety agreement:* In October 2011, Taiwan and PRC representatives signed an agreement regarding cooperative measures in the field of nuclear power safety. The agreement provides for a nuclear safety reporting system and closer ties among nuclear safety regulatory organizations.²²⁸ The agreement entered into effect on June 29, 2012.²²⁹

**Further Developments in Cross-Strait Economic Relations:
Effects of the ECFA**

China is Taiwan's biggest trading partner, with Japan and the United States a distant second and third.²³⁰ In the wake of the signing of the ECFA in 2010, economic exchange between Taiwan and the PRC increased significantly: Official Taiwan government statistics indicate that nearly \$103 billion in trade was conducted with mainland China (not including Hong Kong) between January and November 2010, a 45.7 percent increase over the same period in 2009.²³¹ There continues to be a gradual easing of cross-Strait trade barriers. However, some restrictions on exports to China and investments from China are still in place out of concern over potential threats to Taiwan's national security. Additionally, many protective tariffs and restrictions on Chinese imports into Taiwan remain in place as protectionist measures for Taiwan producers.²³²

Trade across the Taiwan Strait has remained strong but has dipped from the highs seen in the immediate wake of the signing of the ECFA. From January to July 2012 (the most recent months for which official statistics are available), Taiwan exported nearly \$46 billion worth of goods to the PRC (26.73 percent of its total exports) and imported nearly \$24 billion worth of goods from the PRC.²³³ In comparison to the same six-month period in 2011, the total trade volume between the two sides dropped by 8.42 percent.²³⁴ These figures parallel an overall drop in trade between Taiwan and many of its major Asian trading partners during this time frame.²³⁵

Spokespeople for the Ma Administration have praised the ECFA as highly beneficial to Taiwan, particularly in the agricultural sec-

tor: For example, in June 2011, Mainland Affairs Council Minister Lai Shin-Yuan stated that exports of tea, flowers, fish, and other agricultural products from Taiwan to mainland China had increased 526 percent (year-on-year) to \$49.42 million during January to May 2011.²³⁶ More recently, in May 2012, officials of Taiwan's Bureau of Foreign trade cited the ECFA as a key factor supporting foreign investment of \$2.43 billion in Taiwan in the first quarter of the year. These same officials also touted the secondary benefits of the ECFA, such as attracting Japanese companies interested in using Taiwan as a manufacturing and export center following the elimination of tariffs on over 500 categories of exports from Taiwan to the mainland.²³⁷

However, representatives of the opposition Democratic Progressive Party have been far more critical of the ECFA, questioning its economic benefits to Taiwan, blaming it for capital outflows to China and citing it as a danger to Taiwan's economic sovereignty.²³⁸ In the course of the campaign leading up to this year's presidential election in Taiwan, Democratic Progressive Party candidate Tsai Ying-Wen softened earlier strong criticisms of the ECFA²³⁹ but still vowed to "reassess" the trade pact if she were to be elected.²⁴⁰

Aside from its impact on the cross-Strait trade relationship, the ECFA has also spurred further changes in areas such as tourism and educational exchanges:

- *Tourism:* There has been an easing of restrictions on mainland travelers with the launch of the "Free Independent Travelers" program on June 28, 2011.²⁴¹ About 1.78 million Chinese visitors traveled to Taiwan in 2011 (an increase of 9 percent from 2010) and accounted for 29.2 percent of total international tourists.²⁴² According to statistics from the PRC state media, from January to August 2012 there were 1.32 million trips made to Taiwan by mainland tourists.²⁴³ In April 2012, Taiwan and China announced an agreement to boost the number of "Free Independent Travelers" in Taiwan by expanding the number of eligible mainland cities from three to 13.²⁴⁴ Prior to this agreement, only residents of Beijing, Shanghai, and Xiamen were allowed to visit Taiwan independently, with residents from other parts of China restricted to tourist travel in tour groups.²⁴⁵ As of August 7, the new cities added to the Free Independent Travelers program included Tianjin, Chongqing, Nanjing, Guangzhou, Hangzhou, Chengdu, Jinan, Xian, Fuzhou, and Shenzhen.²⁴⁶ The cap for Free Independent Travellers was also increased from 500 to 1,000 visitors a day, but the total number of Chinese tourists remains capped at 3,000 per day.²⁴⁷
- *Education Initiatives:* Since 2011, up to 2,000 mainland students are now permitted to enroll in undergraduate and postgraduate programs on the island.²⁴⁸ Taiwan has declared that it would lift restrictions on studying in Taiwan for Chinese students who have never applied for

household registration and Hong Kong or Macau citizens who have foreign passports.²⁴⁹ Taiwan's Ministry of Education is also undertaking a comprehensive review of its "Three Restrictions and Six Nos" policy that affects Chinese students studying in Taiwan.²⁵⁰

Trade Issues Negotiated between Taiwan and the PRC in Summer 2012

Negotiators from Taiwan and the mainland have continued to build upon the ECFA established in 2010. At the conclusion of their eighth official round of talks held in Taipei on August 8–9, 2012, representatives of Taiwan's Straits Exchange Foundation and the PRC's Association for Relations Across the Taiwan Strait signed three major new economic agreements, all of which had been under negotiation for several months. These agreements are:

- *Cross-Strait investment protection agreement:* This agreement provides further protections for the property and personal security of Taiwan businesspeople investing in the mainland. The agreement establishes a 24-hour window for family members to be notified should a businessperson be arrested on the opposite side of the Strait and guarantees the arrested person access to an attorney. It also clarifies procedures for a Taiwan investor to seek redress from a local or provincial government in the PRC (for example, in the event of seizure of property), and states that Taiwan companies involved in a business dispute on the mainland can choose to use a Taiwanese arbiter.²⁵¹ The pact could significantly strengthen legal mechanisms in what has been an uncertain environment for Taiwan investors: Many Taiwan businessmen operating in the mainland have complained of expropriation of property; of being cheated by mainland partners who enjoy the protection of local officials; of being arrested following a business dispute; etc.²⁵² Reaction from Taiwan's business community on the agreement has been generally positive; however, some in Taiwan continue to express concerns about enforcement of the agreement's provisions in a PRC legal system subject to influence by officials who may hold a financial and/or political stake in local industries.²⁵³
- *New customs agreement:* Taiwan and PRC representatives signed a "Cross-Strait Customs Cooperation Agreement" scheduled to take effect on January 1, 2013. The two sides agreed to mutual recognition of "authorized economic operators" (designated companies offered streamlined customs procedures). They also agreed on procedures for the use of radio frequency identification technology for tracking container shipments, with intent to "[simplify] customs procedures, upgrade the efficiency of related operations, save on customs-clearance costs, and reinforce the competitive advantage of international logistics operators." In addition, the negotiators agreed to eliminate by 2013 tariffs on over 600 products identified in the original ECFA.²⁵⁴

- *Currency clearance agreement:* In the past, Taiwan banks were not allowed to conduct transactions in the PRC's renminbi (RMB) currency, and PRC banks conversely were not able to deal in Taiwan's New Taiwan Dollar. As a result, trade deals or money transfers across the Strait were initially denominated in a third currency (usually the U.S. dollar) and then converted to the local currency. Most such transactions are now conducted through Hong Kong banks; many Taiwan officials and investors hope that liberalized rules for currency conversion will make Taiwan a major center for offshore capital flows into and out of the PRC.²⁵⁵ Per the agreement signed in August, Taiwan banks will now be able to maintain accounts in RMB and to convert between mainland and Taiwan currency without the need to first make conversions into U.S. dollars. Taiwan banks will also now be able to trade in RMB-denominated financial instruments such as corporate bonds and to offer loans in RMB to entities outside of Taiwan.²⁵⁶

Aside from the currency clearance agreement, there were other signs this year of rapidly lowering barriers to cross-Strait commercial banking operations. In late June the Bank of China opened a branch in Taipei, becoming the first PRC bank to establish itself in Taiwan.²⁵⁷ On July 10, 2012, the Republic of China's Bank of Taiwan opened a branch in Shanghai.²⁵⁸ This was followed by the July 16th opening of a Taipei branch by the PRC's China Bank of Communications.²⁵⁹ Such institutions (all state owned) could potentially play a major role in facilitating currency exchange transactions and investments between parties in Taiwan and the PRC.

Media and Telecommunications Controversies in Taiwan

As bilateral economic, cultural, and educational ties have developed between Taiwan and the PRC, many Taiwanese continue to express concerns over the impact that expanded trade and investment could have on Taiwan's national security. In particular, some in Taiwan have expressed concerns about China's growing presence in Taiwan's telecommunications industry and China's growing influence in Taiwan's media. The following are some of the more high-profile controversies since 2011 regarding investments in Taiwan's media and telecommunications sectors:

- *Huawei:* Huawei is a China-based company with ties to the Chinese military; the United States and Australia have expressed concern over Huawei's potential threat to national security. Huawei has a major presence in Taiwan's telecommunications sector: It has secured contracts to supply FarEasTone with approximately \$36 million worth of equipment and maintenance services for wireless network controllers and base stations and to supply Asia Pacific Telecom with approximately \$683 million worth of 3.5G networking and communications equipment. It has also built Taiwan Mobile's fixed-line Ethernet network and manufactured many of the headsets marketed by Chunghwa Telecom. Furthermore, nearly all 3G mobile network cards used in Taiwan incorporate parts produced by

**Media and Telecommunications Controversies in
Taiwan—Continued**

Huawei.²⁶⁰ Some in Taiwan—particularly representatives of Taiwan’s major opposition party, the Democratic Progressive Party—have expressed concern that the large-scale procurement of Huawei base stations and core systems by Taiwanese telecoms firms could impact national security.²⁶¹ In line with the National Communications Commission’s 2009 statement that Type 1 telecommunications (fixed network products and cell phones, among others) are vital to national security and domestic industry safety, Huawei currently cannot establish a branch company or invest in Taiwan directly.²⁶² In early summer 2011, Taiwan’s National Communications Commission sent letters to all major telecommunications companies on the island, ordering them to submit lists of all network equipment supplied by manufacturers on the Chinese mainland. This was done with the intent that “the Executive Yuan, the Ministry of Economic Affairs and a national security agency will consider whether to prohibit the import of telecommunications equipment made in China due to national security considerations.”²⁶³

- *The Want Want Group*: Taiwan has also seen controversy this year regarding the Want Want China Times Group’s \$2.57 billion bid to acquire the cable TV services of China Network Systems (CNS).²⁶⁴ The chairman of the Want Want Group—a large conglomerate involved in snack foods, media, and real estate—is Tsai Eng-Meng, Taiwan’s richest man and a figure who has drawn attention for outspoken comments favorable to the PRC and eventual reunification.²⁶⁵ In a May 7 public hearing, Mr. Tsai tried to allay fears that the group would monopolize the media in Taiwan with a pro-China bias and disguise Chinese advertising as news.²⁶⁶ However, Want Want’s efforts at expansion have seen considerable opposition, as seen in September 1 protests in Taipei by organizations of journalists and students.²⁶⁷ Taiwan’s National Communications Commission has granted approval to Want Want’s acquisition of CNS, with three conditions: (1) Tsai Eng-Meng and his son Tsai Shao-Chung must disassociate themselves from the operations of their existing cable television network, Chung Tien Television; (2) the China Television Company network, which would be acquired in the deal, must set up an editorial review process for content that is independent of Want Want; and (3) China Television must put forth a proposal to change to a non-news format.²⁶⁸ The Want Want Group has protested against these conditions, and it is unclear whether Mr. Tsai and other company officials will accept the deal.²⁶⁹

**Media and Telecommunications Controversies in
Taiwan—Continued**

- *Direct submarine cable link:* FarEasTone Telecommunications Co, Ltd. plans to complete construction of a direct submarine cable link between Damshui (in northern Taiwan) and Fujian Province by the year's end. The company filed the application in November 2011. Currently, Chunghwa Telecom has a cable that links Taiwan's outlying island of Kinmen to Xiamen under the "mini-three links" arrangement between the mainland and Taiwan.²⁷⁰
- *Chinese radio broadcasts:* National Communications Commission Chairperson Su Herng said that the dispute over Chinese radio stations (including China National Radio, Voice of China, and Voice of Strait) broadcasting into southern Taiwan through AM radio frequencies needs to be addressed through cross-Strait negotiations.²⁷¹

Developments Affecting Taiwan's "International Space"

Despite improved relations between China and Taiwan, China continues to coerce international organizations to restrict Taiwan's participation in international space. In one example, Taiwan was unable to participate in the 4th Annual Warrior Competition (an international competition for police and military special forces personnel), even after the Taiwanese Special Forces had registered for the event, as China called for organizers to respect the "one China policy."²⁷² This was the first year that the Taiwanese Special Forces had registered for the event, though they had sent observers in 2011.²⁷³

Taiwan has repeatedly requested that the World Health Organization designate Taiwan as "Chinese Taipei" rather than "Taiwan, Province of China."²⁷⁴ The U.S. Department of State advised Congress that there was no prior discussion with member countries before the World Health Organization changed the designation at the 2012 World Health Assembly.²⁷⁵ The Department of State report also noted that the World Health Organization has placed multiple restrictions on Taiwan's attempts to participate in World Health Organization-sponsored technical activities and consultations, despite inviting Taiwan's Department of Health to the 2012 World Health Assembly.²⁷⁶

President Ma's Administration has attempted to diversify its international trade agreements and utilize the ECFA to attract international investment. President Ma credited the ECFA as a significant factor that sealed the signing of the first investment agreement between Taiwan and Japan in September 2011.²⁷⁷ That same year, Taiwan began negotiations with Singapore on the Agreement between Singapore and the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu on Economic Partnership. Taiwan also engaged in bilateral talks this year with New Zealand, India, and the Association of Southeast Nations on bilateral Economic Cooperation Agreements.²⁷⁸

New Developments in Taiwan's Relations with the United States

U.S.-Taiwan Diplomatic Affairs

The Taiwan Visa Waiver Program

On October 2, 2012, the U.S. Department of Homeland Security announced that, effective November 1, Taiwan would become the 37th country or region eligible for the U.S. Visa Waiver Program. Such eligibility allows ROC (Taiwan) passport holders to travel visa free to the United States for the purposes of business or tourism, for periods of 90 days or less.²⁷⁹ Taiwan's designation for the visa waiver program followed extensive negotiations between the United States and Taiwan and was praised by officials on both sides as a sign of mutual trust and strong bilateral ties.²⁸⁰

The U.S.-Taiwan Trade Relationship

Issues Involving Trade in Agricultural Products

A number of significant developments occurred during 2012 in the U.S.-Taiwan economic relationship, particularly as pertains to trade in agricultural goods. Considerable progress was made in resolving issues related to U.S. exports of meat products containing ractopamine, a long-standing sticking point in the U.S.-Taiwan trade relationship.* Senior figures in Taiwan's government prioritized the resolution of controversial issues affecting beef imports: For example, in May a Taiwanese delegation visited the United States to inspect beef production after a new case of bovine spongiform encephalopathy ("mad cow disease") was reported in California in April.²⁸¹ In late July Taiwan's legislature passed an amendment setting the residual limits for ractopamine in beef to ten parts per billion, the same standard used by Japan and South Korea. This amendment was subsequently signed into law by President Ma in September 2012, clearing the way for a significant expansion in U.S. beef exports to Taiwan. However, Taiwan's ban on ractopamine in pork products remains in place.²⁸²

In pushing for progress on the beef issue, the Ma Administration has drawn linkages to other outstanding trade issues: For example, during a meeting in May with a U.S. Congressional delegation headed by Chairwoman of the House Committee on Foreign Affairs Representative Ilena Ros-Lehtinen (FL), President Ma stated that the U.S. beef dispute should be resolved before the resumption of broader trade talks (see the following page).²⁸³

*The chemical ractopamine is used as a feed additive for livestock, intended to increase muscle size and leanness in meat animals such as pigs and cattle. The U.S. government has approved the use of ractopamine since 2003, and has declared that meat from animals fed ractopamine is safe for human consumption. See U.S. Institute in Taiwan, "The Facts About U.S. Beef and Ractopamine," press release dated February 21, 2012. <http://www.ait.org.tw/en/officialtext-ot1201.html>. The use of ractopamine was banned in Taiwan in 2006, and pig farmers in Taiwan have lobbied intently to keep the ban in place. See Hermia Lin, "Swine Farmers Get Rowdy Over Ractopamine Issue," *Taiwan News*, August 22, 2007. http://www.taiwannews.com.tw/etn/news_content.php?id=506889&lang=eng_news&cate_img=49.jpg&cate_rss=news_Society_TAIWAN.

Negotiations Toward Further U.S.-Taiwan Trade Liberalization

Since 1994, major aspects of U.S.-Taiwan trade negotiations have been conducted under the Trade and Investment Framework Agreement, “a non-binding consultative mechanism the United States employs for resolving trade and investment difficulties with countries still opening their economies.”²⁸⁴ No formal Trade and Investment Framework Agreement talks between the United States and Taiwan have been conducted since 2007, but throughout summer 2012 President Ma expressed strong interest in resuming such talks once the beef issue was resolved.²⁸⁵ In late September, Atul Keshap, coordinator for economic policy in the State Department’s Bureau of East Asian and Pacific Affairs, arrived in Taipei for a three-day visit to discuss economic and regional issues with senior Taiwan government officials.²⁸⁶

President Ma has also indicated that Taiwan will seek increased participation in regional economic blocs and has expressed a clear desire for Taiwan to become involved in the regional economic Trans-Pacific Partnership within eight years.* President Ma has described recent progress on trade issues as directly related to these goals: For example, President Ma described Mr. Keshap’s visit as “exciting news and [proof] that the ROC government is on the right track in promoting economic and trade development . . . We thank the U.S. for taking concrete steps in bolstering bilateral economic ties and hope this will extend to Taiwan’s participation in regional economic integration pacts such as the Trans-Pacific Partnership.”²⁸⁷

Developments in Cross-Strait Military and Security Issues

The Cross-Strait Military Balance

The cross-Strait military balance has continued to shift more firmly in favor of the PRC, with recent developments being more qualitative than quantitative. The Department of Defense assesses that the number of PLA Air Force combat aircraft within unrefueled operational range of Taiwan remained unchanged at approximately 490 airframes from 2010 through 2011,²⁸⁸ and the estimated 1,000–1,200 PLA Second Artillery short-range ballistic missiles based in southeastern coastal areas within range of Taiwan also held steady.²⁸⁹ However, Department of Defense reporting notes that the PLA is fielding more modern and capable platforms: “Newer and more advanced aircraft make up a growing percentage of the inventory” of PLAAF [PLA Air Force] platforms based opposite Taiwan,²⁹⁰ and the Second Artillery has “fielded

*The Trans-Pacific Partnership is a proposed regional free trade agreement currently under negotiation between the governments of the United States, Australia, Brunei, Canada, Chile, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam. See Ian Fergusson et al., “The Trans-Pacific Partnership Negotiations and Issues for Congress” (Washington, DC: Congressional Research Service, September 5, 2012). Statements from President Ma regarding Taiwan and the Trans-Pacific Partnership may be found in Republic of China (Taiwan) President Ma Ying-jeou, inaugural address given May 20, 2012. Full text available at *Focus Taiwan News Channel* (Taiwan Central News Agency), “Full Text of President Ma Ying-Jeou’s Inaugural Address,” May 20, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205200002&Type=aIPL.

new SRBM [short-range ballistic missile] systems, added additional missile brigades in southeastern China, and upgraded the lethality of its existing SRBM [short-range ballistic missile] force by introducing variants with improved ranges, accuracies, and payloads.”²⁹¹

Of particular concern to both Taiwan and U.S. military defense planners—as well as many of China’s neighbors—is the steadily increasing capacity of Chinese military forces to employ extended-range strike warfare and other antiaccess/area denial capabilities.* This growth in capabilities could seriously impact the future ability of the U.S. military to surge forces into the Western Pacific in the event of a major regional contingency operation. The Department of Defense’s 2012 report on Chinese military capabilities notes that:

*China’s long-term, comprehensive military modernization is improving the PLA’s capacity to conduct high-intensity, regional military operations, including counter-intervention operations. For China, ‘counter-intervention’ refers to a set of operationally-defined tasks designed to prevent foreign (e.g., U.S.) military forces from intervening in a conflict and preventing China from accomplishing its military objectives. China employs anti-access/area-denial (A2/AD) weapons in support of this broader counter-intervention strategy—a strategy not bound by a set geographic area or domain.*²⁹²

As the U.S. military has developed an “Air-Sea Battle” operational doctrine to cope with antiaccess/area denial challenges,²⁹³ senior U.S. military commanders have taken great pains to assert that the concept is not directed at China.²⁹⁴ However, China’s antiaccess/area denial capabilities, and the continuing qualitative improvements in PLA air and naval platforms,²⁹⁵ hold clear implications for the United States in the event of a crisis in the Taiwan Strait. (For further discussion of PLA modernization and its impacts on regional security in the Asia-Pacific region, see chap. 2, sec. 1, of this Report, “Military and Security Year in Review.”)

Defense Trends and Reforms in Taiwan

In its 2009 *Quadrennial Defense Review of the Republic of China*, the Ma Administration announced an ambitious series of defense initiatives including a goal of setting defense spending at 3 percent of Taiwan’s gross domestic product (GDP). However, the 2008 global financial crisis caused a dramatic drop in government tax revenue, and, as stated by a Taiwan academic involved in the production of the quadrennial defense review, “[w]ith the recent cross-strait rapprochement, an unspoken public sentiment expecting a ‘peace dividend’ has placed the [Ministry of National Defense, or

*The Department of Defense defines the terms “antiaccess” and “area denial” as follows: “[A]ntiaccess refers to those actions and capabilities, usually long-range, designed to prevent an opposing force from entering an operational area. *Area denial* refers to those actions and capabilities, usually of shorter range, designed not to keep an opposing force out, but to limit its freedom of action within the operational area.” See Chairman of the U.S. Joint Chiefs of Staff, *Joint Operational Access Concept* (Washington, DC: Department of Defense, January 17, 2012), p. 1.

MND] in a politically difficult position when it comes to asking for its needed share of national revenue.”²⁹⁶ Taiwan’s defense budget dropped from NT\$ 325.6 billion (2.51 percent of GDP) in fiscal year 2009 to NT\$ 297.2 billion (2.15 percent of GDP) in fiscal year 2011.²⁹⁷

The defense budget for 2012 rose slightly to 2.2 percent of the island’s GDP but still far below the benchmark of 3 percent of GDP.²⁹⁸ Aside from the economic downturn, Taiwan’s defense budget is facing strains due to the transition to an all-volunteer military force, which requires higher spending on salaries and other personnel costs. Some Taiwan lawmakers have blamed rising personnel costs for shortfalls in logistics and maintenance, thereby impacting overall military readiness.²⁹⁹

Taiwan has continued to conduct high-profile military demonstrations and exercises to demonstrate to China and the United States that it is capable of self-defense. Prominent exercises in 2012 included:

- *Han Kuang Military Exercises*: In April 2012, Taiwan conducted its annual five-day “Han Kuang” (“Chinese Glory”) military war games, with an emphasis on deflecting attacks by unmanned aerial drones—believed by some analysts to be a key element of potential PLA air operations against Taiwan.³⁰⁰ This year’s exercises practiced defending against Chinese troop landings and air attacks and also stimulated a Chinese attack on the north of the island.³⁰¹

Political controversy surrounded the Ma Administration’s handling of Han Kuang 2012: President Ma was on a 12-day trip visiting Taiwan’s diplomatic partners in Africa, the first time in 28 years that a Taiwan president was not present for the war games.³⁰² However, Ma conducted a short tour of a military site in Taoyuan after his trip, and a representative stated he was continuously briefed on the exercises.³⁰³

- *Lien Yung (“Joint Endeavor”) Exercises*: These June 2012 exercises included a live-fire drill and enacted a scenario in which Chinese forces landed on the island’s western beaches and occupied the surrounding mountain areas.³⁰⁴
- *Live-Fire Missile Exercises*: On July 9, army and navy personnel conducted live-fire missile drills in Pingtung County, in southwestern Taiwan. According to Taiwan military spokespersons, 24 out of 26 missiles struck their targets. This was an improvement over live-fire exercises held in January, when six out of 19 missiles missed their targets or failed to explode, embarrassing ROC military officials.³⁰⁵

Taiwan and Disputed Territory in the East and South China Seas

Throughout 2012, world attention was drawn to growing tensions in the South China Sea between China and its maritime neighbors, particularly Vietnam and the Philippines. Taiwan also plays a role in the disputes over territory in the South China Sea, albeit with a much lower profile. Taiwan's government maintains South China Sea territorial claims to include the Spratlys, Paracels, and Pratas Islands groups.³⁰⁶ However, Taiwan actually controls only a handful of islands in the South China Sea, and it has assumed a much less confrontational stance than the PRC in asserting its claims. (For a fuller discussion of current territorial disputes in the South China Sea, see chap. 3, sec. 1 of this Report, "China and the South China Sea.")

One of the islands that Taiwan controls is Taiping Island (also called Itu Aba)—the largest in the Spratlys group and the only one with its own supply of fresh water. Taiwan formerly posted marines on the island, but withdrew them in 2000 in a symbolic step to lower tensions in the region; since then a force of approximately 120 coast guard personnel has been deployed on the island. Amid increased tensions in the South China Sea—and in particular, allegations that Vietnamese boats are more active in entering the waters around Taiping³⁰⁷—Taiwan Coast Guard officials recently discussed deploying additional patrol boats to the island and constructing a larger harbor on Taiping.³⁰⁸ Press reports indicate that Taiwan officials are considering plans to return ROC Marine Corps personnel to Taiping³⁰⁹ or to have marines conduct combat training for the coast guardsmen.³¹⁰

Additionally, in early May Taiwan's Ministry of Defense announced the creation of a rapid response military unit for contingency operations in the area, capable of deploying to Taiping within four hours aboard C-130 transport aircraft.³¹¹ This plan may be connected to reported plans to extend the length of the existing runway on the island.³¹² And, in the most concrete sign yet of planned infrastructure upgrades on the island, in February Taiwan announced it would construct a tactical air navigation facility on the island to facilitate landings in bad weather.³¹³

Taiwan also plays a role in the territorial dispute over the Senkaku/Diaoyu Islands, as it maintains its own claim to sovereignty over the island group. This position is tied directly to historical claims of Chinese administration over the islands as well as to Taiwan's own asserted political identity as the legitimate successor government of the Republic of China: the Republic of China asserted ownership of both the Senkaku/Diaoyu Islands, as well as most of the island territories of the South China Sea, in the years immediately following World War II.³¹⁴

Taiwan and Disputed Territory in the East and South China Seas—Continued

On September 7, 2012, President Ma Ying-jeou attempted to bolster Taiwan's claim to sovereignty over the Senkaku/Diaoyu Islands by making a brief trip to Pingjia Islet, located approximately 140 kilometers (km) to the west of the disputed island chain.³¹⁵ Additionally, other efforts have been made outside of Taiwan government channels: For example, in late September a flotilla of 78 fishing vessels from Taiwan were dispatched to the vicinity of the Senkaku/Diaoyu Islands area to assert Taiwan's claims in the area.³¹⁶ There was no formal political sponsorship of the event, which was nominally a private effort organized by a local fishermen's association; however, ten Taiwan Coast Guard vessels accompanied the flotilla as escorts, with expressed intent for the Taiwan Coast Guard personnel to board the fishing vessels in the event they were stopped by Japanese patrol vessels.³¹⁷ Japanese vessels did intercept the flotilla on September 25, resulting in a duel of water cannons between coast guardsmen of both two sides.³¹⁸

In spite of such incidents, Taiwan's government has recently set forth measures to seek resolution of territorial claims disputed between the PRC, Taiwan, and Japan. In early August, the Ma Administration proposed an "East China Sea Peace Initiative," with five points for conducting peaceful negotiations on conflicting sovereignty claims and natural resource exploitation in the area.* As of the writing of this Report, no negotiations had been conducted within this framework, and the Senkaku/Diaoyu Islands remain a point of serious contention between the three governments. (For additional discussion of disputes regarding the sovereignty of this island group, see chap. 2, sec. 1, of this Report, "Military and Security Year in Review," pages 15–16.)

Some voices from PRC officialdom and the state media have called for mutual efforts by the PRC and Taiwan to cooperate on disputed maritime territory, on the grounds that "[p]eople on both sides of the Taiwan Strait share responsibility for safeguarding the country's sovereignty over the South China Sea islands and their adjacent waters."³¹⁹ Taiwan's government has responded coolly to such statements, as when Tsai De-Sheng, director-general of the National Security Bureau, told Taiwan legislators in May that such a possibility was "impossible at the moment," and that "[w]e will not cooperate with China on such issues at present."³²⁰

*The five points call "on all parties concerned to: (1) Refrain from taking any antagonistic actions. (2) Shelve controversies and not abandon dialogue. (3) Observe international law and resolve disputes through peaceful means. (4) Seek consensus on a code of conduct in the East China Sea. (5) Establish a mechanism for cooperation on exploring and developing resources in the East China Sea." See Republic of China (Taiwan) Ministry of Foreign Affairs, "The Government of the Republic of China (Taiwan) Proposes the East China Sea Peace Initiative," press release dated August 5, 2012. <http://www.mofa.gov.tw/EnOfficial/ArticleDetail/DetailDefault/4a760eff-0c4b-4d8d-8725-cbc1a330c86b?arfid=0b12b1ae-64ff-4e4b-b6bd-e20fb2c7a13&opno=49be2475-017b-4647-8ac1-9a0ec20d892c>.

New Weapons Deployments and Acquisition Efforts

Despite budget pressures, Taiwan's military has attempted over the past year to move forward with the acquisition and/or deployment of new or upgraded weapons platforms. Some of the more prominent of these initiatives are:

- *F-CK-1 Fighter Upgrade*: Due to the delays in upgrading its F-16 A/B fighters (or the purchase of F-16 C/Ds), Taiwan has debated indigenous upgrades to its aging air force.³²¹ A plan to upgrade 56 F-CK-1 Indigenous Defense Fighters should be carried out between 2014 and 2017, at a cost of around \$524.52 million.³²² In June 2011, the military received 6 Indigenous Defense Fighters that were successfully upgraded by Aerospace Industrial Development Corp.³²³ It is unknown whether the July deal to upgrade Taiwan's F-16A/Bs (see the following pages) will affect these plans.
- *Deployment of Missiles*: In May 2012, Taiwan deployed for the first time land attack cruise missiles capable of striking key military bases on the southeast coast of the Chinese mainland.³²⁴ Taiwan has about 100 of the indigenously produced *Hsiung-Feng* ("Brave Wind") 2E missiles in place, each possessing an estimated maximum range of 300 miles.³²⁵ The project costs around \$1.02 billion.³²⁶
- *Hsin-Hai Missile Corvettes*: Taiwan has developed a *Hsin-Hai* "Swift Sea-Carrier Killer" program involving 12,500-ton stealth corvettes, each equipped with eight antiship cruise missiles.³²⁷ These corvettes are projected to be delivered in 2014 and are expected to remain in service for 25 years.³²⁸ The principal role of the new corvettes will be to target any hostile carrier battle group, or other large surface combatants, deployed by the Chinese navy in nearby waters. The project has a \$853.4 million budget.³²⁹ The "carrier killer" program is seen as an indicator that the Republic of China's Navy may be moving to an asymmetrical warfare strategy toward the more powerful PLA Navy, relying less on heavy and expensive platforms and more on speed, stealth, and evasiveness.³³⁰
- *Indigenous Submarine Development*: In March, Taiwan's Deputy Defense Minister Chao Shih-Chang announced that Taiwan planned to build its own submarines.³³¹ Currently, Taiwan is only able to deploy two of four obsolete Dutch-made submarines, and has been unable to obtain either new submarines from European suppliers or the eight conventional submarines initially offered to Taiwan in a 2001 U.S. arms package.³³² In 2003, the government set up an interministerial task force to promote the domestic production of submarines.³³³ A March 2012 report by Taiwan's Ministry of National Defense stated that Taiwan shipbuilders would have to overcome

weaknesses in design, production of key equipment, and construction techniques before Taiwan could produce its own submarines.³³⁴

- *PAC-3 Missiles:* Lockheed Martin announced in February 2012 that Taiwan had placed a \$921 million order for Patriot Advanced Capability-3 surface-to-air missiles.³³⁵ This contract included the production of “hit-to-kill” missiles, launcher modification kits, spares and other equipment, program management, and services.³³⁶ The company did not disclose how many missiles would be produced, though it stated they would be deliverable in 17 months.³³⁷ This contract is the third order of Patriot Advanced Capability-3 missiles from Taiwan, which were included in the October 2008 and January 2010 notifications to the U.S. Congress.³³⁸ These notifications included 330 missiles in the first package and 114 in the second group, and the combined orders totaled \$5.9 billion.³³⁹ Raytheon Corp. has also received orders for six units from Taiwan. As part of the 2008 notification, the delivery of the first four units is scheduled for 2014 or 2015. In January 2012, Raytheon announced that it had received a \$685.7 million contract for the fifth and sixth units, which were part of the 2010 package.³⁴⁰ In addition, Taiwan is also spending \$939 million on upgrading three 1997 Patriot Advanced Capability firing units to Patriot Advanced Capability-3 configuration.³⁴¹

PRC Intelligence Activities Directed at Taiwan

Over the past two years, Taiwan has been rocked by revelations of highly damaging cases of espionage conducted by Taiwan officials on behalf of the PRC. As discussed in the Commission’s 2011 Annual Report, the most prominent case was Major General Lo Hsien-Che, former head of the office of communications and electronic information in Republic of China Army headquarters.³⁴² Reportedly recruited by PRC intelligence while stationed in Thailand, Major General Lo is believed to have passed to the PRC highly sensitive information regarding Taiwan military communications and command and control systems.³⁴³

Following the arrest and conviction of Major General Lo Hsien-Che, other alleged cases of espionage have come to light, indicating continuing and concerted efforts by Chinese intelligence services to penetrate military and national security agencies in Taiwan.* These cases include:

- In June 2011, businessman Lai Kun-Chieh was arrested by Taiwan authorities on charges of acting as an asset for an unidentified PRC intelligence agency. Mr. Lai was reportedly working in Beijing for Lenovo when he was recruited in 2010

*The cases profiled here are provided for informational purposes. The Commission does not take any position regarding unadjudicated cases of individuals charged with criminal activity.

**PRC Intelligence Activities Directed at Taiwan—
*Continued***

by an individual named “Li Xu,” nominally a senior official in the Beijing municipal Office of Taiwan Affairs. Mr. Lai was tasked to collect military-related information from Taiwan, but a Republic of China military officer approached by Mr. Lai reported the incident to authorities, leading to Mr. Lai’s arrest.³⁴⁴

- Research made public in autumn 2011 revealed that an extensive program of exchanges, trips to mainland China, conferences, and recreational activities directed at senior retired Republic of China military officers was operated by front organizations of the CCP United Front Work Department. Among its other roles, “the UFWD [United Front Work Department] [has] also engaged in clandestine foreign intelligence work, propaganda and influence operations against Taiwan, including efforts to seed its personnel into Taiwanese society at the beginning of the cross-Strait intelligence contest” from 1949 onwards.³⁴⁵
- In February 2012, Taiwan officials arrested an air force captain surnamed Chiang, who reportedly worked at a radar surveillance center in northern Taiwan monitoring airspace in the vicinity of the Strait.³⁴⁶ According to Taiwan press reports, Mr. Chiang was recruited by his uncle, Chiang Fu-Ming, a businessman working in China, who in turn had been recruited by Chou Yi-Ru, a Taiwan businesswoman recruited by PRC intelligence several years earlier. In July Mr. Chou Yi-Ru was sentenced by Taiwan’s High Court to four years in prison, while Mr. Chiang Fu-Ming received a sentence of three years.³⁴⁷ As of the publication of this Report, the case of the air force officer remains unadjudicated.
- In April 2012, two retired senior national security officials were arrested on charges of violating the Classified National Security Information Protection Act and gathering intelligence for China: Tsai Kuo-pin, a retired intelligence agent from the National Security Bureau, and Wang Wei-ya, a retired colonel with the Ministry of Defense. Mr. Tsai was accused of passing inside information about the Kuomintang Party, 2008 elections, cross-Strait policies, and the Taiwanese independence movement. Mr. Wang was accused of passing information regarding Falun Gong activities in Taiwan and internal election analysis performed by the Kuomintang. Both men were accused of passing copies of a memoir written by a former Taiwan intelligence agent, which had been banned because of the sensitive nature of its contents.³⁴⁸

**PRC Intelligence Activities Directed at Taiwan—
Continued**

- In early July 2012, media reports indicated that Taiwan military prosecutors were investigating the disappearance of two maps containing classified information related to Republic of China Navy deployments.³⁴⁹ However, it is unconfirmed as to whether any espionage may be involved in the disappearance of the maps.

**Developments and Controversies Regarding Upgrades to
Taiwan's F-16 A/B Fighters**

On September 21, 2011, the Obama Administration notified Congress of intended arms sales related to Taiwan's aging fleet of 145 F-16 A/Bs fighters: the first, to continue to train Taiwan's F-16 pilots at Luke Air Force Base, Arizona; and the second, to sell spare parts for F-16 A/Bs, F-5 E/Fs, C-130 Hercules transport aircraft, and Indigenous Defense Fighters.³⁵⁰ The upgrade includes the installation of LINK 16 (a military tactical data exchange network), the Active Electronically Scanned Array radar, and AIM-9X Sidewinder air-to-air missiles.³⁵¹ On July 13, 2012, U.S. and Taiwan officials signed a letter of offer and acceptance for the F-16A/B upgrades, which is expected to take place between 2012 and 2021, at a cost of \$3.8 billion.³⁵²

Controversy continued throughout 2012 regarding the possibility of U.S. sales of the more advanced C/D variant of the F-16 aircraft, as has been requested by Taiwan's government.³⁵³ On May 26, 2011, 45 U.S. senators signed a letter calling on President Obama to notify Congress of the sale of the 66 requested F-16C/Ds.³⁵⁴ On August 1, 2011, 181 Members of the U.S. House of Representatives also sent a letter to President Obama, similarly urging the administration to approve the proposed sale.³⁵⁵

On April 25, 2012, Senator John Cornyn (TX) lifted a two-month hold on the nomination of Mark Lippert to become the Pentagon's assistant secretary of defense for Asian and Pacific Security Affairs after the White House pledged to give "serious consideration" to selling new F-16 C/D fighter jets to Taiwan.³⁵⁶ In response to a written request by Senator Cornyn, the White House responded that it would consider a proposal to sell new fighter jets to Taiwan in order to address the growing gap in airpower across the Taiwan Strait. The letter, signed by White House Director of Legislative Affairs Robert L. Nabors II, stated that:

We are mindful of and share your concerns about Taiwan's growing shortfall in fighter aircraft as the F-5s are retired from service . . . notwithstanding the upgrade of the F-16A/Bs, we recognize that China has 2,300 operational combat aircraft, while our democratic partner Taiwan has only 490. We are committed to assisting Taiwan in addressing the disparity in numbers of aircraft through our work with Taiwan's defense ministry on its development of a comprehensive defense strategy vis-à-vis China. This work will be a high priority for a new Assistant Secretary of Defense

*in his dialogue on force transformation with his Taiwan counterparts. The Assistant Secretary, in consultation with the inter-agency and the Congress, will play a lead role as the Administration decides on a near-term course of action on how to address Taiwan's fighter gap, including through the sale to Taiwan of an undetermined number of new U.S.-made fighter aircraft.*³⁵⁷

There is some concern in the United States and Taiwan that selling F-16 C/Ds to Taiwan would set back progress on cross-Strait relations. There are also concerns as to whether or not Taiwan could afford to fund both the upgrade of the F-16 A/Bs as well as a potential purchase of the new F-16 C/Ds.³⁵⁸

During the late spring and summer of 2012 there were conflicting signals as to whether or not Taiwan's government was still interested in pursuing the F-16C/D sales. In May, Taiwan's Ministry of Defense issued an expression of thanks for Congressional support, but also stated that the ministry was reassessing the need for more advanced fighters.³⁵⁹ In August, various media reports indicated that the ROC Ministry of Defense was giving serious consideration to dropping the F-16C/D purchase request in favor of pressing for the purchase of more advanced F-35 fighter aircraft; and/or to reducing from 66 to 24 the number of existing F-16A/B fighters that would receive upgrades to their radar systems and other avionics.³⁶⁰ However, these reports are unconfirmed. As of early October the upgrade program for Taiwan's F-16A/B fighters was continuing forward, with Lockheed Martin receiving a \$1.85 billion USD contract to conduct the upgrade project.³⁶¹

Implications for the United States

The warming of relations between Taiwan and the PRC in recent years has significantly reduced tensions across the Strait and has led to a flourishing of economic, educational, and cultural exchanges between the two sides. The expansion of these linkages helps to reduce the chances of conflict in the Taiwan Strait, and the United States should continue to support engagement between Taiwan and China.

However, the underlying issues that divide the two sides remain. The cross-Strait military balance continues to shift decisively in favor of China, thereby posing a serious threat to Taiwan's security. Additionally, the deepening of cross-Strait economic ties has not been matched by progress in security ties, and there are currently no significant official security dialogues between the PRC and Taiwan. The PRC's military build-up continues to take place amid constrained channels for crisis communication between the two governments, increasing regional tensions over conflicting territorial claims, and an ever-present risk of accident or miscalculation involving the armed forces of the two sides.

Furthermore, although it has tabled the issue for the time being, Beijing continues to insist on movement towards political reunification within the construct of the People's Republic of China—a step that enjoys little support among Taiwan's population and to which Taiwan's elected leaders have been resistant.

The *modus vivendi* worked out between the two governments has successfully set aside some of the most contentious issues for the

time being, but the divisions that remain are rooted in issues of identity and sovereignty that will not be easily resolved. As a supporter of the expansion of democratic freedoms around the world, it is in the interest of the United States to see Taiwan's status resolved peacefully and without the coercion of its population.

Conclusions

- The gap in cross-Strait military capabilities continues to widen despite a series of ROC defense initiatives, the implementations of which have been constrained by budgetary concerns. Nonetheless, in 2012, Taiwan accepted a \$3.7 billion U.S. proposal to upgrade its fleet of F-16 A/Bs and held a number of high-prolife military exercises meant to demonstrate its capacity for self-defense.
- While cross-Strait dialogue continues to deepen on issues related to trade, cultural, and educational exchanges, recent years have seen little progress in cross-Strait security dialogues. Furthermore, as a consequence of domestic politics on both sides, the sensitive issues surrounding Taiwan's political status have yet to be discussed.
- In 2012, the U.S. government approved a visa waiver program for Taiwan residents traveling to the United States.

SECTION 3: CHINA AND HONG KONG

Introduction

The year 2012 marked the 15th anniversary of China regaining sovereignty over Hong Kong. While the “one country, two systems” formulation continues to be used to describe Hong Kong’s relationship with the mainland, developments over the past year suggest that Beijing’s influence in the city’s affairs is growing. Beijing intervened in the 2012 chief executive election on behalf of Leung Chun-ying, the eventual winner. Partly as a consequence of such meddling, popular discontent is increasing, and polls now show distrust of the central government among Hong Kong residents at record highs. Further, although the city still enjoys freedoms of expression prohibited on the mainland, those attempting to speak freely faced increasing challenges from city authorities.

Hong Kong’s Chief Executive Elections

Beijing’s influence in Hong Kong’s political affairs continued to increase in 2012 as a new chief executive assumed power in July. The two main candidates for the position were Henry Tang Ying-yan, a former Finance secretary and businessman, and Leung Chun-ying, a former senior member of the city’s cabinet and prosperous land surveyor. Messrs. Tang and Leung were both proestablishment candidates seen as acceptable to the central government. A third candidate, Albert Ho Chun-yan, then Democratic Party chairman, represented Hong Kong’s prodemocracy movement after defeating legislator Frederick Fung Kin-kee of the Association for Democracy and People’s Livelihood in the pan-democratic primary.³⁶² Though Hong Kong’s Basic Law guarantees the city autonomy in managing its internal affairs, Beijing was widely seen as working aggressively to shape the outcome of the election.³⁶³ Some Hong Kong commentators pointed to the depth of Beijing’s interference as evidence that the “one country, two systems” agreement has been undermined.³⁶⁴ Hong Kong residents expressed their displeasure with Beijing by staging protests, demanding universal suffrage and new elections with new candidates.³⁶⁵

In the early months of the campaign Beijing appeared to favor Mr. Tang,³⁶⁶ ostensibly for his loyalty to Beijing and his business credentials.³⁶⁷ His popularity plummeted, however, during several months of scandals and missteps culminating in revelations of an extramarital affair and an admission that he built additions to his wife’s villa without obtaining the proper permits or paying the corresponding real estate taxes.³⁶⁸ According to University of Hong Kong polling data, following Mr. Tang’s scandals Mr. Leung’s public popularity rose sharply.³⁶⁹ In the weeks before the election, Beijing switched its support and began actively advocating on behalf

of the increasingly popular Mr. Leung.³⁷⁰ Some analysts believe support was shifted not only to avoid aggravating an already wary public but also to avoid backing a losing candidate.³⁷¹ Prior to the election, Beijing reportedly encouraged the city's newspapers to give positive and prominent coverage to Mr. Leung.³⁷² The mainland leadership also lobbied Hong Kong's Election Committee,* organizing meetings for committee members across the border with Liu Yandong, a member of the Chinese Communist Party Politburo.³⁷³

While Hong Kong's previous chief executives, Messrs. Tung Chee-hwa and Donald Tsang, ran relatively quiet campaigns, this year's election was boisterous. Scandals and incendiary accusations between the 2012 candidates divided the pro-Beijing camp, leading to rumors that some Election Committee members planned to cast a blank ballot on election day, likely leaving Hong Kong with no winner and forcing a runoff.³⁷⁴ Analysts noted that Beijing, worried about deepening divisions within the pro-Beijing camp, was eager to avoid such an outcome.³⁷⁵ During the campaign's final weeks, despite Beijing's clear support for Mr. Leung, some sections of the Election Committee nevertheless pledged to continue to support Mr. Tang. In one high-profile case, Hong Kong's richest man, Li Ka-shing, publicly endorsed Mr. Tang³⁷⁶ and, days before the election, Hong Kong's pro-business Liberal Party pledged that its members would not switch their support.³⁷⁷

Prodemocratic factions failed to unify behind Mr. Ho, who finished a distant third, collecting a total of only 76 votes and failing to win even a majority of the 205 prodemocracy members of the Election Committee.† James Sung Lap-kung, an analyst at City University of Hong Kong, argued that in addition to being unsatisfied with Mr. Ho's campaign, many prodemocracy members also "chose to cast blank ballot papers, or did not show up—expressing their strong dissatisfaction with the election, as citizens have raised doubts over Leung and Tang's integrity."³⁷⁸

*The Election Committee is an electoral college of just 1,200 individuals who vote in the chief executive elections. Members represent various business and social constituencies within Hong Kong. In the 2012 election, only 1,193 members of the committee were eligible to vote. Christine Loh, "Hong Kong's Messy Election Campaign," *New York Times*, March 23, 2012. <http://www.nytimes.com/2012/03/24/opinion/hong-kongs-messy-election-campaign.html>.

† Given Hong Kong's chief executive electoral system, Mr. Ho and his prodemocracy supporters on the Election Committee were aiming only to prevent either of his opponents from winning a majority of votes on the election's first ballot. They planned then to walk out of a second ballot in protest. The election, however, was decided by the first vote. Eddie Luk, "Top Democrat Abandoned in Hour of Need," *Standard* (Hong Kong), March 26, 2012. http://www.thestandard.com.hk/news_detail.asp?pp_cat=30&art_id=121020&sid=35856356&con_type=1.

The 2012 Legislative Council Elections

In 2012, Hong Kong's Legislative Council held quadrennial elections. These were the first elections since electoral reforms introduced in 2010 expanded both the number of seats on the council from 60 to 70 and the amount of those directly elected from 30 to 40. The remaining 30 seats continue to be selected by business and interests groups that generally favor pro-Beijing candidates. (For a more detailed discussion of the relevant reforms, see pp. 292–294 of the Commission's *2011 Annual Report to Congress*.) Seats captured by prodemocracy groups increased by four to 27 seats, enough to continue to block fundamental changes to the territory's laws.³⁷⁹ Pro-Beijing candidates meanwhile captured a total of 43 spots, up six from the previous election, yielding an essentially unchanged proportional balance between the two camps.³⁸⁰ Pro-Beijing parties enjoyed a financial advantage over their rivals, which enabled them to build extensive logistical networks to mobilize voters and exploit Hong Kong's electoral peculiarities.³⁸¹

Hong Kong—Mainland Relations

Beijing's ties with Hong Kong have grown increasingly turbulent. In December 2011, a University of Hong Kong poll found that only 17 percent of the territory's seven million residents identify themselves as "Chinese citizens," a "new low since 2000," indicating an increasing division regarding how the territory defines itself vis-à-vis the mainland.³⁸² In response, Chinese officials questioned the merits of the survey and the intentions of the surveyor, Robert Chung, the director of the university's Public Opinion Programme. Hao Tiechuan, a senior official at the Liaison Office of the Central People's Government (Liaison Office),* called the survey "unscientific" and, because Hong Kong is now under Beijing's control, he argued it was "illogical" to ask residents if they consider themselves Chinese.³⁸³ The *China Daily* insisted the poll "was a politically-motivated false proposition," not to be taken seriously by media outlets unless they were "intent on messing up Hong Kong."³⁸⁴ † A particularly vitriolic response came from a Beijing University professor, Kong Qindong, who, on Chinese television, called Hong Kong residents "bastards," "thieves," and "dogs of British Imperialists."³⁸⁵ These statements were widely circulated and led to protests outside the Liaison Office.³⁸⁶

Among the other issues aggravating relations with the mainland, one of the most prominent has been the growing trend of Chinese women travelling to Hong Kong to give birth. Babies born in the territory enjoy the privileges of Hong Kong citizenship: access to the city's superior health and education systems, and greater freedom to travel and settle inside and outside China.³⁸⁷ In 2011,

* The Liaison Office of the Central People's Government in Hong Kong acts as the central government's official representation in, and link with, the city.

† The pro-Beijing *Wen Wei Po* asserted the survey "has evil political aims," and sought to "divide Hong Kong people from their compatriots." Andrew Higgins, "China Denounces 'Hong Konger' Trend," *Washington Post*, January 11, 2012. http://www.washingtonpost.com/world/asia-pacific/china-denounces-hong-konger-trend/2012/01/10/gIQAmlwNqP_story_1.html.

44,000 babies were born in the city to mainland women (up from 7,810 babies in 2001),³⁸⁸ straining its healthcare resources and angering the public.³⁸⁹ So-called “birth-tourism” quickly became a hot-button issue, with some going so far as to depict mainland Chinese as “locusts.”³⁹⁰ In April 2012, prior to his inauguration, Chief Executive Leung announced that hospitals would begin to limit maternity services to pregnant women from the mainland starting in 2013.³⁹¹ Under the new “zero quota” policy, only mainland women with husbands from Hong Kong will be eligible to receive obstetrics services in the city.³⁹²

Another source of popular discontent is the island’s soaring real estate costs, often attributed to speculative cash from the mainland. While Centaline Property Agency reports that “property prices have advanced more than 80 percent since the start of 2009,”³⁹³ according to the Nomura Research Institute, “[m]ainland Chinese snapped up around a third of residential flats last year.”³⁹⁴ Hong Kong is now “the world’s most expensive place to own a home” and has the largest wealth gap in Asia.³⁹⁵

Distrust of Beijing also appears to have increased. Another survey conducted by the University of Hong Kong and released in June found that Hong Kong residents’ distrust of the central government reached a “record high since May 1997 probably due to incidents [involving] Bo Xilai, Chen Guangcheng and Li Wangyang.”^{*} As for the confidence indicators, compared to three months ago, people’s confidence in the future of Hong Kong has dropped significantly, [and] that in ‘one country, two systems’ has gone down slightly.”³⁹⁶

Growing discontent with the mainland is a source of concern for Beijing.³⁹⁷ Established in Hong Kong’s Basic Law is the “ultimate aim” of electing the chief executive and Legislative Council “by universal suffrage.”³⁹⁸ But implementation of universal suffrage has already been twice delayed, and its fate is uncertain.[†] Concerns about discontent are, nonetheless, apparent. Chinese Premier Wen Jiabao was briefed on the issue of mainland women giving birth in Hong Kong and, according to Donald Tsang, the city’s previous chief executive, “acknowledged the high concern of Hong Kong people over the issue.”³⁹⁹ Moreover, since taking office, Chief Executive Leung has introduced a number of welfare measures⁴⁰⁰ and pledged repeatedly to “uphold the core values of Hong Kong and protect the freedom and rights of the people.”⁴⁰¹

China and Hong Kong’s Economy

Volatility in global financial markets and slowing Chinese economic growth have weakened Hong Kong’s economy. In 2012, China moved to further enhance Hong Kong’s status as the foremost offshore renminbi (RMB) market,⁴⁰² relax requirements on companies to move RMB into the mainland,⁴⁰³ and leverage the city’s international links on behalf of Chinese enterprises.⁴⁰⁴ (For

^{*} Li Wangyang was a Chinese dissident labor rights activist who was imprisoned for two decades after the 1989 Tiananmen Square protests. His death, officially labeled suicide, was widely believed to be foul play.

[†] First postponed in 2004 and then in 2007, now election by universal suffrage for the chief executive and legislature is not to be implemented until, at the earliest, 2017 and 2020, respectively.

more information on the overseas expansion of Chinese corporations, see chap. 1, sec. 2, of the Commission's 2011 Report.)

In June, the Chinese Ministry of Finance announced a 23 billion RMB (\$3.6 billion) offering of sovereign bonds in Hong Kong—the largest to date—increasing the accessibility of RMB-denominated financial products and burnishing the city's role as the leading RMB market outside the mainland.⁴⁰⁵ Regulations governing the Renminbi Qualified Foreign Institutional Investor program, through which Hong Kong subsidiaries of Chinese companies are allowed to use RMB to directly invest in mainland securities, were also relaxed to increase participation and allow investors greater flexibility in asset allocation.⁴⁰⁶ An easing of capital controls in this way is a positive development for a territory with 550 billion RMB (\$87 billion) now sitting in deposit accounts and unable to flow freely across the border.⁴⁰⁷ Collectively, these moves at once help to improve the city's ailing economy and accelerate the RMB's further internationalization.

Officials in Beijing have also expressed interest in using Hong Kong's international connections to help Chinese entities expand and invest abroad. In June, Zhang Xiaoqiang, deputy director of the National Development and Reform Commission, said, "China is speeding up its pace of 'going out.' Hong Kong will have plenty of opportunities in this area."⁴⁰⁸ * Such a strategy, however, is likely to encounter skepticism. When Hong Kong Exchanges and Clearing announced its intention to acquire the London Metal Exchange in June, it was compelled to go "to great lengths to convince them [the exchange's members] that it was not acting as a stooge for Beijing."⁴⁰⁹

Hong Kong's status as a customs territory distinct from the mainland continues to raise concerns in the United States regarding the illicit transfer of technology to China. An April 2012 U.S. Government Accountability Office report revealed that integrated electronic circuits "have been diverted to China (a destination requiring a license for these items) through Hong Kong (where no license is required)."⁴¹⁰ The report quoted an unnamed Commerce Department official stating that certain types of such circuits could "contribute to China's military advancement."⁴¹¹ While sanctions imposed by the United States following the 1989 Tiananmen Square incident proscribe selling defense articles, including space technology, to China, the 1992 U.S.-Hong Kong Policy Act states that "the United States should continue to support access by Hong Kong to sensitive technologies."⁴¹²

Freedom of the Press

According to a media survey conducted by the Hong Kong Journalists Association in April, 87 percent of journalists believe that press freedom in Hong Kong has deteriorated since former Chief Executive Donald Tsang took office in 2005.⁴¹³ Hong Kong journalists report that the government has restricted media access to events; increased the number of off-the-record briefings; and forced reporters to increasingly rely on official, government-sanctioned

* "Going out" is the term used to describe Beijing's push to have Chinese enterprises expand overseas.

press materials.⁴¹⁴ Also, according to the survey, 79 percent of journalists believe that self-censorship has increased since 2005, and 36 percent admitted that either they or their supervisors practice self-censorship.⁴¹⁵

Although the city's Police General Orders state that "officers at the scene of an incident shall facilitate the work of the news media as much as possible and accord media representatives consideration and courtesy," tensions between the media and the Hong Kong police have continued to rise.⁴¹⁶* During Chinese President Hu Jintao's June 29—July 1 visit to Hong Kong, a reporter for the *Apple Daily* newspaper was dragged off by four Hong Kong security officers and briefly detained after shouting a question to President Hu about the 1989 Tiananmen Square crackdown.⁴¹⁷ In February, a police report reviewing accusations of police misconduct surrounding Vice Premier Li Keqiang's visit to Hong Kong in August 2011 called for a centralized accreditation system for journalists, putatively to better facilitate communication between the police and the media.⁴¹⁸ In response, journalists noted that there is already a system in place for media registration at official events and worried that further measures would only make coverage of high-profile events more difficult.⁴¹⁹

In the runup to the elections, reports of censorship were widespread, and newspapers were pressured to portray Chief Executive Leung positively.⁴²⁰ In one incident, veteran *Sing Pao Daily News* (Hong Kong) commentator Johnny Lau Yui-siu claimed an article, originally written as a rejection of both candidates, was edited so as to explicitly endorse Mr. Leung.† In an open letter to the media, Mr. Lau stated that he felt "an invisible hand" directing local media to engage in self-censorship.⁴²¹ In another incident, Hao Tiechuan of the Liaison Office reportedly called the owner of the *Hong Kong Economic Journal*, Richard Li Tzar-kai, to complain about unfavorable election coverage and criticism of Beijing.⁴²² The journal dismissed the call as "interference in Hong Kong's press freedom."⁴²³

Censorship controversies at the *South China Morning Post*, one of Hong Kong's most prominent newspapers, increased following the appointment of Wang Xingwei as editor-in-chief in January 2012. Mr. Wang, a former *China Daily* reporter, concurrently serves as a member of Jilin Province's Political Consultative Conference,⁴²⁴ a Chinese Communist Party-selected and -controlled organization.‡ In June, he was accused of censoring coverage of the death of Li Wangyang, a well-known Chinese dissident. The paper

*The tensions discussed here come on the heels of a 2011 controversy surrounding Vice Premier Li Keqiang's visit to Hong Kong, during which the media was restricted from covering events.

†While, according to Mr. Lau, his article was originally entitled "Neither Tang nor Leung is Worthy of Support," it ran under the headline, "Out of the Two, [I] Would Rather Choose Leung Chun-ying." Ng Kang-chung, "Article 'Twisted by an Invisible Hand,'" *South China Morning Post* (Hong Kong), March 24, 2012. <http://www.scmp.com/article/996388/article-twisted-invisible-hand>.

‡The Chinese People's Political Consultative Conference officially exists to engage in "political consultation" with, and "democratic supervision of," the Communist Party. According to the Congressional Research Service, the system "gives select prominent citizens, many of them non-Communist, an approved platform to make suggestions about aspects of public policy, but does not oblige the Communist Party to act upon those suggestions." Susan V. Lawrence and Michael F. Martin, *Understanding China's Political System* (Washington, DC: Congressional Research Service, May 10, 2012), p. 25. <http://www.fas.org/sgp/crs/row/R41007.pdf>.

removed a full story about the suspicious death and cut it down to a news brief placed in the back pages.⁴²⁵ When confronted by a subeditor, Mr. Wang defended his decision, saying, "I don't have to explain to you anything. I made the decision and I stand by it. If you don't like it, you know what to do."⁴²⁶ Mr. Wang's reaction triggered a backlash among the *South China Morning Post's* reporters, who condemned his decision and demanded an explanation. In May, citing budget constraints, Mr. Wang informed top journalist Paul Mooney that his contract would not be renewed. Mr. Mooney had earned recognition for his articles on China's human-rights issues, winning several prestigious journalism awards while with the paper.⁴²⁷ Following the decision, several new reporters from the mainland were hired.⁴²⁸

Freedom of Assembly

In 2012, Hong Kong citizens continued to exercise their right to free assembly. Over the year there were a number of small- and large-scale demonstrations on a range of issues, eliciting both permissive and aggressive responses from the city's police. Following Chief Executive Leung's election victory, thousands of demonstrators marched toward the Liaison Office protesting what they perceived to be Beijing's meddling in the process and demanding a greater degree of enfranchisement.⁴²⁹ According to witnesses, police used pepper spray to disperse the crowds.⁴³⁰ Following the incident, the Independent Police Complaints Council, the police force's watchdog group, expressed a need to better facilitate communication between demonstrators and the police and more closely monitor the way the force handles protests.⁴³¹

Although protesting the treatment of mainland dissidents is not unusual in Hong Kong, a particularly large demonstration followed Beijing's announcement that labor rights activist Li Wangyang had committed suicide.⁴³² On June 10, incredulous and suspicious of foul play, an estimated 25,000 protesters demonstrated in front of the Liaison Office calling for a transparent investigation of the death. The police used pepper spray on the crowd.⁴³³

For this year's annual June 4 vigil commemorating the 1989 Tiananmen Square massacre, a record 180,000 people, according to event organizers, gathered in Hong Kong's Victoria Park.⁴³⁴ While the police estimated the turnout at 85,000, according to even conservative estimates participation was the largest ever and up at least 15,000 from last year.⁴³⁵ The chief executive's office did not comment on the event, and it transpired without incident.

The year's largest protest erupted following Chief Executive Leung's inauguration, which was officiated by Chinese President Hu Jintao in a tightly orchestrated ceremony on the 15th anniversary of Hong Kong's return to China. Compounding suspicions about Mr. Leung's intentions and frustrations with the way he was elected, he delivered his inauguration address in Mandarin, the standard dialect on the mainland. Mr. Leung's two predecessors both used Cantonese, Hong Kong's primary dialect, for their inauguration speeches. Following the event, in one of the largest demonstrations in Hong Kong in the last decade, nearly 400,000 demonstrators marched toward government offices expressing their ap-

prehensions about Hong Kong's political future, referring to Chief Executive Leung as a "wolf in sheep's clothing,"⁴³⁶ and calling for his resignation.⁴³⁷ Of particular note was the presence of mainland residents among the demonstrators who, unable to give free expression to their grievances at home, had come to take advantage of the city's freedoms and protest their own issues.⁴³⁸ Upon returning to the mainland, at least two such protestors were arrested and sentenced to 14 months in a labor camp for participating "in an illegal demonstration."⁴³⁹ According to Hong Kong University of Science and Technology Professor Frank Ching, "This is the first known instance of mainlanders being punished for protesting in Hong Kong."⁴⁴⁰

China's Influence in Hong Kong's Education System

Signs of Beijing's increasing influence in Hong Kong's affairs are apparent in proposed modifications to its public school curriculums. The city's public schools were going to be required to begin teaching a course in "moral and national education" by 2015, which some called a thinly veiled "brainwashing" effort evocative of the Cultural Revolution.⁴⁴¹ Faced with widespread criticism and a protest in September estimated at around 100,000 participants, in October the Hong Kong Special Administrative Region government "shelved" the Curriculum Guide.⁴⁴² Despite this, some schools said that they would still introduce the subject with an eye toward presenting more "balanced views."⁴⁴³

While the Education Bureau maintained that the course would focus on "developing critical thinking," and the head of a government-appointed taskforce that drafted the syllabus remarked, "there won't be one-sided praise [about the mainland]," the course guidelines did not include landmark political events like the Cultural Revolution or the 1989 Tiananmen Square incident. Instead, suggested topics included the mainland constitution, central government bodies, and "etiquette for a national flag-raising ceremony."⁴⁴⁴

In July, the Hong Kong National Education Services Center, a government-funded organization, distributed 30,000 copies of a teaching booklet called "The China Model" to schools across the territory.⁴⁴⁵ The booklet, which the center's director says is "just a reference for teachers to help students better understand China," argues that while multiparty political systems develop a "malignant party struggle," China is governed by a "progressive, selfless, and united ruling group."⁴⁴⁶ Although the booklet also discusses controversial topics such as Internet filtering, Hong Kong's Education Minister, Eddie Ng Hak-kim, called it "problematic" and remarked that it should not be used in schools.⁴⁴⁷

Implications for the United States

Beijing's growing interference in Hong Kong's political affairs casts doubt on the continued viability of the "one country, two systems" framework and Beijing's willingness to eventually grant Hong Kong universal suffrage. Coupled with sustained challenges to free expression and assembly, these developments run counter to U.S. support for the expansion of democracy and respect for human

rights abroad. They are also at deviance with the rights guaranteed to the citizens of Hong Kong in the Basic Law and assurances given by the Chinese government prior to regaining sovereignty that the city would “retain its system of government for at least fifty years. ...[and] permit free speech, including criticism of the Communist Party.”⁴⁴⁸

Beijing continues to use Hong Kong to increasingly circulate RMB outside of the mainland, sustaining its effort to gradually internationalize the currency. China has made clear its desire to leverage Hong Kong’s international links to access international markets not open to, or skeptical of, Chinese corporations. Particularly troubling is the prospect that Hong Kong-based enterprises, allowed to acquire sensitive technologies under U.S. export controls, may transfer—intentionally or not—such technology to mainland entities without authorization.

Conclusions

- Hong Kong’s 2012 elections were tumultuous and the outcome was viewed as heavily influenced by Beijing, compounding fears about the integrity of the “one country, two systems” framework.
- Beijing’s increasing influence in Hong Kong’s affairs calls into question the security of advanced technology products exported from the United States to Hong Kong.
- Popular discontent in Hong Kong with the mainland increased in 2012 and led to a number of demonstrations and public quarrels. While the city still enjoys freedoms of expression not permitted on the mainland, there were a number of instances in which city authorities, acting out of deference to Beijing, challenged the exercise of those rights.
- Along with large wealth gaps and soaring real estate costs, Hong Kong’s struggling economy is a concern for Beijing. A series of measures designed to provide economic assistance to the city have been adopted, and China’s efforts to leverage the city to gradually internationalize the RMB have continued.
- Reports of direct censorship and self-censorship also increased in 2012. Leading Hong Kong publications claim to have received pressure to provide positive coverage of Beijing’s favored candidate prior to the election. Conspicuous downplaying of human rights issues and troubling personnel changes amount to an unprecedented degree of interference in the Hong Kong press.

RECOMMENDATIONS

China and the South China Sea

The Commission recommends that:

- Congress direct the Department of Defense to work with U.S. friends and allies in the Asia Pacific region to strengthen mechanisms to share information on maritime activity in the South China Sea.
- Congress urge the U.S. Navy to conduct regular transit operations in critical waterways in ways that demonstrate and reinforce U.S. values and interests related to freedom of navigation.
- Congress direct the U.S. Coast Guard to take steps to promote the formation of, and participate in, a regional coast guard forum in Southeast Asia modeled on the North Pacific Coast Guard Forum.*

China and Taiwan

The Commission recommends that:

- Congress urge the administration to remain engaged with Taiwan officials regarding Taiwan's future defense needs, particularly as they pertain to sales of arms and equipment such as may be necessary to offset the growing capabilities of the People's Liberation Army for coercive power projection.

China and Hong Kong

The Commission recommends that:

- Congress reauthorize Section 301 of the U.S.-Hong Kong Policy Act of 1992, which requires the U.S. secretary of State to submit an annual report to Congress on political, economic, and social developments in Hong Kong of relevance to the United States. This should include reporting on mainland interference in Hong Kong's internal political affairs and Chinese efforts to leverage the territory as a platform for the internationalization of the RMB.
- Congress review the U.S.-Hong Kong Policy Act of 1992 to determine its continued applicability. In particular, Congress should review the security of advanced technology products exported from the United States to Hong Kong.

* Established in 2000, the North Pacific Coast Guard Forum includes the coast guards of Canada, China, Japan, Korea, Russia, and the United States. The forum aims to "foster multi-lateral cooperation by sharing information and establishing best practices in the North Pacific Ocean." The forum focuses on cooperation on maritime security, maritime domain awareness, illegal drug trafficking, illegal migration, fisheries enforcement, and combined operations. North Pacific Coast Guard Forum, "NPCGF—What Is It?" <http://www.ccg-gcc.gc.ca/e0007869>.

- Members of Congress, when visiting mainland China, also visit Hong Kong and that Congress encourage senior administration officials, including the secretary of State, to make visits to Hong Kong part of their travel.

ENDNOTES FOR CHAPTER 3

1. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2012), p. 37. http://www.defense.gov/pubs/pdfs/2012_CMPR_Final.pdf.
2. Seokwoo Lee, "UNCLOS and the Obligation to Cooperate," in Clive Schofield, *NBR Special Report #37, Maritime Energy Resources in Asia: Legal Regimes and Cooperation* (Seattle, WA: National Bureau of Asian Research, February 2012), p. 26.
3. U.S. House of Representatives, Committee on Foreign Affairs, *Hearing on Beijing as an Emerging Power in the South China Sea*, Written testimony of Richard Cronin, 112th Cong., 2nd sess., September 12, 2012.
4. United Nations Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
5. United Nations Convention on the Law of the Sea, "Part 5: Exclusive Economic Zone." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
6. United Nations Convention on the Law of the Sea, "Part 6: Continental Shelf." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm; I Made Andi Arsana and Clive Schofield, "Adding Further Complexity? Extended Continental Shelf Submissions in East and Southeast Asia," in Clive Schofield, *NBR Special Report #37, Maritime Energy Resources in Asia: Legal Regimes and Cooperation* (Seattle, WA: National Bureau of Asian Research, February 2012), pp. 37–41.
7. International Crisis Group, *Asia Report 223: Stirring up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), pp. 16–17. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.
8. United Nations Convention on the Law of the Sea, "Part 8: Regime of Islands." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm; United Nations Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone." http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
9. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 293.
10. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 45. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>.
11. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 294.
12. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 294.
13. Wu Shicun, "Dr. Wu Shicun Speaks at the Conference on the South China Sea and Asia Pacific in Transition: Exploring Options for Managing Disputes Held by CSIS" (Haikou, China: National Institute for South China Sea Studies, July 5, 2012) [video]. http://www.nanhai.org.cn/en/show_view.asp?lm=vie&newsid=2857.
14. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 47. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>.
15. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 45–48. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objective--China-and-the>.
16. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 294.
17. Embassy of the People's Republic of China in the Republic of the Philippines, "Ten Questions Regarding Huangyan Island." <http://ph.china-embassy.org/eng/xwfb/t941672.htm>.
18. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 294–295.
19. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 294–295.
20. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 45–51. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>.

21. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Lyle J. Goldstein, January 26, 2012.

22. International Crisis Group, *Asia Report 223: Stirring up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 3. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

23. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 44–45. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>.

24. Rachel Chan, "MOFA [Ministry of Foreign Affairs] rebuts Vietnam Protest over Taiping Island," *Taiwan Today*, September 12, 2012. <http://taiwantoday.tw/ct.asp?xItem=196094&ctNode=445>.

25. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition Over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 34. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

26. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 12. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>; Open Source Center Report, "Taiwan Backs South China Sea Claims, Rebuffs Cross-Strait Cooperation," November 29, 2011. www.opensource.gov.

27. Open Source Center, "CGA [Coast Guard Administration] to Deploy More Artillery on Taiping Island If Approved by Cabinet," *United Daily News* (Taiwan), July 2, 2012. OSC ID: CPP20120702312001; Voice of America, "Taiwan Lawmakers Land on Disputed South China Sea Island," September 4, 2012. <http://www.voanews.com/content/taiwan-lawmakers-dispute-south-china-sea/1501343.html>.

28. Mei Jinya, "Taiwan holds live-fire drills on Taiping Island," *Sina English*, September 5, 2012. <http://english.sina.com/china/2012/0905/503491.html>.

29. James R. Holmes, "Taiwan and the South China Sea," *Diplomat* (Tokyo), August 22, 2012. <http://thediplomat.com/the-naval-diplomat/2012/08/22/taiwan-and-the-south-china-sea/>.

30. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 12. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

31. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 12. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

32. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition Over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 35. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

33. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 54–55. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>.

34. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 54–55. <http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the>; International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July, 2012), p. 5. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>; and Stuart Kaye, "Freedom of Navigation in the Indo-Pacific Region," *Australian Maritime Affairs* 33 (2008): 8–12. <http://www.navy.gov.au/w/images/PIAMA22.pdf>.

35. BBC News, "Singapore urges China to clarify South China Seas claim," June 20, 2011. <http://www.bbc.co.uk/news/world-asia-pacific-13838462>; Daniel Ten Kate et al., "Aquino Open to China Oil Deal Despite Sea Spat," Bloomberg, May 6, 2012. <http://www.businessweek.com/news/2012-05-06/aquino-open-to-china-sea-oil-deal-separate-from-territory-spat>; Reuters, "Clinton urges China, ASEAN to cooperate on sea claims," July 12, 2012. <http://www.reuters.com/article/2012/07/12/us-asean-sum>

mit-clinton-sea-idUSBRE86B0HZ20120712; and Ian Storey, "Japan Steps Up to the South China Sea Plate," *Wall Street Journal*, July 9, 2012. http://online.wsj.com/article/SB10001424052702303567704577516252626896574.html?mod=wsj_share_tweet.

36. Peter Dutton, "Three Disputes and Three Objectives: China and the South China Sea," *Naval War College Review* 64:4 (Autumn 2011): 45. [http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the-;International-Crisis-Group,Asia-Report-223:Stirring-up-the-South-China-Sea-\(I\)\(Beijing,China;Brussels,Belgium:April2012\),p.17](http://www.usnwc.edu/getattachment/feb516bf-9d93-4d5c-80dc-d5073ad84d9b/Three-Disputes-and-Three-Objectives--China-and-the-;International-Crisis-Group,Asia-Report-223:Stirring-up-the-South-China-Sea-(I)(Beijing,China;Brussels,Belgium:April2012),p.17). [http://www.crisisgroup.org/~media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i](http://www.crisisgroup.org/~/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i); David Lague, "Analysis: China's nine-dash line in South China Sea," Reuters, May 24, 2012. http://articles.chicagotribune.com/2012-05-24/news/sns-rt-us-china-sea-boundarybre84o075-20120524_1_beijing-and-manila-acrimonious-confrontation-south-china-sea; and Lyle J. Goldstein, "Chinese Naval Strategy in the South China Sea: An Abundance of Noise and Smoke, but Little Fire," *Contemporary Southeast Asia* 33:3 (2011): 312.

37. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 297.

38. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing China; Brussels, Belgium: April 2012), pp. 3, 17. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

39. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Patrick M. Cronin, January 26, 2012.

40. Information Office of the State Council, *China's National Defense in 2010* (Beijing, China: March 2011). http://news.xinhuanet.com/english2010/china/2011-03/31/c_13806851.htm.

41. BBC News, "China approves military garrison for disputed islands," July 22, 2012. <http://www.bbc.co.uk/news/world-asia-china-18949941>.

42. Andrei Chang, "China boosts power on offshore islands," UPI.com, September 26, 2008. <http://www.upi.com/Business-News/Security-Industry/2008/09/26/China-boosts-power-on-offshore-islands/UPI-42701222457785/>.

43. Daniel Videre, "The Playing Field," *I&A [IMINT and Analysis] 1:10* (November 2011): 4; Globalsecurity.org, "Chinese South China Sea Military Options," undated. <http://www.globalsecurity.org/military/world/china/south-china-sea.htm>.

44. For details on China's aircraft carrier, see chapter 2, section 1: "Military and Security Year in Review," in this Report.

45. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), chapter 2, section 2, "China's Area Control Military Strategy." http://www.uscc.gov/annual-report/2011/annual_report_full_11.pdf.

46. *Want China Times* (Taiwan), "Chinese military exercises in Hainan serve as warning to Manila," May 13, 2012. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120513000098&cid=1101>.

47. CCTV International, "China's South Sea Fleet conducts military drill," Website of the Ministry of National Defense of the People's Republic of China, May 10, 2012. http://eng.mod.gov.cn/Video/2012-05/10/content_4365772.htm.

48. *China Military* online, "Land-based missile regiment of South China Sea Fleet conducts actual-troop live-ammunition drill," July 9, 2012. http://eng.mod.gov.cn/Photos/2012-07/05/content_4382959.htm; Open Source Center, "JFJB [Jiefangjun Bao]: 'South China Sea Fleet Landing Ship Flotilla Conducts Three-Dimensional Landing Drill,'" May 12, 2012. OSC ID: 20120510702004. <http://www.opensource.gov>.

49. *Want China Times* (Taiwan), "PLAN [PLA Navy] naval exercise to simulate assault on disputed islands," July 11, 2012. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120711000082&cid=1101>.

50. Robert Johnson, "China Has Deployed 'Combat Ready' Patrols To The South China Sea," *Business Insider*, June 29, 2012. <http://www.businessinsider.com/china-has-deployed-combat-ready-patrols-to-the-south-china-sea-2012-6>.

51. Dean Cheng, "South China Sea: China Drops a Bombshell," *The Foundry* (Washington, DC: The Heritage Foundation, July 7, 2012). <http://blog.heritage.org/2012/07/07/south-china-sea-china-drops-a-bombshell/>.

52. Tania Branigan, "Chinese frigate runs aground in disputed part of the South China Sea," *Guardian* (UK), July 13, 2012. <http://www.guardian.co.uk/world/2012/jul/13/chinese-frigate-runs-aground-sea>.

53. Open Source Center, "PRC Expert Views Report on PLA's Building of New Missile Brigade in Guangdong," *Nanfang Dushi Bao* online, July 6, 2012. OSC ID: CPP20120706787016. <http://www.opensource.gov>.

54. Ananth Krishnan, "In South China Sea, a surprise Chinese escort for Indian ships," *Hindu* (India), June 14, 2012. <http://www.thehindu.com/news/national/article3524965.ece?homepage=true>.

55. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), pp. 264–265.

56. Linda Jakobson and Dean Knox, *New Foreign Policy Actors in China* (Stockholm, Sweden: Stockholm International Peace Research Institute (SIPRI), *Policy Paper 26*, September 2010), p. 12. <http://books.sipri.org/files/PP/SIPRIPP26.pdf>.

57. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 34. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>; Willy Lam, "China Hawks in Command," *Wall Street Journal*, July 1, 2012. <http://online.wsj.com/article/SB10001424052702304211804577500521756902802.html>.

58. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), pp. 264–265.

59. M. Taylor Fravel, "PLA and the South China Sea," *Diplomat* (Tokyo), June 17, 2012. <http://taylorfravel.com/2012/06/the-pla-in-the-south-china-sea/>.

60. Teddy Ng, "Beijing denies adopting tough approach," *South China Morning Post* (Hong Kong), August 1, 2012. <http://www.scmp.com/article/1008187/pla-denies-adopting-tough-approach>.

61. Lyle J. Goldstein, "Chinese Naval Strategy in the South China Sea: An Abundance of Noise and Smoke, but Little Fire," *Contemporary Southeast Asia* 33:3 (2011): 335.

62. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 10. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

63. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 10. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>; Carlyle A. Thayer, "Efforts to Ensure Maritime Security" (Presentation to the Second Tokyo Defense Forum Seminar, Tokyo, Japan, March 16, 2012), pp. 7–8. For a thorough discussion of China's naval modernization and its motives and objectives, see U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2009), pp. 128–147, especially pp. 131–134. http://www.uscc.gov/annual_report/2009/chapter2_section_2.pdf.

64. *Economist*, "Shopping spree," March 24, 2012. <http://www.economist.com/node/21551056>.

65. Carlyle A. Thayer, "Efforts to Ensure Maritime Security" (Presentation to the Second Tokyo Defense Forum Seminar, Tokyo, Japan, March 16, 2012), p. 7. <http://www.scribd.com/doc/86041998/Thayer-Efforts-to-Ensure-Maritime-Security-in-East-Asia>.

66. Carlyle A. Thayer, "Efforts to Ensure Maritime Security" (Presentation to the Second Tokyo Defense Forum Seminar, Tokyo, Japan, March 16, 2012), p. 7. <http://www.scribd.com/doc/86041998/Thayer-Efforts-to-Ensure-Maritime-Security-in-East-Asia>.

67. Ben Packham and Lanai Vasek, "Labor launches \$40 billion submarine project," *Australian*, May 3, 2012. <http://www.theaustralian.com.au/national-affairs/defence/labor-launches-40-billion-submarine-project/story-e6frg8yo-1226345520888>.

68. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 21. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

69. Ian Storey, "Japan Steps Up to the South China Sea Plate," *Wall Street Journal*, July 9, 2012. <http://online.wsj.com/article/SB10001424052702303567704577516252626896574.html>; Ken Jimbo, "Japan, and ASEAN's [Association of Southeast Asian Nations] maritime security infrastructure," *East Asia Forum*, June 3, 2012. <http://www.eastasiaforum.org/2012/06/03/japan-and-asean-s-maritime-security-infrastructure>.

70. Chris Larano, "Aquino Urges Expansion of Philippine Military," *Wall Street Journal*, July 23, 2012. http://online.wsj.com/article/SB10000872396390443570904577544480905671846.html?mod=WSJASIA_hpp_MIDDLESecondNews; Thomas Lun, *The Republic of the Philippines and U.S. Interests* (Washington, DC: Congressional Research Service, April 2012), pp. 15–21. <http://www.fas.org/sgp/crs/row/RL33233.pdf>.

71. 1987 Constitution of the Republic of the Philippines, Article II, Section 17. <http://www.chanrobles.com/philsupremelaw2.html#.UGTMRoImCSo>; Rozzano Rufino B. Biazon, "Defence Budgeting in the Philippines," (Paper submitted to the Fourth Workshop of the Inter-parliamentary Forum on Security Section Governance in Southeast Asia, Shuket, Thailand, May 23–24, 2008). http://ipf-ssg-sea.net/4th_WS/Biazon.pdf.

72. Manuel Mogato, "U.S. triples military aid to Philippines in 2012," Reuters, May 3, 2012. <http://www.reuters.com/article/2012/05/03/us-philippines-usa-idUSBRE8420IU20120503>.

73. James Hardy, "Back to the Future: The U.S. Navy Returns to the Philippines," *Diplomat* (Tokyo), October 16, 2012. <http://thediplomat.com/2012/10/16/just-like-old-times-us-navy-returns-to-philippines/2/?all=true>; Thomas Lun, *The Republic of the Philippines and U.S. Interests* (Washington, DC: Congressional Research Service, April 2012), pp. 14–16. <http://www.fas.org/spp/crs/row/RL33233.pdf>.

74. Manuel Mogato and Rosemarie Francisco, "Manila offers U.S. wider military access, seeks weapons," Reuters, March 29, 2012. <http://www.reuters.com/article/2012/03/29/us-philippines-us-idUSBRE82S0LD20120329>; Manuel Mogato, "U.S. triples military aid to Philippines in 2012," Reuters, May 3, 2012. <http://www.reuters.com/article/2012/05/03/us-philippines-usa-idUSBRE8420IU20120503>.

75. Jun Pasaylo, "US sends nuclear-powered submarine near disputed shoal," *Philippine Star*, May 15, 2012. <http://www.philstar.com/nation/article.aspx?articleid=807282>.

76. Greg Torode, "Arrival of US Sub in Philippines Sign of Shifting Balance of Naval Power," *South China Morning Post* (Hong Kong), September 15, 2012. <http://www.scmp.com/news/asia/article/1037174/arrival-us-sub-philippines-sign-shifting-balance-naval-power>.

77. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 20. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

78. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 20. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

79. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 20. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

80. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 19. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

81. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012.

82. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 20. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

83. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 1. <http://www.opensource.gov>.

84. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 6. <http://www.opensource.gov>.

85. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 7. <http://www.opensource.gov>.

86. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 8. <http://www.opensource.gov>.

87. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 8. <http://www.opensource.gov>.

88. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 8. <http://www.opensource.gov>.

89. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 9. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

90. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 10. <http://www.opensource.gov>.

91. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012.

92. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 8. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

93. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 9. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

94. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 11. <http://www.opensource.gov>.

95. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 11. <http://www.opensource.gov>.

96. GlobalSecurity.org, "2012 South China Sea Developments." <http://www.globalsecurity.org/military/world/war/south-china-sea-2012.htm>.

97. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 37. <http://taylorfravel.com/documents/research/fravel.2012.CNAS.maritime.security.SCS.pdf>.

98. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 13. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

99. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 13. <http://www.opensource.gov>.

100. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 13. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

101. Michael Auslin, *Security in the Indo-Pacific Commons: Toward a Regional Strategy* (Washington, DC: American Enterprise Institute, December 2010), p. 12. http://www.public.navy.mil/usff/Documents/austin_report_dec_2010.pdf.

102. Thomas J. Bickford, *Uncertain Waters: Thinking About China's Emergence as a Maritime Power* (Alexandria, VA: CNA, September 2011), p. 67. <http://www.cna.org/sites/default/files/research/Uncertain%20Waters%20China%27s%20Emergence%20as%20a%20Maritime%20Power%20D0025813%20A1.pdf>; Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 14. <http://www.opensource.gov>; and International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 13. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

103. Open Source Center. "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 19. <http://www.opensource.gov>.

104. Open Source Center. "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 19. <http://www.opensource.gov>.

105. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012.

106. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Patrick M. Cronin, January 26, 2012.

107. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 14. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

108. Thomas J. Bickford, *Uncertain Waters: Thinking About China's Emergence as a Maritime Power* (Alexandria, VA: CNA, September 2011), p. 67. <http://www.cna.org/sites/default/files/research/Uncertain%20Waters%20China%27s%20Emergence%20as%20a%20Maritime%20Power%20D0025813%20A1.pdf>.

109. Thomas J. Bickford, *Uncertain Waters: Thinking About China's Emergence as a Maritime Power* (Alexandria, VA: CNA, September 2011), p. 67. <http://www.cna.org/sites/default/files/research/Uncertain%20Waters%20China%27s%20Emergence%20as%20a%20Maritime%20Power%20D0025813%20A1.pdf>; Open Source Center. "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 18. <http://www.opensource.gov>.

110. Open Source Center, "OSC Report: PRC Maritime Law Enforcers Dispersed in Six Agencies, Mull Consolidation" (May 31, 2012): 13. <http://www.opensource.gov>.
111. Xinhua, "China to Conduct Exercise in East China Sea," October 18, 2012. <http://english.cri.cn/6909/2012/10/18/3241s727948.htm>.
112. For a more comprehensive discussion of China's fishing industry and its global reach, see chapter 4, section 2, "China's Demand for and Control of Global Resources," of this Report.
113. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Patrick M. Cronin, January 26, 2012.
114. Will Rogers, "The Role of Resources in the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 89. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf; Daniel Shearf, "S. China Sea Dispute Blamed Partly on Depleted Fish Stocks," *Voice of America*, May 16, 2012. <http://www.voanews.com/content/south-china-sea-dispute-blamed-partly-on-depleted-fish-stocks/666766.html>.
115. Stephanie Kleine-Ahlbrandt, "Fish Story," *Foreign Policy*, June 25, 2012. http://www.foreignpolicy.com/articles/2012/06/25/fish_story.
116. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Patrick M. Cronin, January 26, 2012.
117. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Patrick M. Cronin, January 26, 2012; U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.
118. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012.
119. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012; International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 5. [http://www.crisisgroup.org/~media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i](http://www.crisisgroup.org/~/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i).
120. Associated Press, "Vietnam says China assaulted fishermen," March 2, 2012. <http://globalnation.inquirer.net/27127/vietnam-says-china-assaulted-fishermen>.
121. Associated Press, "Vietnam protests to China over alleged assault on fishermen in disputed waters," March 1, 2012. <http://finance.yahoo.com/news/vietnam-says-china-assaulted-fishermen-141755608.html>.
122. Xinhua, "China looking after Vietnamese caught fishing illegally," March 28, 2012. http://usa.chinadaily.com.cn/china/2012-03/28/content_14927020.htm.
123. Agence France-Presse, "China holding 21 Vietnamese fishermen: official," March 20, 2012. <http://www.google.com/hostednews/afp/article/ALeqM5gtw2BQDEI1I5qzGLMHkj1QcnGtxnw?docId=CNG.742410812344fcb2e47cf8e231dad960.5d1>; BBC News, "China frees Vietnamese fishermen held on Paracel Islands," April 21, 2012. <http://www.bbc.co.uk/news/world-asia-17796451>.
124. Radio Free Asia, "Vietnamese Fishermen 'Beaten'," April 23, 2012. <http://www.rfa.org/english/news/vietnam/fish-04232012203010.html>.
125. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition Over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012) p. 38. <http://taylorfravel.com/documents/research/fravel.2012.CNAS.maritime.security.SCS.pdf>.
126. M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition Over Maritime Rights," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 38. <http://taylorfravel.com/documents/research/fravel.2012.CNAS.maritime.security.SCS.pdf>.
127. Edith Regalado, "PHL Ships Ready to Return to Shoal," *Philippine Star*, June 21, 2012. <http://www.philstar.com/Article.aspx?articleId=819337&publicationSubCategoryId=63>.
128. Edith Regalado, "PHL Ships Ready to Return to Shoal," *Philippine Star*, June 21, 2012. <http://www.philstar.com/Article.aspx?articleId=819337&publicationSubCategoryId=63>.
129. BBC News, "US and Philippines begin South China Sea drills," April 16, 2012. <http://www.bbc.co.uk/news/world-asia-17724429>.

130. Carlyle A. Thayer, "Standoff at Scarborough Shoal: Implications for US-China Relations," *China-US Focus*, May 9, 2012. <http://www.chinausfocus.com/peace-security/standoff-at-scarborough-shoal-implications-for-us-china-relations/>.

131. Ding Cervantes, "Philippines to lift Scarborough fishing ban," *Philippine Star*, June 28, 2012. <http://www.abs-cbnnews.com/nation/06/27/12/philippines-lift-scarborough-fishing-ban>.

132. Ding Cervantes, "Philippines to lift Scarborough fishing ban," *Philippine Star*, June 28, 2012. <http://www.abs-cbnnews.com/nation/06/27/12/philippines-lift-scarborough-fishing-ban>; *Business Mirror*, "China, Philippines to ban fishing in disputed waters," May 14, 2012. <http://businessmirror.com.ph/home/top-news/27148-china-philippines-to-ban-fishing-in-disputed-waters>.

133. Department of Foreign Affairs of the Republic of the Philippines, "Why There Was No ASEAN [Association of Southeast Asian Nations] Joint Communiqué" (Manila, Philippines: Public Information Services Unit, July 19, 2012). <http://www.dfa.gov.ph/main/index.php/newsroom/dfa-releases>.

134. Philip C. Tubeza and TJ Burgonio, "China ropes off Scarborough Shoal," *Philippine Daily Inquirer*, August 3, 2012. <http://globalnation.inquirer.net/46289/china-ropes-off-panatag-shoal>.

135. ABS-CBN News (Philippines), "3 Chinese ships seen in Scarborough—PCG [Philippine Coast Guard]," September 12, 2012. <http://rp1.abs-cbnnews.com/nation/regions/09/12/12/3-chinese-ships-seen-scarborough-pcg>.

136. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Patrick M. Cronin, January 26, 2012.

137. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), pp. 22–23. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i.pdf>.

138. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Lyle J. Goldstein, January 26, 2012.

139. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 22. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i.pdf>.

140. Mutual Defense Treaty Between the United States and the Republic of the Philippines, August 30, 1951. http://avalon.law.yale.edu/20th_century/phil001.asp.

141. International Crisis Group, *Asia Report 229: Stirring Up the Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 25. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

142. Floyd Whaley, "U.S. Reaffirms Defense of Philippines in Standoff With China," *New York Times*, May 1, 2012. http://www.nytimes.com/2012/05/02/world/asia/us-reaffirms-defense-of-philippines-in-standoff-with-china.html?_r=1.

143. Jim Webb, "Senator Webb to State Dept.: Clarify U.S.-Philippines Mutual Defense Treaty Commitments," July 20, 2012. <http://www.webb.senate.gov/newsroom/pressreleases/07-20-2011-04.cfm>.

144. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikal E. Herberg, January 26, 2012.

145. Nick Owen, "Oil Disputes in the South China Sea in Context," in Dini Djalal et al., *NBR Special Report #35: Maritime Energy Resources in Asia: Energy and Geopolitics* (Seattle, WA: National Bureau of Asian Research, December 2011), pp. 31–32.

146. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 1. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i.pdf>.

147. Nick Owen, "Oil Disputes in the South China Sea in Context," in *NBR Special Report #35: Maritime Energy Resources in Asia: Energy and Geopolitics* (Seattle, WA: National Bureau of Asian Research, December 2011): 31.

148. Will Rogers, "The Role of Natural Resources in the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 87. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

149. See chapter 4, section 2, of this Report for a discussion of China's dependence on foreign energy resources.

150. Open Source Center Report, "China—Activities of Leading State-Owned Oil Enterprises in South China Sea," May 30, 2012, p. 1. <http://www.opensource.gov>.
151. Open Source Center Report, "China—Activities of Leading State-Owned Oil Enterprises in South China Sea," May 30, 2012, p. 3. <http://www.opensource.gov>.
152. Open Source Center Report, "China—Activities of Leading State-Owned Oil Enterprises in South China Sea," May 30, 2012, p. 1. <http://www.opensource.gov>.
153. For additional discussion of CNOOC's deepwater oil rig, see U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), p. 168. http://www.uscc.gov/annual-report/2011/annual-report_full_11.pdf.
154. Charlie Zhu, "China tests troubled waters with \$1 billion rig for South China Sea," Reuters, June 21, 2012. <http://www.reuters.com/article/2012/06/21/us-china-southchinasea-idUSBRE85K03Y20120621>.
155. Charlie Zhu, "China tests troubled waters with \$1 billion rig for South China Sea," Reuters, June 21, 2012. <http://www.reuters.com/article/2012/06/21/us-china-southchinasea-idUSBRE85K03Y20120621>.
156. Tom Orlik, "Picking Apart Nationalist Rhetoric Surrounding China's Oil Rig," *Wall Street Journal Real Time Report*, May 11, 2012. <http://blogs.wsj.com/chinarealtime/2012/05/11/picking-apart-nationalist-rhetoric-around-chinas-new-oil-rig/>.
157. Tom Orlik, "Picking Apart Nationalist Rhetoric Surrounding China's Oil Rig," *Wall Street Journal Real Time Report*, May 11, 2012. <http://blogs.wsj.com/chinarealtime/2012/05/11/picking-apart-nationalist-rhetoric-around-chinas-new-oil-rig/>.
158. Wayne Ma and James Hookway, "Vietnam Spars with China over Oil Plans," *Wall Street Journal*, June 27, 2012. http://online.wsj.com/article/SB10001424052702303649504577491823837421842.html?mod=wsj_share_tweet.
159. Wayne Ma and James Hookway, "Vietnam Spars with China over Oil Plans," *Wall Street Journal*, June 27, 2012. http://online.wsj.com/article/SB10001424052702303649504577491823837421842.html?mod=wsj_share_tweet.
160. Carlyle A. Thayer, "South China Sea: Oil Bids for Paracel Islands," *Thayer Consultancy Background Brief*, September 3, 2012. <http://www.scribd.com/doc/105432238/Thayer-South-China-Sea-Oil-Bids-for-Paracel-Islands>.
161. Wayne Ma and James Hookway, "Vietnam Spars With China Over Oil Plans," *Wall Street Journal*, June 27, 2012. <http://online.wsj.com/article/SB10001424052702303649504577491823837421842.html>.
162. James Hookway, "Sea Tensions Deepen with China's Rise," *Wall Street Journal*, June 7, 2012. <http://online.wsj.com/article/SB10001424052702304065704577423962285903208.html>.
163. Agence France-Presse, "Philippines to drill at China-claimed reef," May 17, 2012. <http://sg.finance.yahoo.com/news/philippines-drill-china-claimed-reef-105404184.html>.
164. Gregory Poling, "Arguing Over Blocks: Do China and the Philippines Both Have a Claim?" *The South China Sea Frame-by-Frame, No. 1* (Washington, DC: Center for Strategic and International Studies, April 16, 2012). <http://csis.org/publication/arguing-over-blocks-do-china-and-philippines-both-have-claim>.
165. Bonnie S. Glaser, "Armed Clash in the South China Sea: Contingency Planning Memorandum No. 14" (New York: Council on Foreign Relations, April 2012). <http://www.cfr.org/east-asia/armed-clash-south-china-sea/p27883>.
166. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), pp. 10, 12, 22–24. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i.pdf>.
167. He Xin, "Sansha Officials Discussing Large-Scale Commercial Development," *Caixin Online*, July 9, 2012. http://english.caixin.com/2012-07-09/100408988_all.html.
168. He Xin, "Sansha Officials Discussing Large-Scale Commercial Development," *Caixin Online*, July 9, 2012. http://english.caixin.com/2012-07-09/100408988_all.html.
169. Government of the People's Republic of China, "China's Sansha starts forming government," July 17, 2012. http://english.gov.cn/2012-07/17/content_2185369.htm.
170. He Xin, "Sansha Officials Discussing Large-Scale Commercial Development," *Caixin Online*, July 9, 2012. http://english.caixin.com/2012-07-09/100408988_all.html.
171. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 23. <http://>

www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i.pdf.

172. Voice of America, "Philippines Slams China's Establishment of Sansha City in South China Sea" (Washington, DC: June 23, 2012). <http://www.voanews.com/content/philippines-slams-chinese-establishment-of-city-in-south-china-sea/1443944.html>.

173. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), pp. 12, 24. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

174. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 24. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

175. Xinhua, "Tourism wharf for Xisha Islands under review," April 27, 2012. http://www.china.org.cn/china/2012-04/27/content_25251331.htm.

176. International Crisis Group, *Asia Report 223: Stirring Up the South China Sea (I)* (Beijing, China; Brussels, Belgium: April 2012), p. 24. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/223-stirring-up-the-south-china-sea-i>.

177. Xinhua, "Tourism wharf for Xisha Islands under review," April 27, 2012. http://www.china.org.cn/china/2012-04/27/content_25251331.htm.

178. Xinhua, "News Analysis: Int'l tribunal not solution to South China Sea tensions," May 13, 2012. http://news.xinhuanet.com/english/indepth/2012-05/13/c_131585164.htm.

179. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 15. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

180. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 15. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

181. M. Taylor Fravel, "China's Strategy in the South China Sea," *Contemporary Southeast Asia* 33:3 (2011): 300.

182. The official website of The Association for Southeast Asian Nations "Declaration on the Conduct of Parties in the South China Sea." <http://www.aseansec.org/13163.htm>.

183. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), pp. 30–32. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

184. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), pp. 30–32. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

185. Ann Jung, "An Interview with Ian Storey: ASEAN and the South China Sea: Deepening Divisions," *National Bureau of Asian Research Policy Q&A*, July 16, 2012. <http://www.nbr.org/research/activity.aspx?id=262>.

186. Jeremy Grant et al., "South China Sea issue divides ASEAN," *Financial Times*, July 16, 2012. <http://www.ft.com/cms/s/0/3d45667c-cf29-11e1-bfd9-00144feabd00.html#axzz20rW10GoL>.

187. Erlinda F. Basilio, "Why There Was No ASEAN Joint Communiqué," *Inquirer global Nation* (Philippines), July 12, 2012, <http://www.abs-cbnnews.com/depth/07/18/12/why-there-was-no-asean-joint-communicue>.

188. Joshua Kurlantzick, "South China Sea: From Bad to Worse?" (New York: Council on Foreign Relations, July 24, 2012). http://www.cfr.org/china/south-china-sea-bad-worse/p28739?cid=rss-china-south-china-sea-from-bad-to-w-072412&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+region%2Fchina+%28CFR.org+-+Regions+-+China%29&utm_content=Google+Reader.

189. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 1. <http://www.crisisgroup.org/-/media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

190. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium:

July 24, 2012), p. 1. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

191. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 10. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

192. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 23. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

193. Patrick Ventrall, "State Dept. on South China Sea" (Washington, DC: U.S. Department of State, August 3, 2012). <http://translations.state.gov/st/english/texttrans/2012/08/20120803134096.html#ixzz26B7EjBuW>.

194. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 22. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

195. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), p. 27. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

196. International Crisis Group, *Asia Report 229: Stirring Up the South China Sea (II), Regional Responses* (Beijing, China; Jakarta, Indonesia; Brussels, Belgium: July 24, 2012), pp. 22–27. <http://www.crisisgroup.org/~media/Files/asia/north-east-asia/229-stirring-up-the-south-china-sea-ii-regional-responses.pdf>.

197. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 7. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

198. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 7. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

199. Patrick M. Cronin and Robert D. Kaplan, "Cooperation from Strength: U.S. Strategy and the South China Sea," in Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for a New American Security, January 2012), p. 7. http://www.cnas.org/files/documents/publications/CNAS_CooperationFromStrength_Cronin_1.pdf.

200. Kurt Campbell, Remarks at "The South China Sea and Asia Pacific in Transition" Conference, Center for Strategic and International Studies (Washington, DC, June 26, 2012). http://csis.org/files/attachments/120627_SOUTHCHINASEA_CAMPBELL_TRANSCRIPT.pdf; Leon E. Panetta, "Remarks By Secretary Panetta at the Shangri-La Dialogue in Singapore (Shangri-La Dialogue) (Singapore, June 2, 2012). <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=5049>.

201. Senate Armed Services Committee, "Advance Policy Questions for Samuel J. Locklear III, U.S. Navy, Nominee to be Commander, U.S. Pacific Command," 112th Cong., 2nd sess, February 20, 2012. <http://www.armed-services.senate.gov/statemnt/2012/02%20February/Locklear%2002-09-12.pdf>.

202. For overviews of Taiwan-PRC relations in recent years, see U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: Government Printing Office, November 2011), chapter 3, section 3, "Taiwan," pp. 275–289; Bonnie Glaser and Brittany Billingsley, *Taiwan's 2012 Presidential Elections and Cross-Strait Relations: Implications for the United States* (Washington, DC: Center for Strategic and International Studies, November 2011), http://csis.org/files/publication/111114_Glaser_Taiwan2012_WEB.pdf.

203. Jacques Delisle, "Taiwan's 2012 Presidential and Legislative Elections: Winners, Losers, and Implications" (Philadelphia, PA: Foreign Policy Research Institute, January 2012). <http://www.fpri.org/enotes/2012/201201201.delisle.taiwan.html>.

204. Huang Chieh-Cheng, *The Prospects and Challenges of Cross-Strait Relations* (Washington, DC: Carnegie Endowment for International Peace, July 12, 2012).

205. For two examples, see Bonnie Glaser and Ralph Cossa, "Building Trust Across the Taiwan Strait: A Role for Military Confidence-building Measures" (Washington, DC: Center for Strategic and International Studies, January 2010). <http://csis.org/publication/building-trust-across-taiwan-strait>; Ming Shih Shen, "The Military Confidence Building Measures Strategy Across the Taiwan Strait," *Journal of Defence Studies* (India) 5:3 (July 2011).

206. KMT.org.tw (official English-language website of the Kuomintang Party), “Premier Wu: Two Prerequisites for Cross-Strait Military CBMs [confidence-building measures],” press release dated March 18, 2010. <http://www.kmt.org.tw/english/page.aspx?type=article&mnum=112&anum=7783>.

207. Jacques deLisle, “Strait Ahead?: China’s Fifth Generation Leaders and Beijing’s Taiwan Policy” (Philadelphia, PA: Foreign Policy Research Institute, July 2011). <http://www.fpri.org/enotes/2011/201107.delisle.chinatrtransition.html>.

208. Greg Chaffin, “Continuing a Peaceful Rise: China’s Foreign Policy After the Leadership Transition—An Interview with Shen Dingli” (Seattle, WA: National Bureau of Asian Research, September 6, 2012). <http://www.nbr.org/research/activity.aspx?id=271>.

209. Xing Zhigang and Tan Zongyang, “Taiwan’s Ma wins tight re-election race,” *China Daily*, January 15, 2012. <http://english.people.com.cn/90785/7705365.html>.

210. Xing Zhigang and Tan Zongyang, “Taiwan’s Ma wins tight re-election race,” *China Daily*, January 15, 2012. <http://english.people.com.cn/90785/7705365.html>.

211. Xing Zhigang and Tan Zongyang, “Taiwan’s Ma wins tight re-election race,” *China Daily*, January 15, 2012. <http://english.people.com.cn/90785/7705365.html>.

212. Bonnie Glaser and Brittany Billingsley, *Taiwan’s 2012 Presidential Elections and Cross-Strait Relations: Implications for the United States* (Washington, DC: Center for Strategic and International Studies, November 2011), pp. 7–8. http://csis.org/files/publication/111114_Glaser_Taiwan2012_WEB.pdf.

213. Arthur Ding, *The Prospects and Challenges of Cross-Strait Relations* (Washington, DC: Carnegie Endowment for International Peace, July 12, 2012).

214. Chris Wang, “DPP [Democratic Progressive Party] Spokesperson Lo visits China as party eases policy,” *Taipei Times*, March 15, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/03/15/2003527831>.

215. Lawrence Chung, “Taiwan’s DPP [Democratic Progressive Party] Reopens Its Mainland Affairs Office,” *South China Morning Post* (Hong Kong), July 30, 2012.

216. Lawrence Chung, “Former Taiwan Premier Frank Hsieh Concludes Five-Day Mainland Tour,” *South China Morning Post* (Hong Kong), October 8, 2012.

217. Sun Zhe, *The Prospects and Challenges of Cross-Strait Relations* (Washington, DC: Carnegie Endowment for International Peace, July 12, 2012).

218. Daniel Lynch, “An Election That Could Redirect China-Taiwan Relations,” *ThinkUSC* (blog for faculty of the University of Southern California), January 15, 2012. <http://think.usc.edu/2012/01/15/an-election-that-could-redirect-china-taiwan-relations/>.

219. Republic of China President Ma Ying-jeou, inaugural address given May 20, 2012. Full text available at *Focus Taiwan News Channel* (Taiwan Central News Agency), “Full Text of President Ma Ying-Jeou’s Inaugural Address,” May 20, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205200002&Type=aIPL.

220. The actual history of debate over the meaning of the “1992 consensus” is very complicated. For an overview of this complex issue, see Shirley A. Kan, “China/Taiwan: Evolution of the ‘One China’ Policy—Key Statements from Washington, Beijing, and Taipei” (Washington, DC: Congressional Research Service, June 24, 2011), p. 46, footnote #120.

221. The phrase “One Country, Two Areas” was first utilized by Wu Poh-Hsiung, honorary chairman of the Kuomintang, at a March 2012 meeting with PRC President Hu Jintao. See *China Post*, “‘1 country, 2 areas’ new basis for dialogue: KMT,” March 23, 2012.

222. Republic of China President Ma Ying-jeou, inaugural address given May 20, 2012. Full text available at *Focus Taiwan News Channel* (Taiwan Central News Agency), “Full Text of President Ma Ying-Jeou’s Inaugural Address,” May 20, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205200002&Type=aIPL.

223. Ralph Jennings, “Taiwan President Pledges Close Ties with China,” *Voice of America*, May 20, 2012. <http://www.voanews.com/articleprintview/727406.html>.

224. Grace Kuo, “Ma Views All Cross-Strait Pacts as Basis for Peace,” *Taiwan Today* (publication of the Office of the Department of International Information Services, Ministry of Foreign Affairs, Republic of China), February 9, 2012. <http://taiwantoday.tw/ct.asp?xItem=185911&ctNode=413>; *Focus Taiwan News*, “Ex-China Envoy to China Lauds Improving Taiwan-China Ties,” July 18, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201207180016.

225. Grace Kuo, “Ma Views All Cross-Strait Pacts as Basis for Peace,” *Taiwan Today* (publication of the Office of the Department of International Information Services, Ministry of Foreign Affairs, Republic of China), February 9, 2012. <http://taiwantoday.tw/ct.asp?xItem=185911&ctNode=413>; Daniel Rosen and Zhi Wang, “Deepening China-Taiwan Relations through the Economic Cooperation Framework

Agreement" (Washington, DC: Peterson Institute for International Economics, *Policy Brief PB10-16*, June 2010). <http://www.iie.com/publications/pb/pb10-16.pdf>.

226. Associated Press, "Taiwan to Ease Ban on Strategic High-Tech Exports to China," May 27, 2012.

227. Aaron Hsu, "Tariffs Eliminated on 437 Taiwan Items Under ECFA," *Taiwan Today* (publication of the Office of the Department of International Information Services, Ministry of Foreign Affairs, Republic of China), January 2, 2012. <http://www.taiwanembassy.org/US/GUM/ct.asp?xItem=243869&ctNode=2300&mp=32&nowPage=54&pagesize=15>.

228. China.org.cn (PRC government information website), "Mainland, Taiwan Sign Nuclear Deal," October 20, 2011. http://www.china.org.cn/china/2011-10/20/content_23679367.htm.

229. Xinhua, "Cross-Strait Nuclear Power Agreement Goes Into Effect on June 29," June 28, 2012. http://news.xinhuanet.com/english/china/2012-06/28/c_131681747.htm.

230. For the period of January–July 2012 (the most recent months for which official figures are available), total trade between Taiwan and the PRC (not including Hong Kong) was valued at nearly \$69,849,000,000, making China the number one trade partner of Taiwan. Japan was Taiwan's second biggest trading partner, with nearly \$38,510,000,000 in transactions for the same period; and the United States was third, with approximately \$33,082,000,000 in total trade. [See Republic of China, Bureau of Foreign Trade, "Value of Exports and Imports by Country/Time Period: 2012/01–2012/07." <http://cus93.trade.gov.tw/ENGLISH/FSCE/>.]

231. In the first 11 months of 2009, Taiwan and mainland China (not including Hong Kong and Macau) had nearly \$70,686,000,000 in assessed total trade; for the same period in 2010, the total was approximately \$102,986,000,000. [See Republic of China, Bureau of Foreign Trade, "2010.01–11ROC—China, Mainland, Hong Kong, and Macau Trade Statistics." <http://www.trade.gov.tw/english/Pages/Detail.aspx?nodeID=664&pid=321457>.]

232. Pasha Hsieh, "The China-Taiwan ECFA, Geopolitical Dimensions and WTO [World Trade Organization] Law," *Journal of International Economic Law* 14: 1 (2011); Daniel Rosen and Zhi Wang, *The Implications of China-Taiwan Economic Liberalization* (Washington, DC: Peterson Institute for International Economics, 2011), p. 48.

233. In this period, the total volume of cross-Strait trade was assessed to be approximately \$69,849,000,000. Exports from Taiwan to the PRC were valued at approximately \$45,894,000,000; and imports from the PRC into Taiwan were valued at approximately \$23,955,000,000. [See Republic of China, Bureau of Foreign Trade, "Value of Exports and Imports by Country—Time Period: 2012/01–2012/07." <http://cus93.trade.gov.tw/ENGLISH/FSCE/>.]

234. The volume of trade between Taiwan and mainland China (not including Hong Kong or Macau) for January–July 2011 was assessed to be \$76,269,367,080; for the same period in 2012 it was assessed to be \$69,848,967,726, a drop of 8.418 percent. [See Republic of China, Bureau of Foreign Trade, "Year Comparison of ROC Imports & Exports by Continent (Area)—Time Period: 2012/01–07 vs. 2011/01–07." <http://cus93.trade.gov.tw/ENGLISH/FSC3/FSC3050F.ASPX>.]

235. For example, comparisons of the period January–July 2012 with the same period for 2011 indicate that Taiwan's total trade with Hong Kong dropped by 8.288 percent; with Japan, by 8.514 percent; and with South Korea, by 13.633 percent. [Republic of China, Bureau of Foreign Trade, "Year Comparison of ROC Imports & Exports by Continent (Area)—Time Period: 2012/01–07 vs. 2011/01–07." <http://cus93.trade.gov.tw/ENGLISH/FSC3/FSC3050F.ASPX>.]

236. Shih Hsiu-chuan and Vincent Y. Chao, "DPP [Democratic Progressive Party] Says ECFA Claims are Overblown," *Taipei Times*, June 29, 2011.

237. John Wren, "ECFA Puts Taiwan on Fast Track to Prosperity," *Taiwan Today* (publication of the Office of the Department of International Information Services, Ministry of Foreign Affairs, Republic of China), May 13, 2012. <http://taiwantoday.tw/ct.asp?xitem=190503&CtNode=426>.

238. Shih Hsiu-chuan and Vincent Y. Chao, "DPP [Democratic Progressive Party] Says ECFA Claims are Overblown," *Taipei Times*, June 29, 2011; Dong Wang, "ECFA and the Elections: Implications for Cross-Strait Relations," *China Brief* 12: 1 (January 2012).

239. U.S.-China Economic and Security Review Commission, *2008 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2008), section 2, part 1, "Taiwan," p. 258. The 2008 Report cites comments made to Commissioners by then Democratic Progressive Party Chairwoman Tsai Ying-Wen in Taipei, August 2008.

240. Vincent Chao, "Tsai Promises to Reassess ECFA If Elected President," *Taipei Times* (Taiwan), April 6, 2011.
241. Shelley Shan, "MOTC [Ministry of Transportation and Communications] Considers Increase in Chinese Tourist Quota," *Taipei Times*, April 3, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/03/2003529402>.
242. Shelley Shan, "MOTC [Ministry of Transportation and Communications] Considers Increase in Chinese Tourist Quota," *Taipei Times*, April 3, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/03/2003529402>.
243. Xinhua, "Number of Mainland Tourists to Taiwan to Hit Record High," September 26, 2012. http://news.xinhuanet.com/english/china/2012-09/26/c_131874058.htm.
244. Shelley Shan, "MOTC [Ministry of Transportation and Communications] Considers Increase in Chinese Tourist Quota," *Taipei Times*, April 3, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/03/2003529402>.
245. Shelley Shan, "MOTC [Ministry of Transportation and Communications] Considers Increase in Chinese Tourist Quota," *Taipei Times*, April 3, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/03/2003529402>.
246. Xinhua, "4 More Mainland Cities Open Taiwan Individual Travel," August 28, 2012. http://www.chinadaily.com.cn/china/2012-08/28/content_15713973.htm.
247. Shelley Shan, "MOTC [Ministry of Transportation and Communications] Considers Increase in Chinese Tourist Quota," *Taipei Times*, April 3, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/03/2003529402>.
248. Xinhua, "Taiwan University favored by mainland students," March 31, 2012. http://news.xinhuanet.com/english/china/2012-03/31/c_131501509.htm.
249. Hsu Chih-wei, "Education Ministry lifts restrictions on dual nationality students," *Focus Taiwan News*, May 23, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205230013&Type=aEDU.
250. Taiwan's policy of "three restrictions and six nos" on Chinese students is as follows: The "three restrictions" limit enrollment to Chinese students who come from "schools of high academic standing," places a ceiling on the number of Chinese students allowed to study in Taiwan at any one time, and does not recognize medical diplomas from China; the "six nos" refer to no preferential consideration on entrance exams, no scholarships, no effect on Taiwan student enrollments, no part-time jobs in Taiwan, no participation in professional licensing, and no staying in Taiwan after graduation. See *Focus Taiwan News Channel* (Taiwan Central News Agency), "Education Ministry To Help Chinese Students Become Research Assistants," May 26, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205260027&Type=aEDU.
251. Eva Dou, "Cross-Strait Pact: New Day for Taiwanese Investors?" *China Realtime Report* (affiliated blog of the *Wall Street Journal*), August 13, 2012. <http://blogs.wsj.com/chinarealtime/2012/08/13/cross-strait-pact-new-day-for-taiwanese-investors/?mod=WSJBlog>.
252. Jens Kastner, "Taiwan Businesses Get Arbitration Pact," *Asia Times*, August 14, 2012. http://www.atimes.com/atimes/China_Business/NH14Cb01.html.
253. There have been dramatically contrasting perspectives on the value of the August 2012 investment agreement in the Taiwan press. For a supportive viewpoint, see *China Times*, "A Worthy and Substantive Cross-Strait Investment Guarantee Agreement," August 10, 2012, <http://www.kmt.org.tw/english/page.aspx?type=article&mnum=113&anum=11704>. For a skeptical perspective, see Mo Yan-chih and Amy Su, "Cross-Strait Investment Protection Accord Signed," *Taipei Times*, August 10, 2012, <http://www.taipetimes.com/News/front/archives/2012/08/10/2003539898/2>; and Lee Yu-hsin and Stacy Hsu, "Japanese Businessman Raises Red Flag About Dangers of Chinese Investment," *Taipei Times*, September 12, 2012, <http://www.taipetimes.com/News/front/archives/2012/09/12/2003542547>.
254. Republic of China (ROC) Ministry of Economic Affairs, "Cross-Strait Customs Cooperation Agreement to Take Effect Next Year," Council for Economic Planning and Development, press release dated September 20, 2012. http://invest.taiwan.nat.gov.tw/matter/show_eng.jsp?ID=124&MID=7.
255. Jens Kastner, "Taiwan Sets Sight on Becoming Yuan Hub," *Asia Times*, April 5, 2012. http://www.atimes.com/atimes/China_Business/ND05Cb01.html.
256. Annie Huang, "Taiwan, China Sign Currency Clearing Deal," Associated Press, August 31, 2012, <http://www.businessweek.com/ap/2012-08-31/taiwan-china-sign-currency-clearing-deal>; Faith Hung, "Taiwan-China Economic Ties to Deepen with Yuan Pact," Reuters, September 7, 2012. <http://in.reuters.com/article/2012/09/07/taiwan-china-idINL4E8K52AE20120907>.
257. Dow Jones Newswire, "Bank of China President: Taiwan, China Should Sign Bilateral Investment Protection Agreement," June 29, 2012. <http://www.foxbus>

iness.com/news/2012/06/29/bank-china-president-taiwan-china-should-sign-bilateral-investment-protection/#ixzz215W69IWG.

258. *Today* online, "Taiwan's Largest Bank Opens Branch in China," July 11, 2012. <http://www.todayonline.com/Business/EDC120711-0000041/Taiwans-largest-bank-opens-branch-in-China>.

259. *China Post* (Taiwan, in English), "Bank of Communications Set to Open Taipei Branch," July 12, 2012. <http://www.chinapost.com.tw/taiwan/business/2012/07/12/347308/Bank-of.htm>.

260. Law firm of Shay & Partners (Taipei law firm specializing in media and telecommunications law), "Government Postpones Huawei's Investment in Telecoms Sector," May 09 2012. <http://www.internationallawoffice.com/newsletters/Detail.aspx?g=8893fbe2-5838-4a63-aba2-0d5a754c3090>. Conversion rates (1,059,000,000.00 New Taiwan Dollars = 36,178,519.39 U.S. dollars, and 20,000,000,000.00 New Taiwan Dollars = 683,298,856.48 U.S. dollars) acquired October 5, 2012 from the currency conversion website www.xe.com.

261. Lee Yu-hsin, "DPP [Democratic Progressive Party] lawmakers warn of threat posed by Huawei," April 12, 2012. <http://www.taipeitimes.com/News/taiwan/print/2012/04/12/2003530139>.

262. Lee Yu-hsin, "DPP [Democratic Progressive Party] lawmakers warn of threat posed by Huawei," April 12, 2012. <http://www.taipeitimes.com/News/taiwan/print/2012/04/12/2003530139>.

263. Law firm of Shay & Partners (Taipei law firm specializing in media and telecommunications law), "NCC [National Communications Commission] Launches Investigation into Telecoms Equipment Made in China," June 15, 2011. <http://www.internationallawoffice.com/newsletters/Detail.aspx?g=32b5ec4f-ac71-4b64-808e-13ddb63d4f49&redir=1>.

264. Chris Wang, "Academics highlight threats to media freedom," *Taipei Times*, May 4, 2012. <http://www.taipeitimes.com/News/front/archives/2012/05/04/2003531945>.

265. See "Tsai Eng-Meng," profile on Forbes.com, <http://www.forbes.com/profile/eng-meng-tsai/>; Andrew Higgins, "Tycoon Prods Taiwan Closer to China," *Washington Post*, January 21, 2012.

266. Central News Agency, "Want Want boss defends self at public hearing on controversial deal," *Focus Taiwan News*, May 7, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=&ID=201205070031.

267. *China Post* (Taiwan), "Groups Protest Media Monopoly," September 2, 2012. <http://www.chinapost.com.tw/taiwan/national/national-news/2012/09/02/352936/p1/Groups-protest.htm>.

268. Adam Tyrsett Kuo, "NCC [National Communications Commission] Approves Want Want Purchase of CNS, Imposes Significant Conditions," *China Post* (Taiwan), July 26, 2012. <http://www.chinapost.com.tw/taiwan/national/national-news/2012/07/26/348880/NCC-approves.htm>.

269. *China Post* (Taiwan), "Want Want Rejects Terms Set By NCC [National Communications Commission]," July 28, 2012. <http://www.chinapost.com.tw/taiwan/national/national-news/2012/07/28/349111/Want-Want.htm>.

270. Central News Agency, "Taiwan approves first direct submarine cable link with China," *Focus Taiwan News*, March 28, 2012. <http://focustaiwan.tw/SearchNews/hyDetailws.aspx?qid=201203280038&q=telecom>.

271. Shelley Shan, "China 'invades' Taiwanese radio," *Taipei Times*, May 22, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/22/2003533442>.

272. J. Michael Cole, "Beijing obstructs Taiwanese SWAT team bid in Jordan," *Taipei Times*, May 16, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/16/2003532946>.

273. J. Michael Cole, "Beijing obstructs Taiwanese SWAT team bid in Jordan," *Taipei Times*, May 16, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/16/2003532946>.

274. Chen Ching-fang and Sofia Wu, "Taiwan Asks WHO [World Health Organization] to Rectify Name Designation Controversy," *Focus Taiwan News*, May 24, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&TNo=&ID=201205240009.

275. Tony Liao and Sofia Wu, "U.S. Calls for Transparency in Deciding Taiwan's WHO [World Health Organization] Designation," *Focus Taiwan News*, May 17, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201205170018.

276. Tony Liao and Sofia Wu, "U.S. Calls for Transparency in Deciding Taiwan's WHO [World Health Organization] Designation," *Focus Taiwan News*, May 17, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201205170018.

277. Grace Soong, "Taiwan signs historic pact with Japan," *China Post*, September 23, 2011. <http://www.chinapost.com.tw/taiwan-business/2011/09/23/317548/Taiwan-signs.htm>.

278. Translation by Commission staff from Mandarin Chinese: Bureau of Foreign Trade, "Response to the *Liberty Times*' article on the WTO [World Trade Organization] demonstrating that ECFA is a harmful policy," April 4, 2012. <http://www.trade.gov.tw/Pages/detail.aspx?nodeID=40&pid=348118>.

279. U.S. Department of Homeland Security, "DHS Announces Taiwan's Designation into the Visa Waiver Program," press release dated Oct. 2, 2012. <http://www.aila.org/content/default.aspx?docid=41568>.

280. Republic of China (Taiwan) Ministry of Foreign Affairs, "Ma Welcomes Taiwan's US Visa-Waiver Inclusion," press release dated October 3, 2012. <http://www.taiwanembassy.org/US/LAX/ct.asp?xItem=315069&ctNode=2825&mp=52>.

281. *Taipei Times*, "Taiwanese delegation begins US beef inspection visit," May 9, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/05/09/2003532368>.

282. Chris Wang, Shih Hsiu-chuan, and Mo Yan-chih, "Legislature Votes to Allow Ractopamine," *Taipei Times*, July 26, 2012, <http://www.taipetimes.com/News/front/archives/2012/07/26/2003538652>; Elaine Hou, "Taiwan to Allow Beef Imports with Ractopamine in September (Update)," Central News Agency (Taiwan), August 1, 2012, http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201208150032&Type=aSOC; and conversation between Commission staff and staff of the Taipei Economic and Cultural Representative Office, October 2, 2012.

283. *China Post*, "Resolution of US beef issue needed for TIFA [Trade and Investment Framework Agreement] talks: Ma," May 22, 2012. <http://www.chinapost.com.tw/taiwan/national/national-news/2012/05/22/341857/Resolution-of.htm>.

284. Kerry Dumbaugh, "Taiwan-U.S. Relations: Developments and Policy Implications" (Washington, DC: Congressional Research Service, November 2, 2009), p. 12.

285. Shirley Kan and Wayne M. Morrison, "U.S.-Taiwan Relationship: Overview of Policy Issues" (Washington, DC: Congressional Research Service, June 15, 2012), p. 23; *Taipei Times*, "Ma Asks US to Resume TIFA [Trade and Investment Framework Agreement] Talks," (Taiwan), August 7, 2012, <http://www.taipetimes.com/News/taiwan/archives/2012/08/07/2003539676>.

286. Enru Lin, "US Official Arrives to Explore Trade Talk Possibilities," *China Post* (Taiwan), September 24, 2012, <http://www.chinapost.com.tw/taiwan/foreign-affairs/2012/09/24/355331/US-official.htm>; KMT.org (official website of Taiwan's Kuomintang political party), "US Officials in Taipei to Expand Economic/Trade Cooperation," September 24, 2012, <http://www.kmt.org.tw/english/page.aspx?type=article&mnum=112&anum=11907>.

287. Rachel Chan, "Ma Lauds Progress on Resuming TIFA [Trade and Investment Framework Agreement] Talks," *Taiwan Today* (publication of the Office of the Department of International Information Services, Ministry of Foreign Affairs, Republic of China), September 11, 2012. <http://taiwantoday.tw/ct.asp?xItem=196032&ctNode=413>.

288. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: May 2011), p. 4; U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2011), p. 24.

289. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2011* (Washington, DC: May 2011), p. 2; U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2011), p. 21.

290. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2011), p. 4.

291. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2011), p. 2.

292. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2011), p. 2.

293. Chairman of the U.S. Joint Chiefs of Staff, *Joint Operational Access Concept* (Washington, DC: Department of Defense, January 17, 2012), p. 4.

294. Comments by General Norman Schwartz (U.S. Air Force) and Admiral Jonathan Greenert (U.S. Navy) at the event "Air-Sea Battle Doctrine: A Discussion with the Chief of Staff of the Air Force and Chief of Naval Operations" (Washington, DC: The Brookings Institution, May 16, 2012).

295. For further discussion on the dramatic improvements seen in many PLA weapons platforms over the past decade, see Amy Chang, "Indigenous Weapons Development in China's Military Modernization" (U.S.-China Economic and Security Review Commission staff research report, April 3, 2012). <http://www.uscc.gov/>

researchpapers/2012/China-Indigenous-Military-Developments-Final-Draft-03-April2012.pdf.

296. Alexander Chieh-Cheng Huang, "A Midterm Assessment of Taiwan's First Quadrennial Defense Review" (Washington, DC: The Brookings Institution, February 2011). <http://www.brookings.edu/research/papers/2011/02/taiwan-huang>.

297. Alexander Chieh-Cheng Huang, "A Midterm Assessment of Taiwan's First Quadrennial Defense Review" (Washington, DC: The Brookings Institution, February 2011). <http://www.brookings.edu/research/papers/2011/02/taiwan-huang>.

298. CIA World Factbook, entry for Taiwan, dated July 5, 2012. <https://www.cia.gov/library/publications/the-world-factbook/geos/tw.html>.

299. Jimmy Chuang, "Taiwan's Military Downsizing Worries Lawmakers," *Want China Times* (Taiwan), March 8, 2011. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?cid=1101&MainCatID=11&id=20110308000084>.

300. Central News Agency, "Taiwan debuts self-made drone in war games," *Focus Taiwan News*, April 18, 2012. http://focustaiwan.tw/ShowNewsWebNews_Detail.aspx?Type+&ID+201204180054

301. Chen Tzu-wen, "Ma skips Han Kuang drill," *Taipei Times*, April 17, 2012. <http://www.taipeitimes.com/News/front/archives/2012/04/17/2003530529>.

302. Chen Tzu-wen, "Ma skips Han Kuang drill," *Taipei Times*, April 17, 2012. <http://www.taipeitimes.com/News/front/archives/2012/04/17/2003530529>; and *Taipei Times* with Central News Agency, "Ma wraps up Han Kuang look-over with quick visit," April 21, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/04/21/2003530894>.

303. Central News Agency, "President inspects military exercise upon return to Taiwan," *Focus Taiwan News*, April 18, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aall&TNo=&ID=201204180059.

304. Central News Agency, "President inspects military exercise upon return to Taiwan," *Focus Taiwan News*, April 18, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aall&TNo=&ID=201204180059.

305. Agence France-Presse, "2 Missiles Miss Targets in Taiwanese Drill," July 9, 2012; *China Post* (Taiwan) "Malfunctioning Drone Ruins Near-Perfect Military Exercise," July 10, 2012.

306. According to a statement issued June 15, 2012, "The Ministry of Foreign Affairs of the Republic of China (Taiwan) reiterates its position as follows: 1. Whether looked at from the perspective of history, geography or international law, the Nansha Islands (Spratly Islands), the Shisha Islands (Paracel Islands), the Chungsha Islands (Macclesfield Bank) and the Tungsha Islands (Pratas Islands), as well as their surrounding waters, sea beds and subsoil, are all an inherent part of the territory of the Republic of China (Taiwan). These archipelagoes therefore fall under the sovereignty of the Republic of China (Taiwan), and the government reasserts that it enjoys all rights over the islands and their surrounding waters, and that it does not accept any claim to sovereignty over, or occupation of, these areas by other countries. 2. The government of the Republic of China (Taiwan) calls on countries bordering the South China Sea to respect the principles and spirit of the Charter of the United Nations and the United Nations Convention on the Law of the Sea, and to refrain from adopting unilateral measures that might threaten the peace and stability of the region. 3. The government of the Republic of China (Taiwan) reiterates that it upholds the basic principles of 'safeguarding sovereignty, shelving disputes, peace and reciprocity, and joint exploration' and remains willing to work with other countries on exploring resources in the South China Sea. 4. The government of the Republic of China (Taiwan) also urges the countries concerned to exercise self-restraint so that peaceful resolutions to disputes can be reached through consultation and dialogue. Taiwan remains willing to participate in such dialogue that seeks to find resolutions to disputes and promote regional peace, stability and development." See Ministry of Foreign Affairs of the Republic of China, "Ministry of Foreign Affairs of the Republic of China (Taiwan) reiterates that the Nansha Islands, the Shisha Islands, the Chungsha Islands and the Tungsha Islands, as Well as Their Surrounding Waters, Sea Beds and Subsoil Are All an Inherent Part of the Territory of the Republic Of China (Taiwan)" (Taipei, Taiwan: press release, June 15, 2012). <http://www.gio.gov.tw/ct.asp?xItem=91250&ctNode=2463&mp=807>.

307. *Taipei Times*, "Runway in Spratlys May Be Extended, Report Says," July 16, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/07/16/2003537877>.

308. Central News Agency, "Taiwan to Expand Military Presence on Taiping Amid Tensions," *Focus Taiwan News*, May 15, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205160052&Type=aIPL.

309. Central News Agency, "Ministry Reiterates Mission to Train Coast Guards in South China Sea," *Focus Taiwan News*, May 7, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201205070037&Type=aIPL.

310. Cindy Sui, "Taiwan to Boost Forces in Disputed Spratly Islands," BBC News, April 19, 2011. <http://www.bbc.co.uk/news/world-asia-pacific-13130208>.

311. Agence France-Presse, "Taiwan Sets Up Airborne Unit for Spratlys," May 1, 2012.

312. *Taipei Times*, "Runway in Spratlys May Be Extended, Report Says," July 16, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/07/16/2003537877>.

313. J. Michael Cole, "Taiwan's South China Sea Plan," *Diplomat* (Tokyo), July 19, 2012. <http://thediplomat.com/flashpoints-blog/2012/07/19/taiwans-south-china-sea-plan/>.

314. For an example of arguments that Taiwan enjoys rightful sovereignty over the Senkaku/Diaoyu Islands due to historical developments involving the Republic of China, see an op-ed written by Taiwan's foreign minister, Lin Yung-lo (David Lin): Yung-lo Lin, "Those Islands Belong to Taiwan," *Foreign Policy* (online edition), October 18, 2012, http://www.foreignpolicy.com/articles/2012/10/18/those_islands_belong_to_taiwan. For discussion of the Republic of China's territorial claims in the South China Sea—to include discussion of the "Nine-Dashed Line" that impacts ongoing debates over sovereignty claims in this region—see Li Jinming and Li Dexia, "The Dotted Line on the Chinese Map of the South China Sea: A Note," *Ocean Development & International Law*, 34 (2003).

315. Mo Yan-Chih, "Ma Does Little to Bolster Claim on Islands," *Taipei Times* (Taiwan), September 9, 2012.

316. Agence France-Presse, "Taiwan Flotilla Leaves for Disputed Diaoyus," September 24, 2012.

317. RT News, "Japan Uses Water Cannons Against Taiwanese Flotilla," September 25, 2012. <http://rt.com/news/japan-china-taiwan-islands-dispute-913/>.

318. *Taipei Times* (Taiwan), "Taiwan Flotilla Sails to Daiyutais," September 25, 2012.

319. Xinhua, "Mainland, Taiwan Responsible For S. China Sea Sovereignty: Spokeswoman," April 26, 2012. <http://english.peopledaily.com.cn/90785/7799705.html>. See also Fu Qiang, "Sea Spat Can Draw Mainland and Taiwan Closer," *Global Times* (in English), July 11, 2012. <http://english.peopledaily.com.cn/90785/7871683.html>.

320. Central News Agency, "Taiwan Will Not Work With China on South China Sea Issue: Official," *Focus Taiwan News*, May 21, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201205210010.

321. Central News Agency, "Ministry urged to continue IDF [Indigenous Defense Fighters] upgrades while pursuing U.S. arms sales," *Focus Taiwan News*, May 9, 2012.

322. Central News Agency, "Ministry urged to continue IDF [Indigenous Defense Fighters] upgrades while pursuing U.S. arms sales," *Focus Taiwan News*, May 9, 2012.

323. Central News Agency, "Ministry urged to continue IDF [Indigenous Defense Fighters] upgrades while pursuing U.S. arms sales," *Focus Taiwan News*, May 9, 2012.

324. Agence France-Presse, "Taiwan Deploys Anti-China Missiles," May 28, 2012.

325. Agence France-Presse, "Taiwan Deploys Anti-China Missiles," May 28, 2012.

326. Agence France-Presse, "Taiwan Deploys Anti-China Missiles," May 28, 2012.

327. J. Michael Cole, "'Carrier killer' program goes ahead," *Taipei Times*, April 28, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/28/2003531472>.

328. J. Michael Cole, "'Carrier killer' program goes ahead," *Taipei Times*, April 28, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/28/2003531472>.

329. J. Michael Cole, "'Carrier killer' program goes ahead," *Taipei Times*, April 28, 2012. <http://www.taipetimes.com/News/taiwan/archives/2012/04/28/2003531472>.

330. William Lowther, "Taiwan Must Rethink Naval Strategy: Expert," *Taipei Times*, September 9, 2012.

331. Agence France-Presse, "Taiwan May Build Own Submarines: Official," March 29, 2012.

332. The history of U.S.-Taiwan negotiations in regard to potential submarine sales to Taiwan, and/or the development of an indigenous submarine building program, is very complex. For an overview of these developments from 2001–2012, see Shirley Kan, *Taiwan: Major U.S. Arms Sales Since 1990* (Washington, DC: Congressional Research Service, May 21, 2012), pp. 11–15. <http://www.fas.org/sgp/crs/weapons/RL30957.pdf>.

333. Central News Agency, "Taiwan needs U.S. assistance to build submarines: military report," *Focus Taiwan News*, March 28, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201203280045.
334. Central News Agency, "Taiwan needs U.S. assistance to build submarines: military report," *Focus Taiwan News*, March 28, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201203280045.
335. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
336. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
337. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
338. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
339. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
340. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
341. J. Michael Cole, "Taiwan places US \$921 m order for PAC-3 missiles," *Taipei Times*, February 2, 2012. <http://taipeitimes.com/News/taiwan/archives/2012/02/02/2003524483>.
342. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 283.
343. Rich Chang, "Lo Hsien-che Given Life Sentence," *Taipei Times*, July 26, 2011.
344. Peter Mattis, "Taiwan Espionage Cases Highlight Changes in Chinese Intelligence Operations," *China Brief* 11:12 (July 1, 2011).
345. John Dotson, "Retired Taiwan Officer Exchanges Offer Insight into a Modern 'United Front,'" *China Brief* 11:19 (October 14, 2011).
346. Agence France-Presse, "Taiwan Air Force Captain Held Over Leaks to China," February 29, 2012.
347. "Two Taiwanese Sentenced to Jailtime Over China Espionage," *China Post*, July 19, 2012.
348. Central News Agency, "Two Men Indicted for Leaking National Security Information to China," *Focus Taiwan News*, April 16, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201204160042.
349. Agence France-Presse, "Secret Taiwan Naval Maps Go Missing: Report," July 7, 2012.
350. U.S. Taiwan Business Council and Project 2049 Institute, "Chinese Reactions to Taiwan Arms Sales" (March 2012), p. 31.
351. U.S. Taiwan Business Council and Project 2049 Institute, "Chinese Reactions to Taiwan Arms Sales" (March 2012), p. 31; Central News Agency, "Taiwan Receives U.S. Letter of Answer for F-16 A/B Upgrade," May 5, 2012. http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201205050032.
352. Rupert Hammond Chambers, "Special Commentary: Signing of an LOA [Letter of Offer and Acceptance] to Upgrade Taiwan's F-16 A/B Fighters" (Arlington, VA: U.S.-Taiwan Business Council, press release, July 18, 2012). http://www.us-taiwan.org/reports/2012_july18_signing_of_loa_to_upgrade_taiwans_f-16ab_fighters.pdf.
353. Wendell Minnick, "U.S. to Deny Taiwan New F-16 Fighters," *Defense News*, August 14, 2011. <http://www.defensenews.com/article/20110814/DEFSECT04/108140302/U-S-Deny-Taiwan-New-F-16-Fighters>.
354. Josh Rogin, "Coryn tries to force F-16 sales," *Foreign Policy*, September 12, 2011. http://thecable.foreignpolicy.com/posts/2011/09/12/cornyn_tries_to_force_taiwan_f_16_sales.
355. Josh Rogin, "Coryn tries to force F-16 sales," *Foreign Policy*, September 12, 2011. http://thecable.foreignpolicy.com/posts/2011/09/12/cornyn_tries_to_force_taiwan_f_16_sales.
356. William Lowther, "Talk of F-16 C/Ds could upset US-China negotiations," *Taipei Times*, May 4, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/04/2003531968>.

357. John Coryn, "Coryn Statement on the Confirmation of Mark W. Lippert," April 27, 2012. http://www.cornyn.senate.gov/public/index.cfm?p=InNews&ContentRecord_id=2e86bd6b-ec60-43f4-a43e-aa4095e01735&ContentType_id=b94acc28-404a-4fc6-b143-a9e15bf92da4&f6c645c7-9e4a-4947-8464-a94cacb4ca65&Group_id=bf378025-1557-49c1-8f08-c5df1c4313a4&MonthDisplay=4&YearDisplay=2012.

358. *Taipei Times* with Central News Agency, "Taipei may be rethinking fighter jet needs," May 30, 2012. <http://www.taipeitimes.com/News/front/archives/2012/05/30/2003534064>; J. Michael Cole, "Difficult Choices Faced on F-16 Deals," *Taipei Times*, May 7, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/07/2003532203>.

359. *Taipei Times* with Central News Agency, "Taipei may be rethinking fighter jet needs"; J. Michael Cole, "Difficult Choices Faced on F-16 Deals," *Taipei Times*, May 7, 2012. <http://www.taipeitimes.com/News/taiwan/archives/2012/05/07/2003532203>.

360. As examples, see United Press International, "Taiwan Denies It Still Seeks F-16C/D Jets," August 17, 2012; and Tony Liao and Jamie Wang, "Taiwan Might Give Up on F-16C/D, Pursue F-35B Instead: Media," Central News Agency (Taiwan), July 10, 2012, http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aIPL&ID=201207100047.

361. Wendell Minnick, "Lockheed Awarded Taiwan F-16 Upgrade," *Defense News*, October 3, 2012.

362. Colleen Lee, "Albert Ho Romps Home in Poll to Pick CE [chief executive] Candidate," *South China Morning Post* (Hong Kong), January 9, 2012. <http://www.scmp.com/article/989615/albert-ho-romps-home-poll-pick-ce-candidate>.

363. Ching Cheong, "Beijing's Interference Hurts its Credibility," *Straits Times* (Singapore), March 31, 2012. OSC ID: SEP20120331027018. <http://www.open-source.gov>.

364. Albert Chang, "Confidence in 'One Country, Two Systems' Is Eroding," *South China Morning Post* (Hong Kong), March 14, 2012; Ching Cheong, "Beijing's Interference Hurts Its Credibility," *Straits Times* (Singapore), March 31, 2012. <http://www.scmp.com/article/995398/confidence-one-country-two-systems-eroding>; Ching Cheong, "Beijing's Interference Hurts Its Credibility," *Straits Times* (Singapore), March 31, 2012. OSC ID: SEP20120331027018. <http://www.opensource.gov>.

365. Christine Loh, "Hong Kong's Messy Election Campaign," *New York Times*, March 23, 2012. <http://www.nytimes.com/2012/03/24/opinion/hong-kongs-messy-election-campaign.html>.

366. Kevin Drew, "Beijing's Favorite to Lead Hong Kong Sees His Star Falling," *New York Times*, February 20, 2012. http://www.nytimes.com/2012/02/21/world/asia/henry-tang-a-candidate-to-lead-hong-kong-runs-into-trouble.html?ref=world&page_wanted=print.

367. Andria Matrone, "Hong Kong's Chief Executive Elections Reveals Rift with Beijing," *China Brief* 12.8 (April 12, 2012): 6.

368. Kevin Drew, "Beijing's Favorite to Lead Hong Kong Sees His Star Falling," *New York Times*, February 20, 2012. <http://www.nytimes.com/2012/02/21/world/asia/henry-tang-a-candidate-to-lead-hong-kong-runs-into-trouble.html?ref=world&pagewanted=print>.

369. Te-ping Chen, "Beijing Tips Hand in Hong Kong Poll," *Wall Street Journal*, March 22, 2012. <http://online.wsj.com/article/SB10001424052702303812904577295342191821080.html>.

370. Ching Cheong, "Beijing's Interference Hurts its Credibility," *Straits Times* (Singapore), March 31, 2012. OSC ID: SEP20120331027018. <http://www.open-source.gov>.

371. James Pomfret and Sisi Tang, "Beijing's Loyalist to Lead Hong Kong after Fraught Election," Reuters, March 25, 2012. <http://www.reuters.com/article/2012/03/25/us-hongkong-election-idUSBRE8200F220120325>; Te-ping Chen, "Beijing Tips Hand in Hong Kong Poll," *Wall Street Journal*, March 22, 2012. <http://online.wsj.com/article/SB10001424052702303812904577295342191821080.html>.

372. Ching Cheong, "Beijing's Interference Hurts its Credibility," *Straits Times* (Singapore), March 31, 2012. OSC ID: SEP20120331027018. <http://www.opensource.gov>.

373. Keith Bradsher, "Beijing Switches Sides in the Race for Hong Kong's Chief Executive," *New York Times*, March 21, 2012. <http://www.nytimes.com/2012/03/22/world/asia/beijing-switches-support-in-race-for-hong-kong-chief.html>.

374. Chow Chung-yan, "Beijing Set to End the Bickering," *HK News Watch*, February 29, 2012. <http://topics.scmp.com/news/hk-news-watch/article/Beijing-set-to-end-the-bickering>.

375. Chow Chung-yan, "Beijing Set to End the Bickering," *HK News Watch*, February 29, 2012, <http://topics.scmp.com/news/hk-news-watch/article/Beijing-set-to-end-the-bickering>.

376. Te-ping Chen, "Beijing Tips Hand in Hong Kong Poll," *Wall Street Journal*, March 22, 2012. <http://online.wsj.com/article/SB10001424052702303812904577295342191821080.html>.

377. Te-ping Chen, "Beijing Tips Hand in Hong Kong Poll," *Wall Street Journal*, March 22, 2012. <http://online.wsj.com/article/SB10001424052702303812904577295342191821080.html>.

378. Eddie Luk, "Top Democrat Abandoned in Hour of Need," *Standard* (Hong Kong), March 26, 2012. http://www.thestandard.com.hk/news_detail.asp?pp_cat=30&art_id=121020&sid=35856356&con_type=1.

379. Keith Bradsher, "Pro-Beijing Candidates Outmaneuver Opponents as Hong Kong Votes," *New York Times*, September 10, 2012. <http://www.nytimes.com/2012/09/11/world/asia/hong-kong-voting-for-legislature-is-heavy.html?pagewanted=all>.

380. Robert Olsen, "Hong Kong Election: Democrats Retain Vital Veto Power," *Forbes*, September 10, 2012. <http://www.forbes.com/sites/robertolsen/2012/09/10/hong-kong-election-democrats-retain-vital-veto-power/>.

381. Keith Bradsher, "Pro-Beijing Candidates Outmaneuver Opponents as Hong Kong Votes," *New York Times*, September 10, 2012. <http://www.nytimes.com/2012/09/11/world/asia/hong-kong-voting-for-legislature-is-heavy.html?pagewanted=all>.

382. Public Opinion Programme, The University of Hong Kong, "HKU [Hong Kong University] POP [public opinion poll] Releases Latest Survey on Hong Kong People's Ethnic Identity," February 28, 2012. <http://hkupop.hku.hk/english/release/release884.html>.

383. Andrew Higgins, "China Denounces 'Hong Konger' Trend," *Washington Post*, January 11, 2012. http://www.washingtonpost.com/world/asia_pacific/china-denounces-hong-konger-trend/2012/01/10/gIQA5ivNqP_story_1.html.

384. Kwan Chiu, "Chung's Poll a Political Tool," *China Daily*, January 4, 2012. <http://pub.chinadailyapac.com/opinion/press/201203/624.html>.

385. Jonathan Watts, "Chinese Professor Calls Hong Kong Residents 'Dogs of British Imperialists,'" *Guardian* (United Kingdom) January 24, 2012, <http://www.guardian.co.uk/world/2012/jan/24/chinese-professor-hong-kong-dogs?newsfeed=true>.

386. Jonathan Watts, "Chinese Professor Calls Hong Kong Residents 'Dogs of British Imperialists,'" *Guardian* (United Kingdom) January 24, 2012, <http://www.guardian.co.uk/world/2012/jan/24/chinese-professor-hong-kong-dogs?newsfeed=true>.

387. Keith Richburg, "China and Hong Kong Battle Over Babies," *Washington Post*, February 2, 2012. http://www.washingtonpost.com/blogs/blogpost/post/china-and-hong-kong-battle-over-babies/2012/02/01/gIQA5jvulhQ_blog.html.

388. Census and Statistics Department, Hong Kong Special Administrative Region, *Hong Kong Population Projections, 2012–2041* (Hong Kong, China: July 2012), p. 32. <http://www.statistics.gov.hk/pub/B1120015052012XXXXB0100.pdf>.

389. Trefor Moss, "Why Mainland Worries Hong Kong," *Diplomat* (Tokyo), February 13, 2012. <http://thediplomat.com/2012/02/13/why-mainland-worries-hong-kong/?all=true>.

390. Trefor Moss, "Why Mainland Worries Hong Kong," *Diplomat* (Tokyo), February 13, 2012. <http://thediplomat.com/2012/02/13/why-mainland-worries-hong-kong/?all=true>.

391. BBC News, "Hong Kong to Limit Mainland China Maternity Services," April 25, 2012. <http://www.bbc.co.uk/news/world-asia-china-17838280>.

392. Emily Tsang, "'Zero Quota' Policy for Mainland Mothers Has No Legal Basis," *South China Morning Post* (Hong Kong), May 28, 2012. <http://www.scmp.com/article/1002221/zero-quota-policy-mainland-mothers-has-no-legal-basis-regina-ip>.

393. Marco Lui and Patrick Boehler, "Hong Kong's Wealth Gap Widens Amid Aging Population, Inflation," *Bloomberg*, June 18, 2012. <http://www.bloomberg.com/news/2012-06-18/hong-kong-s-wealth-gap-widens-amid-aging-population-inflation.html>.

394. James Pomfret and Sisi Tang, "HK's China Policies Spur Clash with Mainland Cousins," *Reuters*, February 3, 2012. <http://in.reuters.com/article/2012/02/03/us-hongkong-china-idINTRE8120CF20120203>.

395. Marco Lui and Patrick Boehler, "Hong Kong's Wealth Gap Widens Amid Aging Population, Inflation," *Bloomberg*, June 18, 2012. <http://www.bloomberg.com/news/2012-06-18/hong-kong-s-wealth-gap-widens-amid-aging-population-inflation.html>.

396. Public Opinion Programme, The University of Hong Kong, "HKU [Hong Kong University] POP [public opinion poll] Releases the Latest Trust and Confidence Indicators," February 28, 2012. <http://hkupop.hku.hk/english/release/release936.html#5>.

397. Jason Chow, "Hong Kong-Mainland Tiffs Worry Beijing," *Wall Street Journal*, February 1, 2012. <http://online.wsj.com/article/SB10001424052970203920204577193013612406588.html>.

398. National People's Congress of the People's Republic of China, *The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China* (Beijing, China: April 4, 1990). <http://www.basiclaw.gov.hk/text/en/basiclawtext/index.html>.

399. Tanna Chong and Peter So, "Wen's Concern over Mainland Mums," *South China Morning Post* (Hong Kong), December 27, 2012. <http://topics.scmp.com/news/hk-news-watch/article/Wens-concern-over-mainland-mums>.

400. Sisi Tang and Tan Ee Lyn, "HK's New Leader Unveils Sweeteners to Pacify Angry Public," Reuters, July 16, 2012. <http://www.reuters.com/article/2012/07/16/us-hongkong-politics-idUSBRE86F0D220120716>.

401. Keith Bradsher and Kevin Drew, "Protesters March as New Hong Kong Leader Is Sworn In," *New York Times*, July 1, 2012. <http://www.nytimes.com/2012/07/02/world/asia/protesters-march-as-new-hong-kong-leader-is-sworn-in.html>.

402. Lu Hui, "China unveils new boost for Hong Kong economy" Xinhua, July 2012. http://news.xinhuanet.com/english/business/2012-07/02/c_131689138.htm.

403. *Economist*, "China's Capital Controls: The More Special Economic Zone," July 7, 2012. <http://www.economist.com/node/21558307>.

404. Celine Sun and Tony Cheung, "Beijing Planning Initiatives to Help Hong Kong," *South China Morning Post* (Hong Kong), July 14, 2012. <http://www.scmp.com/article/1003886/beijing-planning-initiatives-help-hong-kong>.

405. CREnglish.cn, "China to Issue 23 Billion Yuan Bonds in HK," June 28, 2012. <http://english.cri.cn/6826/2012/06/28/191s709000.htm>.

406. TaxNews.com, "China Lowers the Bar For Foreign Institutional Investors," June 25, 2012. http://www.tax-news.com/news/China_Lowers_The_Bar_For_Foreign_Institutional_Investors_56031.html.

407. *Economist*, "China's Capital Controls: The More Special Economic Zone," July 7, 2012. <http://www.economist.com/node/21558307>.

408. Celine Sun and Tony Cheung, "Beijing Planning Initiatives to Help Hong Kong," *South China Morning Post* (Hong Kong), July 14, 2012. <http://www.scmp.com/article/1003886/beijing-planning-initiatives-help-hong-kong>.

409. Robert Cookson et al., "HKEx Walks Fine Line with LME's [London Metal Exchange] China Strategy," *Financial Times*, June 18, 2012. <http://www.ft.com/intl/cms/s/0/9fe1c130-b8eb-11e1-a2d6-00144feabdc0.html#axzz1z09XSo7V>.

410. U.S. Government Accountability Office, *Export Controls: U.S. Agencies Need to Assess Control List Reform's Impact on Compliance Activities* (Washington, DC: 2012), p. 19. <http://www.gao.gov/assets/600/590287.pdf>.

411. U.S. Government Accountability Office, *Export Controls: U.S. Agencies Need to Assess Control List Reform's Impact on Compliance Activities* (Washington, DC: 2012), p. 19. <http://www.gao.gov/assets/600/590287.pdf>.

412. U.S.-Hong Kong Policy Act of 1992, Public Law 102-383, 102nd Congress, 2nd sess., October 5, 1992. http://www.hongkong.usconsulate.gov/ushk_pa_1992.html.

413. Mak Yinting, "Opinion: Hong Kong Press Freedom Under Chinese Attack," CNN, July 5, 2012. <http://www.cnn.com/2012/07/05/opinion/hong-kong-press-freedom-eroded/index.html>.

414. *Wall Street Journal*, "Hong Kong Journalists Warn of Self-Censorship," June 28, 2012. <http://blogs.wsj.com/chinarealtime/2012/06/28/hong-kong-journalists-warn-of-self-censorship/>.

415. *Wall Street Journal*, "Hong Kong Journalists Warn of Self-Censorship," June 28, 2012. <http://blogs.wsj.com/chinarealtime/2012/06/28/hong-kong-journalists-warn-of-self-censorship/>.

416. *Police General Orders*, "Police, Public and Media Relations (January 2003). http://www.police.gov.hk/ppp_en/11_useful_info/doc/Eppo039.pdf.

417. Associated Press, "Hong Kong Reporter Asks About Tiananmen, Upsets Hu Visit," June 30, 2012. <http://www.foxnews.com/world/2012/06/30/hong-kong-reporter-asks-about-tiananmen-upsets-hu-visit/>.

418. Dennis Chong and Simpson Cheung, "Call for Approval System on Media," *South China Morning Post* (Hong Kong), February 3, 2012. <http://www.scmp.com/article/991582/call-approval-system-media>.

419. Dennis Chong and Simpson Cheung, "Call for Approval System on Media," *South China Morning Post* (Hong Kong), February 3, 2012. <http://www.scmp.com/article/991582/call-approval-system-media>.

420. Ching Cheong, "Beijing's Interference Hurts its Credibility," *Straits Times* (Singapore), March 31, 2012. OSC ID: SEP20120331027018. <http://www.opensource.gov>.

421. Ng Kang-chung, "Article 'Twisted by an Invisible Hand,'" *South China Morning Post* (Hong Kong), March 24, 2012. <http://www.scmp.com/article/996388/article-twisted-invisible-hand>.

422. Stuart Lau, "Anger at 'Beijing Media Meddling' in HK," *South China Morning Post* (Hong Kong), March 23, 2012. OSC ID: CPP20120323572018. <http://www.opensource.gov>.

423. WantChinaTimes.com, "Hong Kong media complain of interference in election reporting," March 24, 2012. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120324000079&cid=1101&MainCatID=0>.

424. Hugo Restall, "The Censor at Hong Kong's Post," *Wall Street Journal*, June 26, 2012. <http://online.wsj.com/article/SB10001424052702304898704577477932515774016.html>.

425. Reuters, "China Casts Long Shadow as Hong Kong Paper Stands Accused of Censorship," June 20, 2012. <http://in.reuters.com/article/2012/06/20/hongkong-censorship-idINL3E8HK3TL20120620>.

426. Hugo Restall, "The Censor at Hong Kong's Post," *Wall Street Journal*, June 26, 2012. <http://online.wsj.com/article/SB10001424052702304898704577477932515774016.html>.

427. Hugo Restall, "The Censor at Hong Kong's Post," *Wall Street Journal*, June 26, 2012. <http://online.wsj.com/article/SB10001424052702304898704577477932515774016.html>.

428. Paul Mooney, "Prize-Winning Reporter Driven out of SCMP [South China Morning Post]," *Asia Sentinel* (Thailand), June 28, 2012. http://www.asiasentinel.com/index.php?option=com_content&task=view&id=4642&Itemid=375.

429. Reuters, "Thousands in Hong Kong Protest Beijing's Interference," April 1, 2012. <http://www.reuters.com/article/2012/04/01/us-hongkong-protests-idUSBRE83007C20120401>.

430. Reuters, "Thousands in Hong Kong Protest Beijing's Interference," April 1, 2012. <http://www.reuters.com/article/2012/04/01/us-hongkong-protests-idUSBRE83007C20120401>.

431. Simpson Cheung, "Watchdog Wants a Say on Protests," *South China Morning Post* (Hong Kong). OSC ID: CPP20120423572008. <https://www.opensource.gov>.

432. Austin Ramzy, "Suspicious Death of a Chinese Dissident Becomes Rallying Point in Hong Kong," *Time*, July 2, 2012. <http://world.time.com/2012/07/02/suspicious-death-of-a-chinese-dissident-becomes-rallying-point-in-hong-kong/>.

433. Austin Ramzy, "Suspicious Death of a Chinese Dissident Becomes Rallying Point in Hong Kong," *Time*, July 2, 2012. <http://world.time.com/2012/07/02/suspicious-death-of-a-chinese-dissident-becomes-rallying-point-in-hong-kong/>.

434. Mark McDonald, "Blacking Out 180,000 Candles," *New York Times*, June 5, 2012. <http://rendezvous.blogs.nytimes.com/2012/06/05/blacking-out-180000-candles/?ref=china>.

435. Alexis Lai, "Record Crowds Attend Hong Kong Tiananmen Vigil," *CNN*, June 5, 2012. <http://www.cnn.com/2012/06/05/world/asia/hong-kong-tiananmen-vigil/index.html>.

436. Keith Bradsher and Kevin Drew, "Protesters March as New Hong Kong Leader Is Sworn In," *New York Times*, July 1, 2012. <http://www.nytimes.com/2012/07/02/world/asia/protesters-march-as-new-hong-kong-leader-is-sworn-in.html>.

437. Te-Ping Chen and Trinna Leong, "'China Model' Teaching Booklet Riles Hong Kong," *Wall Street Journal*, July 16, 2012. <http://blogs.wsj.com/chinarealtime/2012/07/16/hong-kong-school-leaflets-praise-one-party-system/>.

438. Keith Bradsher and Kevin Drew, "Protesters March as New Hong Kong Leader Is Sworn In," *New York Times*, July 1, 2012. <http://www.nytimes.com/2012/07/02/world/asia/protesters-march-as-new-hong-kong-leader-is-sworn-in.html>.

439. BBC News, "Chinese Activists 'Sentenced' for Hong Kong Protest," July 25, 2012. <http://www.bbc.co.uk/news/world-asia-china-18980707>.

440. Frank Ching, "China's 'One Country, Two Systems' Under Threat," *Diplomat* (Tokyo), September 11, 2012. <http://thediplomat.com/2012/09/11/chinas-one-country-two-systems-under-threat/?all=true>.

441. Te-Ping Chen and Trinna Leong, "'China Model' Teaching Booklet Riles Hong Kong," *Wall Street Journal*, July 16, 2012. <http://blogs.wsj.com/chinarealtime/2012/07/16/hong-kong-school-leaflets-praise-one-party-system/>.

442. Dennis Chong and Johnny Tam, "Controversial guidelines on national education shelved," *South China Morning Post* (Hong Kong), October 9, 2012. <http://www.scmp.com/news/hong-kong/article/1056653/controversial-guidelines-national-education-shelved>.

443. Dennis Chong and Johnny Tam, "Controversial guidelines on national education shelved," *South China Morning Post* (Hong Kong), October 9, 2012.

<http://www.scmp.com/news/hong-kong/article/1056653/controversial-guidelines-national-education-shelved>.

444. Dennis Chong, "National Education Course Revised," *South China Morning Post* (Hong Kong), May 1, 2012. <http://www.scmp.com/article/999701/national-education-course-revised>.

445. Te-Ping Chen and Trinna Leong, "China Model' Teaching Booklet Riles Hong Kong," *Wall Street Journal*, July 16, 2012. <http://blogs.wsj.com/chinarealtime/2012/07/16/hong-kong-school-leaflets-praise-one-party-system/>.

446. Te-Ping Chen and Trinna Leong, "China Model' Teaching Booklet Riles Hong Kong," *Wall Street Journal*, July 16, 2012. <http://blogs.wsj.com/chinarealtime/2012/07/16/hong-kong-school-leaflets-praise-one-party-system/>.

447. Ng Kang-chung, "Publisher Rejects Bias," *South China Morning Post* (Hong Kong), July 14, 2012. <http://www.scmp.com/article/1006681/publisher-rejects-bias>.

448. Ezra Vogel, *Deng Xiaoping and the Transformation of China* (Cambridge, MA: Harvard University Press, 2011), p. 508.

CHAPTER 4

CHINA'S GLOBAL REACH

SECTION 1: CHINA AND EUROPE

Introduction

Europe has been a reliable destination for Chinese exporters, and it has also become an increasingly attractive prospect for Chinese investors seeking to diversify their foreign holdings and to acquire valuable technologies and know-how. At the same time, the economic relationship has been plagued by Europe's economic woes and the growing European frustration, shared by the United States, over China's continued disregard for intellectual property rights, reliance on forced technology transfers, restrictions on market access for foreign firms, and the many direct and indirect subsidies offered by the Chinese state to Chinese exporters and investors.

Many questions remain about what role China will play in resolving the European sovereign debt crisis. European Union (EU) member states are working hard to attract Chinese investment, giving rise to fears that competition among EU countries for Chinese investment could allow China to "divide-and-conquer" Europe on matters of trade, security and human rights.

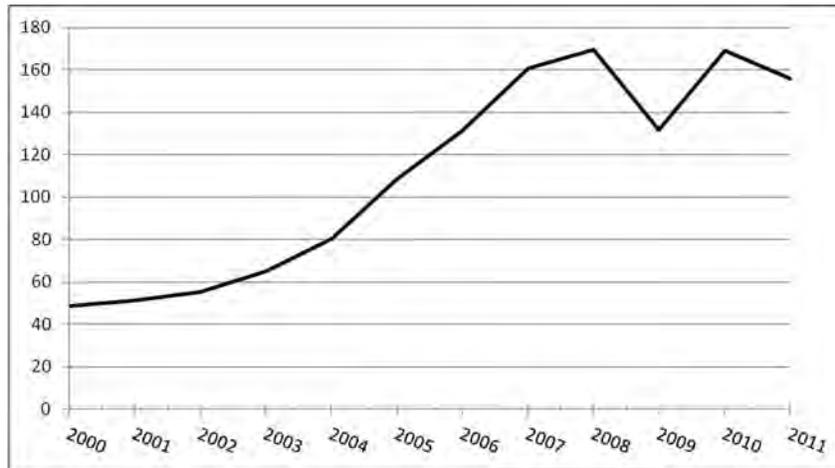
Although Sino-European cooperation on antipiracy, peacekeeping operations, and other global security issues has largely been a positive development for the European Union and China, European defense and dual-use exports to China have emerged as an area of potential transatlantic disagreement. Despite a European arms embargo, EU defense exports to China totaled over \$90 million in 2010. Some European defense scholars have asserted that EU engagement with China in the military and high-tech sphere has contributed significantly to the advancement of China's defense capabilities.

Drawing on testimony received at the Commission's April 19, 2012, hearing and additional research, this section of the Report will explore the various aspects of the China-Europe relationship. It will also identify key areas where European and U.S. interests coincide and where the potential exists for better coordination in our respective policies.

Part 1: The Sino-European Economic Relationship and the Eurozone Crisis

The European Union* is one of China's most important trading partners and its largest export market. In 2010 (the last full year of available statistics) trade with the European Union accounted for 17 percent of China's total trade, compared to the United States, which made up 13.6 percent of China's total trade. Like the United States, the European Union has been running increasingly large trade deficits with China for many years (see figure 1, below). In 2011, the European Union ran a €155.9 billion (\$203.6 billion) trade deficit with China, down by 9 percent compared to the 2010 record of €169.8 billion (about \$221.8 billion).¹ By comparison, the U.S. deficit with China reached \$295.4 billion in 2011, up from \$273.1 billion in 2010. Over the first six months of 2012, the European Union exported €72.7 billion (\$94.9 billion) to China and imported €140.2 billion (\$183.1 billion), for a deficit of €67.5 billion (\$88.2 billion).

Figure 1: The EU27 Trade Deficit with China (in € billions), 2000–2011



Source: Eurostat (Luxembourg: European Commission, various issues).

The trade deficit, coupled with growing frustration over Chinese restrictions on market access for many European exports and investment, has led to increased frictions. The European Commission and European business associations have grown more vocal in their complaints over Chinese trade barriers (see the section below on recent trade frictions). Speaking in 2011, Karel De Gucht, the EU trade commissioner, noted that while Chinese companies investing in Europe have enjoyed the advantage of Europe's open economy

* In this section, the European Union, EU, or EU27 refers to the economic and political union of 27 member states: Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. Not all members of the European Union are in the eurozone.

and transparent procurement rules, the business climate in China “gets worse.”²

The EU-China High Level Economic and Trade Dialogue was launched in Beijing in April 2008. Like the U.S.-China Strategic and Economic Dialogue, the High Level Economic and Trade Dialogue was created as a tool to address issues of mutual concern in the areas of investment, market access, intellectual property rights protection, and other issues related to trade. Its success has been limited to date, mostly due to China’s unwillingness to compromise.³

The Eurozone Crisis and China’s Response

With no definitive resolution in sight to the European sovereign debt crisis, China’s potential involvement has triggered a wave of speculation about the political, economic, and strategic implications of China “buying up” or “bailing out” Europe. The EU leadership has been trying to build support for the European Financial Stability Facility,^{*} and its permanent replacement, the European Financial Mechanism, by seeking financial help from the International Monetary Fund (IMF), the United States, and other rich countries around the world. But it has been China that has figured most prominently in the speculations.

China, with its \$3.2 trillion in foreign exchange reserves, seems uniquely positioned among world actors to provide funding when others, facing their own economic or political pressures, may be unable or unwilling to help. There are certainly plenty of reasons for China to do so: The European Union is China’s biggest export market, and the IMF has reported that China’s gross domestic product (GDP) growth could drop by as much as 4 percentage points if Europe’s crisis worsens.⁴ Europe is struggling economically and will be more open to Chinese acquisitions of European companies if it means additional jobs for Europeans. Moreover, China has been looking to diversify away from its dollar-denominated assets. Statements by Chinese government officials support such interpretations. For example, in February 2012, Chinese Premier Wen Jiabao, speaking at the EU-China summit,[†] said, “Europe is a main investment destination for China to diversify its foreign-exchange reserves.”⁵ There have been, however, some concerns among EU and U.S. observers over what leverage Beijing may gain through the growing trade linkages, burgeoning Chinese foreign direct investment (FDI), and the desire of European businesses to gain access to the Chinese market.⁶

^{*}The European Financial Stability Facility, created in 2010, is a special-purpose vehicle financed by members of the eurozone to address the European sovereign debt crisis. It provides financial assistance to eurozone states in economic difficulty. The facility is authorized to borrow up to €440 billion, of which €250 billion remained available after the Irish and Portuguese bailout. The facility’s permanent successor, the European Stability Mechanism, was established on September 27 2012, and will function as a permanent firewall for the eurozone with a maximum lending capacity of €500 billion.

[†]The EU-China Summit has been held on an annual basis since 1998 to discuss and further the mutual interests of the European Union and China. The summits generally culminate with the issuance of joint statements declaring mutual policy positions on a range of economic, foreign policy, and security issues. European Union External Action, “EU-China Summits” (Brussels, Belgium). http://eeas.europa.eu/china/summits_en.htm.

Despite assurances from Chinese leaders that China is both sympathetic to the eurozone's* financial plight and willing to contribute financially to its attempts at restructuring its debt, China's actions have been modest to date. At the Commission's April 19, 2012, hearing, witnesses concurred that the scale of China's involvement in the European debt crisis has been overstated in the press. China's government has been nervous about being exposed to risky bonds on the eurozone periphery,⁷ and Chinese public opinion appears to be hostile to the idea of "bailing out" Europeans.⁸

At the EU level, some eurozone members are skeptical about the idea of a Chinese contribution to the European Financial Stability Facility, or any foreign involvement at all.⁹ Nonetheless, Klaus Regling, the chief executive of the European Financial Stability Facility, was in Beijing in October 2011 for talks with China's State Administration for Foreign Exchange, ostensibly to drum up support.¹⁰ Regardless of the official EU position, individual member states are eager to attract Chinese money. Statements of Chinese support or even mention of possible talks have been used by various countries, including Spain, Greece, Portugal, and Italy, to shore up confidence in their economies.¹¹

So far, China's multiple promises of assistance have not translated into major commitments of financial resources, and there are no indications that China has taken on significant exposure to the riskier bonds. The European Central Bank does not keep a public tracking of the nationality of foreign investors in the debt market and does not publicly aggregate or coordinate data on foreign purchases of public debt in the 27 member states. The composition of China's foreign exchange reserves is a state secret, so the full extent of Chinese euro-denominated bond purchases is unknown.¹²

Analysts estimate that about a quarter of China's foreign reserves are held in euro-denominated assets, most of which appear to be concentrated in the more economically stable countries.¹³ Since the European financial crisis began, China has purchased a limited amount of European bonds from individual states. Stephen Green, China economist at Standard Chartered, noted that the majority of China's bond purchases in Europe has likely been in core eurozone countries like Germany that boast relatively low debt levels. Chinese officials have privately indicated that they "are wary of buying bonds directly from Greece, Portugal and other troubled European nations."¹⁴ Comments by Chinese officials have indicated that they would prefer to help with Europe's sovereign bailout through the IMF rather than buying bonds directly.[†]

Any decrease in Chinese holdings of U.S. Treasury securities, as reported by the U.S. Treasury, has often been interpreted as indicative of an increase in European bond purchases. That is not necessarily the case, however, as China frequently buys U.S. Treas-

*The eurozone, officially called the euro area, is an economic and monetary union of 17 EU states that have adopted the euro (€) as their common currency. The eurozone currently consists of Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

†For example, while Zhou Xiaochuan, the governor of China's central bank, said that China would increase its participation through the IMF, the European Financial Stability Facility, and the future European Stability Mechanism, Premier Wen Jiabao stressed that any further investment in euro debt will happen in line with the principles of security, liquidity, and value preservation. *China Daily*, "Investment Will Continue," February 16, 2012.

uries through secondary channels (or could be investing in U.S. agency debt or in other countries such as Japan).

Estimates of Chinese holdings in European Financial Stability Facility bonds are similarly more a guess than concrete information. The facility categorizes bond purchases by region, rather than by individual purchasers.¹⁵ In 2011 and 2012, Asian investors, a separate category, purchased between 9 percent and 40 percent of the long-term bonds, depending on the issuance.¹⁶ The assumption is that China holds around 40 percent of the issuances held by Asian investors.¹⁷ While these are just estimates, general trends suggest that so far China has been a cautious investor rather than “a savior” for the eurozone.¹⁸

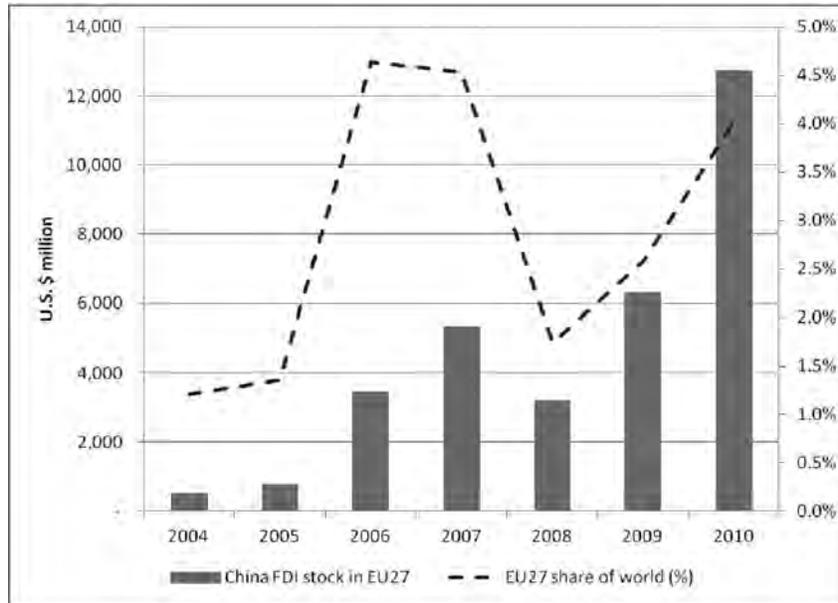
Chinese FDI in Europe

While China might be risk averse when it comes to buying euro bonds, it is more than willing to accept a stake in Europe by investing directly and buying up companies, technology, and brands at reduced prices.¹⁹ This fits with a new phase in the Chinese going-out strategy and the Chinese ambition of moving up the value chain.²⁰ Chen Deming, China’s minister of Commerce, sees the euro crisis as an opportunity: “European countries are facing a debt crisis and hope to convert their assets to cash and would like foreign capital to acquire their enterprises.”²¹

Chinese economic officials have stated repeatedly their intent to increase investment in Europe, because its investment climate is “friendlier” to Chinese investment than that of the United States. Even countries that have not been severely affected by the current eurozone debt problems have rolled out favorable policies for Chinese investors. For example, Denmark, Belgium, and the United Kingdom (UK) offer a package that includes a waiver on office rent for the first year; consultation on legal, financial, and policy issues; and language support.²² So far, however, there has been no dramatic upswing in Chinese investment.

China’s FDI in Europe, growing from a very low base, has been accelerating but remains small compared to the overall direct investments into Europe. Eurostat, the statistical office of the European Union, reported that in 2010 (latest data available) China’s cumulative FDI in Europe stood at \$8.9 billion, less than one-tenth of 1 percent of the EU’s total FDI flows and under 0.3 percent of the FDI from outside Europe. Statistics from China’s Ministry of Commerce (MOFCOM) put total Chinese FDI in Europe at \$12.5 billion by 2010. By either measure, the figure is small compared to the total accumulated FDI in Europe, estimated at \$11.8 trillion.²³

Figure 2 below shows cumulative Chinese FDI in EU27 countries between 2004 and 2010 (latest data available) per MOFCOM statistics. Official statistics allow examining overall trends, but delays in publication and significant discrepancies among various reporting agencies make it difficult to assess recent flows. For example, for 2010, Eurostat records \$0.98 billion of FDI inflows from China, whereas MOFCOM puts it at \$5.96 billion, six times greater.²⁴

Figure 2: Chinese Cumulative FDI in the EU27, 2004–2010

Source: Ministry of Commerce of the People's Republic of China, *2010 Statistical Bulletin of China's Outward Foreign Direct Investment* (Beijing, China: 2011).

Using an independently compiled dataset, between 2000 and 2011 the Rhodium Group recorded 573 Chinese investment transactions in the European Union worth \$21 billion. For 2009–2010, the number of deals reached 100, and annual inflows grew to \$3 billion. In 2011, the Rhodium Group recorded 54 greenfield investments and 37 acquisitions, with total investment volume of almost \$10 billion, a threefold increase over the previous two years combined.²⁵ The Rhodium Group's research shows a marked increase in Chinese FDI flows in the EU27 following the 2008 global economic crisis: from less than \$1 billion annually from 2004 to 2008, to around \$3 billion per year in 2009 and 2010 and \$10 billion per year in 2011.²⁶ A brief overview of Chinese FDI in the European Union is provided below.

Geographical: Although some observers have suggested that China is expanding its European investments by focusing on economically and politically weaker states in need of foreign money, the data imply that its patterns are similar to those of other external investors.²⁷ According to Rhodium Group estimates, to date most Chinese FDI in Europe has been in the core countries. In 2000–2011, the top three destinations were Europe's three largest economies: France, the United Kingdom, and Germany. France was the number one recipient, with 70 deals worth \$5.7 billion.* The

*A single transaction accounts for almost two-thirds of this amount: China Investment Corporation's \$3.2 billion investment in Gaz de France in 2011. Without this transaction, France would be the fourth largest destination for Chinese FDI. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), pp. 32–39.

United Kingdom, in the second place, registered 95 deals together worth \$3.7 billion.* In third place was Germany, which attracted 146 deals, more than one-third of all European deals, totaling \$2.5 billion.²⁸

Sectoral: It is noteworthy that Chinese firms have invested heavily in upstream industries† in the European Union. The ranking of sectors in the European Union that received China's FDI is different depending on whether one measures FDI value or project number. Chemicals, plastics, and rubber; utility and sanitary services; coal, oil, and gas; and metals mining are all in the top ten in terms of FDI value. Chemicals, plastics, and rubber is the top sector in terms of value (with 17.3 percent of the total investment of \$20.95 billion in 2000–11), but it ranks just tenth in terms of project number, with a share of 3.8 percent of 573 projects. Communications equipment and services account for 17.5 percent of total projects (top rank) but just 6.5 percent of total FDI value, characterized by numerous small-scale projects. A sector that stands out is automotive original equipment manufacturing and components. It ranks third in FDI value (12.5 percent share) and fifth in project number (6.1 percent share).²⁹

The European Approach to Screening Foreign Investment

Analysis of the positive or negative impacts of Chinese investment on Europe is difficult, because outbound Chinese FDI is a recent phenomenon. Although, on the whole, European countries welcome any foreign investment as a potential source of growth and employment, the major source of concern is the lack of transparency of Chinese companies investing in Europe. Unlike the United States, where the Committee on Foreign Investment in the United States (CFIUS) considers national security implications of foreign investment, the European Union lacks a centralized investment review process.

* Chinese investment in the United Kingdom includes autos, banking, and real estate as well as stakes in UK-listed firms with limited operations in Europe (mostly mining firms with assets in Africa, Latin America, and Central Asia).

† "Upstream industries" refers to industrial firms that process the basic or raw material into an intermediary product that is converted into a finished product by the downstream industries.

The European Approach to Screening Foreign Investment—Continued

Under European Community law, screening FDI for national security is permitted in order for members to address public security and “take any necessary measures for the protection of the essential interest of their security.”³⁰ There is little agreement among member states on the definition of national security much less the institutional setups, processes, and time lines.* Research by Thilo Hanemann and Daniel Rosen of the Rhodium Group has noted that “Europe’s current fragmented approach to screening foreign investment for security threats risks a race to the bottom, fails to address pan-European national security risks, and offers room for protectionist abuse in the name of security.”³¹ For example, in one case, an acquisition of a French yoghurt brand by a foreign competitor was blocked on strategic importance grounds.³² There is also a concern that China could engage in “regime shopping” to gain access to strategic assets in states with less robust screening regimes (or those that do not have them at all).³³ Problems associated with Chinese companies’ “regime shopping,” also known as “license shopping,” are addressed in a discussion of European dual-use transfers to China in part 2 of this section.

In the past, the European Commission’s job was to keep the door open to foreign investment, but investment promotion and protection was left to national governments. As a result, China has 24 independent bilateral investment treaties with EU members, creating a balkanized landscape with different requirements and security measures (for those states that have them). In principle, the 2009 Lisbon Treaty, which made FDI policy part of the EU’s common commercial policy, should make the screening procedures easier by transferring the rights of concluding international investment agreements from individual member states to the European Commission.³⁴ It remains to be seen how effective the Lisbon Treaty will be in practice.

In addition, in 2011, two European commissioners proposed the establishment of a European equivalent of CFIUS, claiming the backing of a number of member states.³⁵ An internal European Commission assessment has concluded that, since there is no legal basis to put such a body in place, there is no immediate rationale to proceed, but it is an indication that Chinese investments may face increased scrutiny.³⁶

* Each member state has its own understanding of what constitutes national security. For example, France specifies several sectors, including aerospace construction and press agencies; Poland identifies real estate (among others); while the U.K.’s list includes aerospace and defense, energy, and manufacturing. Organization for Economic Cooperation and Development, “Transparency and Predictability for Investment Policies Addressing National Security Concerns: A Survey of Practices” (Paris, France: May 2008). www.oecd.org/dataoecd/2/20/40700254.pdf; Organization for Economic Cooperation and Development, “Freedom of Investment, National Security and ‘Strategic’ Industries: An Interim Report,” *International Investment Perspectives: Freedom of Investment in a Changing World* (Paris, France: 2007), pp. 53–63. <http://www.oecd.org/investment/investmentpolicy/40476055.pdf>.

Investor ownership structure: State-owned enterprises (SOEs) are less important in China's investment portfolio in Europe than in the global picture. Due to their dominance in extractive industries and ease in getting approvals from the Chinese government, SOEs have dominated China's global FDI activities in the past, accounting for some 70 percent of the cumulative investment in 2010, according to official statistics. According to Rhodium Group research, from 2000 to 2011, 359 of 573 deals (63 percent) of Chinese deals in Europe were done by private companies (defined as having 80 percent or greater nongovernment ownership). Private companies dominate in greenfield investment and sectors such as services, but the average size of their deals is much smaller than for SOEs.³⁷

While SOEs account for only one-third of deals, they dominate in terms of total deal value. Sovereign investment entities have kept a low profile to date when it comes to direct investment, but their activities are ramping up. China Investment Corporation (CIC), the most prominent of China's sovereign wealth funds, is an active investor in Europe, but it has only made two investments that meet the definition of FDI (a stake exceeding 10 percent*): In 2009, CIC injected \$340 million in Songbird Estates PLC, the owner of London's Canary Wharf; in 2011, CIC invested \$3.2 billion in Gaz de France's gas and oil exploration and production business. CIC also has several big portfolio investment stakes in European companies, such as its 9 percent ownership of Thames Water, a UK utility. By the end of 2010, CIC had 21.7 percent of its diversified equities portfolio allocated to Europe.³⁸

China's Quest for Concessions

The prospect of China's assistance either in the form of bond purchases or FDI has raised the possibility that China would extract from individual member states promises or concessions, including the granting of market economy status[†] and the lifting of the arms embargo,[‡] which have long been on China's wish list.³⁹ The possibility of Chinese financing being provided through the IMF also entails potential concessions, including a rebalancing of voting rights and the inclusion of the renminbi (RMB) in the special drawing rights currency unit.⁴⁰

On several occasions in the past, China has used its economic influence to achieve foreign policy objectives. For example, China used "checkbook diplomacy" to entice countries to support Beijing's position on Taiwan or withhold economic benefits from countries when their leaders meet with the Dalai Lama.§ Beijing has also

*The European Union uses as a base for its work the Organization for Economic Cooperation and Development (OECD) and IMF benchmarks, which define FDI as "the category of international investment made by an entity resident in one economy (direct investor) to acquire a lasting interest in an enterprise operating in another economy (direct investment enterprise). The lasting interest is deemed to exist if the direct investor acquires at least 10% of the voting power of the direct investment enterprise." Eurostat, "Foreign Direct Investment: Eurostat Metadata in SDDS [statistical data dissemination system] format: Summary Methodology" (Luxembourg: February 12, 2008). http://europa.eu/estatrefinfo/sdds/en/bop/bop_fdi_sm.htm.

†The European Union has upgraded China from "non-market" to "transition" economy status but has refrained from granting it the full "market economy" treatment, which would make it more difficult for Chinese firms to be found guilty of dumping goods in overseas markets.

‡The status of the EU arms embargo to China is discussed in Part 2 of this section.

§ For example, in 2008, China called off the EU-China summit because the Dalai Lama would be visiting Europe and meeting with then French President Nicolas Sarkozy around the same

used its economic power to punish countries for decisions that it did not like. For example, in 2010 China introduced an informal ban on exports of rare earth minerals to Japan amid a dispute over Japan's detention of the captain of a Chinese fishing boat that collided with Japanese Coast Guard boats in contested waters of the East China Sea.⁴¹ Also in 2010, China limited its imports of Norwegian salmon and froze its political relations with Norway after the Oslo-based Nobel Committee awarded human rights activist Liu Xiaobo the Nobel Peace Prize.⁴²

In 2011, Premier Wen Jiabao explicitly offered China's financial support in return for recognition of China's market economy status.⁴³ There have also been suggestions that Europe should lift its post-Tiananmen Square arms embargo in exchange for Beijing's contribution to European debt relief.⁴⁴ A number of European analysts are worried that instead of offering broad support to the European Union, China may deal directly with member states, employing a "divide-and-conquer" strategy to buy up strategic assets and play member states against each other and against their collective interests.⁴⁵

From the start of the euro crisis, the EU's official position has been that external support for the eurozone is helpful but not necessary.⁴⁶ Andrew Small of the German Marshall Fund of the United States noted in his testimony before the Commission that while individual EU members may have needed bailouts, there has been strong political pushback when anyone has misleadingly created the impression of Europe "begging" for support. Despite several reports of China's interest in seeking concessions, there have been no signs of the European Union considering any of them. For example, although several EU members, including France and Italy, have supported lifting the arms embargo, China has made no progress on the human rights issues that were linked to its possible lifting, so "this is not in any sense a live issue," according to Mr. Small.⁴⁷

On the other hand, the European Union views the granting of the market economy status as a "waning asset."⁴⁸ Under China's World Trade Organization (WTO) accession protocol, WTO members have the ability to treat China as a "nonmarket economy"* until 2016 when determining antidumping penalties. After 2016, this ability will no longer be automatic but will instead be determined on the basis of the individual WTO member's trade law (see textbox, below). Mr. Small noted in his testimony that many European policymakers think this ability should be traded for concessions from China not related to the current sovereign debt crisis.⁴⁹

time as the summit. In addition, Chinese nationalists called for boycotts on French goods and on the French supermarket Carrefour. Ian Traynor, "China Cancels EU Summit over Dalai Lama Visit," *Guardian* (United Kingdom), November 2008; Matthew Day, "Defiant Nicolas Sarkozy Meets Dalai Lama Despite China's Trade Threat," *Telegraph* (United Kingdom), December 6, 2008.

*A nonmarket economy is an economic system in which decisions regarding investment, production, and distribution, and the prices of goods and services, or any combination thereof, are determined by a central authority, usually a government agency, rather than based on supply and demand.

Market Economy Status and EU Law

Even after 2016, China's treatment as a market economy will not be automatic. Like the United States, the European Union has a statutory test for determining whether a country has a market economy. The European Union assesses the existence of a market environment using five criteria set out in the EU Anti-dumping Regulation. To be considered a market economy, a country must have a floating exchange rate; a free market; a nonintrusive government; effective accounting standards in firms; and a clear definition of property rights and bankruptcy laws.⁵⁰

In 2011, the European Commission concluded that China had only fulfilled one of the five criteria required to gain the market economy status, relating to the free market criteria. The European Parliament noted in 2012 that no "appreciable progress" has been made by China in the other areas since then.⁵¹ Chinese Premier Wen Jiabao reiterated his call for the European Union to grant China a full market status at the September 2012 EU-China Summit.⁵²

François Godement and Jonas Parello-Plesner of the European Council on Foreign Relations, a think tank, have noted that China may be applying to Europe's periphery the same tactics that have paid off in the developing world, making investment deals or promises of assistance in exchange for special favors or concessions, though to date the payoff has been limited.⁵³ China has particularly focused on the Mediterranean and southeastern member states most in need of Chinese cash, and the danger for Europe is that China is trying to cultivate relationships with smaller member states within the European Union, which could be relied upon to block any unanimous decision against its interests.⁵⁴ For example, the purchase of the Athens Container Port by China's COSCO Group provided the Greek government with \$4.2 billion that Greece used to help pay down debt.⁵⁵

In one telling case, Serbia, an official candidate for membership in the European Union, built a bridge over the Danube River with financing from China Development Bank. That deal coincided with the push by China for a reduced presence at the Nobel Prize ceremony for Liu Xiaobo, a jailed Chinese dissident. Serbia initially was inclined to accede to Beijing's demands but, under EU pressure, followed other European countries and sent representatives to the ceremony.⁵⁶

Although the consensus among experts on the China-Europe relationship is that greater Chinese influence on some member states is unlikely to fundamentally change the EU's calculus, Mr. Parello-Plesner noted at the Commission's April 19, 2012, hearing that Europe faces a structural disadvantage in dealing with China. While China is a single actor "that can mobilize banks, wealth funds, money and diplomacy to pursue its foreign policy goals," the European Union is divided between member states with different economic interests.⁵⁷ Mr. Parello-Plesner noted in his testimony that even before the euro crisis, China knew how to take advantage of the disjointed nature of governance within the European Union.

For example, China knows that “free-traders” in northern Europe, such as the United Kingdom, the Netherlands, Denmark, and Sweden, will work to block strong retaliatory moves that may appear protectionist, while the southern European countries are unlikely to be “frontrunners on EU’s human rights policy.”⁵⁸ The EU’s policy, according to Mr. Parelo-Plesner, “often ends up in a lowest common denominator which is comfortable for China.”

The European Union’s Stance in Recent Trade Frictions

European firms have been outspoken about recent signs of backsliding as China’s government has turned to such initiatives as a preference for indigenously developed goods in government procurement.* In addition, despite multiple promises and years of negotiations and dialogues, China’s capital markets remain largely closed in sectors that the government deems important for its economic development strategy. In the most recent release of the EU Council’s “Guidelines on the EU’s Foreign and Security Policy in East Asia,” the European Union reaffirmed its commitment to ensuring that China adheres to its WTO obligations.⁵⁹ Despite Europe’s current strained economic conditions, the European Union has moved more assertively in its trade policy toward China, as a few recent developments demonstrate.

The European Commission, the European body charged with investigating trade complaints, is considering initiating antisubsidy and antidumping investigations without waiting for a company to ask for such an investigation (companies are often reluctant to bring complaints against China for fear of retaliation). Although the proposal does not specify a target country, it is clearly aimed at China. European companies are increasingly frustrated by Chinese policies impeding market access and Chinese government subsidies benefitting Chinese firms, which disadvantage foreign companies.⁶⁰

In May 2012, the European Commission announced that it was gathering evidence to open an investigation into subsidies received by Chinese telecommunications equipment companies including Huawei and ZTE. The investigation would be the first time the European Union has opened a trade investigation on its own initiative and not at the behest of a European company (Ericsson, Siemens-Nokia, and Alcatel-Lucent, the biggest EU telecom equipment companies, all of which have business interests in China, have refused to cooperate).⁶¹ In response, China threatened to retaliate with investigations into European agriculture, automobiles, renewable energy, and telecommunications companies.⁶² In an unexpected development, the European Commission delayed the case to gather more evidence on the eve of Premier Wen’s arrival for the EU-China Summit in September 2012. The European Commission staff insisted the move was not tied to Premier Wen’s visit or to pressure from some EU member states to drop the case for fear of retaliation.⁶³

*For an in-depth analysis of China’s indigenous innovation efforts, see U.S.-China Economic and Security Review Commission, *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), Chapter 1, Section 3: “Indigenous Innovation and Intellectual Property Rights,” pp.70–87.

The European Commission also announced in September 2012 that it will investigate whether Chinese makers of solar energy equipment have dumped their products in Europe, which could lead to imposition of penalty tariffs. However, German Chancellor Angela Merkel said on a state visit to China that her preference would be to resolve the trade dispute through bilateral negotiations rather than tariffs, exposing a rift among European policy-makers.⁶⁴ During Chancellor Merkel's visit, China and Germany signed 18 agreements, including a \$3.5 billion deal under which ICBC (Industrial and Commercial Bank of China) Financial Leasing Co. Ltd.* will acquire 50 Airbus aircraft.⁶⁵ This is the first significant deal in China for Airbus since a dispute broke out between China and the European Union over the EU's introduction of fees on airline emissions (discussed below).

In 2012, the United States, the European Union, and Japan brought a case in the WTO over China's limits on exports of rare earths, tungsten, and molybdenum.⁶⁶ The panel in this case was established in July 2012. For more on this WTO case, see chapter 1, section 1, of this Report. For a discussion of Chinese policies related to rare earths, see chapter 4, section 2, of this Report.

China, Europe, and Government Procurement

Spurred by the “going out” strategy, Chinese companies have been successfully bidding for infrastructure projects across Europe. In their report, *The Scramble for Europe*, Dr. Godement and Mr. Parelo-Plesner noted that the focus of Chinese efforts has been the “cash-strapped countries in Europe's periphery that have need for upgrading roads, railroads and public buildings,” perhaps in the hopes of securing some “soft power” leverage.⁶⁷ The European public procurement market is very open, and Chinese companies can offer low prices on their bids—taking advantage of cheap loans financed by Chinese banks and low wages paid to their Chinese workers—easily undercutting their competitors.⁶⁸

Meanwhile, even as Chinese companies can and do bid for government procurement contracts in Europe without opposition, the same cannot be said for the ability of European companies to access the equivalent market in China. The European Union Chamber of Commerce in China estimates the size of China's government procurement market at \$1 trillion, but, like their U.S. counterparts, European companies have been largely excluded from Chinese public procurement contracts.⁶⁹ In a damning report, the EU Chamber of Commerce detailed the obstacles faced by European and other foreign companies in trying to bid for contracts with the Chinese state.⁷⁰ Because China has not yet joined the WTO Government Procurement Agreement, as it has repeatedly promised to do upon its WTO accession in 2001, it is not illegal for China to discriminate against foreign goods or services in its government procurement.

*ICBC Financial Leasing Co. Ltd. is a financial leasing branch of the Industrial and Commercial Bank of China (ICBC), one of China's “Big Four” state-owned commercial banks. ICBC Leasing's business covers aviation, shipping, and large equipment.

China, Europe, and Government Procurement—Continued

As a consequence of these growing frustrations, the European Union is considering a reciprocity rule that will give member states the option to reject bids from countries that fail to open their public procurement markets to European companies. While the procedure can be applied to all countries that have not signed up to the WTO's Government Procurement Agreement, it was drawn up with China as the principal target. Chinese companies would stand to lose access to the EU's \$500 billion market unless China either joins the Government Procurement Agreement or stops its own restrictive practices.⁷¹

In addition to direct trade enforcement action, Mr. Small noted in his testimony that the European Union launched free trade talks with virtually every major economy in China's neighborhood, an approach that some observers have dubbed "Asia-minus-one."⁷²

The new EU legislation that makes foreign airlines liable to pay a tax for carbon emissions when entering European airports has also emerged as a recent point of friction. China and several other countries, including the United States, are opposed to this plan. China has forbidden its airlines to pay the tax. In fact, China threatened implicit and explicit retaliation if the emissions tax goes into effect. According to Airbus, the European aerospace manufacturer, China suspended the purchase of 45 long-haul A330s and 10 A380 superjumbo planes, valued at around \$14 billion. Although Airbus did not name the airlines involved, industry sources suggested that A380 jets were earmarked for Hong Kong Airlines, which is 46 percent owned by NHA Group, the parent of Hainan Airlines.⁷³ In a related development, during the September 2012 EU-China Summit, the two sides signed a deal to cut greenhouse gas emissions through projects including the development of a Chinese emissions trading scheme and assisting Chinese cities to be resource efficient. The European Union will contribute €25 million (\$33 million) and technical assistance over a four-year period to three carbon-reduction projects.⁷⁴ It is unclear what impact the new deal will have on China's refusal to comply with the EU airlines emissions law.

Implications for the United States

For the United States, the opportunities to coordinate with the European Union on economic and trade policy responses are greater than the risks that Europe's need for Chinese money will act as a constraint on Europe's willingness to challenge China's trade practices. Unlike in the security arena, where U.S. and EU interests are not completely aligned, the two powers face the same challenges in their commercial dealings with China, such as market access problems, intellectual property theft, forced technology transfer, and indigenous innovation. This presents ample opportunities for cooperation. The United States and the European Union have long coordinated their efforts at the WTO, as in this year's filing of the case on China's restriction of rare earth exports, and there has been collaboration over issues such as China's indigenous innovation policies. China has a history of responding more favorably

to multilateral pressure in trade disputes and, as China's two largest trading partners, the United States and the European Union are in a far stronger position when joint approaches are taken. In a joint statement issued in July 2012, Secretary of State Hillary Clinton and the EU High Representative Catherine Ashton underscored the importance of open markets in the Asia-Pacific region, including reciprocal market access for goods, services, and government procurement; security for investments; and protection of intellectual property rights.⁷⁵

There are areas, however, where closer collaboration would be beneficial. There is little pan-European, let alone transatlantic, coordination on investment regimes and screening mechanisms. As the effects of the economic crisis are felt more deeply across the European Union, member states are competing with each other for Chinese business, thus diminishing their leverage and reducing their chances of collectively striking a better deal with China.⁷⁶ Lack of U.S.-EU coordination on investment screenings is particularly problematic in the age of global interconnectedness, including communication networks and financial systems. Technologies or critical infrastructure protected under the U.S. investment review regime may slip through the cracks in the disjointed European landscape, which could pose a danger not just for European members but for the United States as well. Thus Huawei, which has alleged links to the People's Liberation Army and has been unable to acquire telecommunications networks in the United States, has considerable leeway in most European countries.

Conclusions

- China has a fundamental interest in seeing the euro crisis recede, as it depends on the European Union for the largest part of its exports. Throughout the euro crisis, China has consistently voiced support for the euro and for individual countries in distress, but there have not been any significant direct contributions.
- The opacity of bond purchases, especially in the secondary market for European bonds, makes it difficult to determine what role China has played in alleviating the EU's sovereign debt crisis. Statements by Chinese officials and economic trends suggest that Chinese companies have been using the euro crisis to deepen their foreign direct investment (FDI) in the European Union through acquisitions of technologies and brands, among other things.
- Chinese FDI flows to the European Union so far have been modest, but there is potential for significant growth. Chinese investment has been generally well received, but it is too early to assess its impacts, negative or positive.
- European companies face the same problems as U.S. companies: loss of intellectual property and technology to Chinese companies; an uneven playing field due to Chinese government subsidies offered to the domestic firms, and the lack of market access in many sectors and industries; and China's government procurement market. This presents a number of opportunities for U.S.-EU cooperation on trade-related issues.

Part 2: Security Relations between Europe and China

Security relations between China and Europe are not nearly as well developed as trade and economic relations. Neither power has considered the other to be particularly vital to its own geostrategic interests.⁷⁷ The current strategic “backyards” of Europe are the Mediterranean, North Africa, and the Middle East. Since the end of World War II and the loss of European colonial possessions in Asia, European countries’ security relations in the region have focused on arms sales to China, which directly affects U.S. strategic interests. Experts on Sino-European relations testified to the Commission that while European leaders are concerned about economic threats posed by China, they do not see China as a direct military threat. This perception contrasts with widely held U.S. concerns about China’s military modernization and recent assertiveness in the Asia-Pacific region and may impact transatlantic solidarity on issues related to China in the future.

EU policymakers have identified the need for a more proactive EU foreign and security policy toward China. In 2012, the European Union signaled greater interest in security issues related to China and Asia more broadly. According to the “Guidelines on the EU’s Foreign and Security Policy in East Asia,” the European Union “needs a more developed, coherent, and focused common foreign and security policy in East Asia.”⁷⁸ Among the reasons cited for enhanced strategic attention are Europe’s many direct economic interests in the region; growing tensions in the South China Sea;* “China’s economic development, more active diplomacy, and increasing (and nontransparent) defense expenditure”; and the need for Europe to “remain sensitive” to U.S. roles and interests in Asian security issues.⁷⁹ In an additional indication of the EU’s heightened interest in Asian security, EU High Representative Ashton attended the 2012 ASEAN (Association of Southeast Asian Nations) Regional Forum—her first appearance at the meeting since becoming the EU’s chief foreign policy official in 2009. A joint U.S.-EU statement from the forum called for closer bilateral consultation on security issues in the region.⁸⁰ Kurt Campbell, U.S. assistant secretary of State for East Asia and the Pacific, stated in June 2012 that “there is remarkably little discussion or strategic engagement between Europe and the United States” on Asia.⁸¹

Sino-European Security Cooperation

In 2003 and 2004, China and the European Union expressed an intent to elevate Sino-European relations to a “strategic partnership” to reflect the “expanded intensity and scope” of the relationship after nearly three decades of formal diplomatic relations.⁸² This partnership has not been codified, and it is expressed primarily through statements issued at annual EU-China summits.⁸³ The partnership encompasses cooperation on security issues like piracy, terrorism, weapons proliferation, human trafficking, and

*For a discussion of China’s policies and activities in the South China Sea, see chapter 3, section 1, of this Report.

other regional or global matters that arise. However, the partnership focuses overwhelmingly on economic issues.⁸⁴

European observers frequently argue that the “strategic partnership” lacks substance, especially in the security realm.⁸⁵ Two factors inhibit meaningful security cooperation. First, as mentioned above, the EU’s supranational status limits its ability to behave as a unitary actor, as member states hold a wide range of foreign policy and security responsibilities. While the European Union does have a formal foreign and security policy-making process, most decision-making in this realm remains the responsibility of individual member states.⁸⁶ As such, China deals with European countries bilaterally when it comes to most foreign policy and security issues.⁸⁷

Second, historical differences limit meaningful security cooperation between China and Europe. European security interests traditionally concentrate in the Mediterranean, Africa, and the Middle East, and China’s security interests center on Asia. China’s growing global presence and an increasingly interdependent Sino-European economic relationship make this historical difference increasingly irrelevant. Nonetheless, China is reluctant to adopt security and foreign policy cooperation with Europe commensurate with their increasingly overlapping global interests.⁸⁸ For example, Sino-European cooperation in Africa is conspicuous by its relative absence. Jonathan Holslag, head of research at the Brussels Institute for Contemporary China Studies in Brussels, Belgium, testified to the Commission that while both China and Europe have security interests in Libya, Sudan, and South Sudan, very little communication or coordination exists between European and Chinese official entities on issues of mutual concern in those countries.⁸⁹ According to Mathieu Duchâtel, senior researcher at the Stockholm International Peace Research Institute, and Alexandre Sheldon Duplaix, researcher at the French Defense Historical Service, China views Europe as a weak security actor and thus prioritizes economic and technological issues in its relations with Europe.⁹⁰

Despite limited engagement in the security realm, China and Europe cooperate and communicate on some regional and global security issues through United Nations (UN) peacekeeping missions, humanitarian assistance and disaster relief, antipiracy operations, and military-to-military contacts.*

UN peacekeeping operations: According to testimony from Øystein Tunsjø, associate professor at the Norwegian Institute for Defence Studies in Oslo, Norway, China-Europe cooperation on global security issues is strongest within UN operations.⁹¹ China, the sixteenth-largest contributor of UN peacekeeping troops among 118 contributing countries, has cooperated extensively with Europe in this context since it began supporting peacekeeping operations in the late 1980s.⁹² Chinese and European peacekeepers served to-

*China and Europe also have participated in international organizations that promote global security, including the International Maritime Organization, the International Ship and Port Facility Security Code, the International Organization for Migration (which acts to combat human trafficking), and the Global Initiative to Combat Nuclear Terrorism. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012; International Organization for Migration, “Promoting EU-China Cooperation on Migration Management” (Geneva, Switzerland). <http://www.iom.int/jahia/Jahia/immigration-and-border-management/promoting-china-eu-cooperation-on-migration-management>.

gether in 11 of the 17 UN missions that were ongoing in 2012.* This has spurred conferences and dialogues to promote further China-Europe cooperation in UN missions.⁹³

Humanitarian assistance and disaster relief: China and Europe have engaged in multilateral relief activities, including operations in Burma in the aftermath of a tropical cyclone in 2008.⁹⁴ Several regional fora promote such cooperation, including the Asia-Europe Meeting,[†] the EU-China Disaster Risk Management Project, and the EU-China Institute of Emergency Management. These mechanisms seek to enhance cooperation on disaster preparedness, prevention, and response.⁹⁵

Antipiracy operations: Since 2008, the Chinese People's Liberation Army (PLA) Navy has assisted UN efforts to police and repress piracy around the Horn of Africa.⁹⁶ The PLA Navy's escort operations have occurred concurrently with U.S., European, and other antipiracy task forces. The multinational task forces and individual countries conducting antipiracy operations coordinate their activities with the Shared Awareness and Deconfliction Meeting mechanism, through which liaisons share information about their escort tasks and divide responsibilities in patrol zones.⁹⁷ The PLA Navy maintains its own escort corridor off the coast of Somalia in the Gulf of Aden and does not participate in multinational antipiracy task forces. While cooperation between China and European actors is minimal, it acts to reinforce mutually shared imperatives and norms regarding maritime security, according to testimony from Dr. Tunsjø.⁹⁸

China's military visits and exchanges with European countries: China's military relations with specific European countries are reflected in defense consultations and dialogues, personnel exchanges, and military exercises.

In the first nine months of 2012, China held military exchanges with at least 16 European countries, including Belarus, Bulgaria, Croatia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Romania, Spain, Sweden, Switzerland, Turkey, and Ukraine, as well as with the European Union.⁹⁹ In 2011, 16 senior-level exchanges took place between China and European countries.¹⁰⁰ Over 50 separate defense exchanges took place between Chinese and EU officials from 2009 to 2010.¹⁰¹ China maintained particularly robust interactions with Germany, conducting seven high-level meetings over the two-year span, including a Strategic Consultation on Defense between the Chinese and German militaries in Germany in September 2009.¹⁰² China also held five military exchanges and two joint exercises with Romania during that period.[‡]

*Chinese and European peacekeepers have been deployed in Côte d'Ivoire, Cyprus, Darfur, Haiti, Liberia, Lebanon, South Sudan, Syria, Timor-Leste, Western Sahara, and in the UN Middle East Truce Supervision Organization. United Nations, "Current peacekeeping operations." <http://www.un.org/en/peacekeeping/operations/current.shtml>.

†The Asia-Europe Meeting dialogue was established in 1996 to address political, economic, and cultural issues "with the objective of strengthening the relationship between [Europe and Asia], in a spirit of mutual respect and equal partnership." All 27 EU countries, China, and 18 other Asian countries participate in the Asia-Europe Meeting. Asia-Europe Meeting, "About ASEM." <http://www.aseminforboard.org/about-asem-menu.html>.

‡China and Romania conducted "Friendship Operation-2009," a joint military training exercise of mountain troops held in Brad, Romania, in September 2009. The drills were reprised in Kunming, Yunnan Province, China, in 2010. Information Office of the State Council, "Appendix I: Major International Exchanges of the Chinese Military (2009–2010)," *China's National De-*

In November 2010, China's PLA Air Force and the Turkish Air Force conducted a joint air exercise using U.S.-made Turkish jets and Chinese Sukoi-27 fighter jets.¹⁰³ The exercise, "Anatolian Eagle," appears to be one of the few military exercises between the PLA and a European military that involved combat-relevant elements (most other exercises between China and European countries take the form of naval search-and-rescue exercises, which have little value for combat operations).¹⁰⁴ Although Turkish officials assured the United States that the exercise had revealed no sensitive U.S. or North Atlantic Treaty Organization (NATO) technologies or secrets, the exercise prompted concern in the U.S. defense community.¹⁰⁵

NATO and China

Contact between NATO and China is a relatively recent and largely tentative development. Formal NATO communication with China began in 2002 when the Chinese ambassador in Brussels, Belgium, met with the NATO secretary general to discuss NATO's operations in Afghanistan.¹⁰⁶ Subsequently, NATO and China have held some dialogues and delegation visits on issues such as terrorism, maritime piracy, proliferation of weapons of mass destruction, and crisis management.¹⁰⁷ These dialogues have been largely political in nature, and sporadic rather than institutional. A 2011 report by the Political Committee of NATO's Parliamentary Assembly advised strengthened, yet gradual and limited, cooperation with China, noting that the "most obvious area for NATO-China cooperation concerns maritime piracy."¹⁰⁸

It remains to be seen whether NATO or China is interested in or willing to develop a more formal relationship. Chinese leaders are ambivalent about NATO, especially its activities in neighboring Afghanistan.¹⁰⁹ NATO would also face challenges if it pursued a more formal relationship with China. According to testimony from Christina Lin, visiting fellow at the Paul H. Nitze School of Advanced International Studies Center for Transatlantic Relations, deepened cooperation would be inhibited by China's apparent view of NATO as an intelligence collection target for both U.S. and European technology and procedural know-how.* These obstacles aside, it is unclear whether NATO is willing and able to take on the kind of global role that would support more robust engagement with China, and some observers perceive the alliance as increasingly inward looking.¹¹⁰

fense White Paper 2010 (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/02/content_4415546.htm; Information Office of the State Council, "Appendix III: Joint Exercises and Training with Foreign Armed Forces (2009-2010)," *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/06/content_4416714.htm.

*In early 2012, Chinese actors reportedly created a fictitious social networking account for NATO Supreme Allied Commander Europe James Stavridis in order to target other U.S. and NATO officials. (For more information on Chinese cyber espionage and related matters, see chap. 2, sec. 2, of this Report.) U.S.-China Economic and Security Review Commission, *Hearing*

NATO and China—Continued

Future NATO-China military cooperation could be limited by U.S. law. The U.S. National Defense Authorization Act of 2000 prohibits the U.S. secretary of Defense from authorizing military-to-military contact with the PLA if it could “create a national security risk due to inappropriate exposure.”¹¹¹ Consequently, prospects remain limited for military exchanges between NATO and China beyond “soft security” issues like piracy, search and rescue, peacekeeping, and dialogues.

NATO and China each have strong interests in maintaining security in Central Asia, particularly in Afghanistan. As NATO draws down its presence in Afghanistan in coming years, China may take a greater interest in Afghanistan’s security than it has in the past. In 2012, China took concrete steps to expand its security relationship with Afghanistan.¹¹² In September, Politburo Standing Committee member and China’s domestic security chief Zhou Yongkang visited Kabul to sign economic and security agreements, including one to send 300 Afghan police officers to China for training (Mr. Zhou was the highest-ranking Chinese official to visit the country in 46 years).¹¹³ In addition, Chinese Foreign Minister Yang Jiechi stated that the Shanghai Cooperation Organization (SCO), a Chinese- and Russian-led regional political and security organization,* should play a stronger role in Afghanistan’s peace and reconstruction process.¹¹⁴ In June 2012, the SCO signaled its interests in Afghanistan by inviting it to be an observer to the organization.¹¹⁵

Beyond Central Asia, NATO and SCO interests overlap in the case of Turkey, a NATO member state that was named an SCO dialogue partner in 2012.¹¹⁶ If the SCO becomes a viable security actor (a reality that remains to be seen), overlapping—and perhaps competing—NATO and SCO interests in the region could present both opportunities and risks.

European Arms Sales to China

European arms sales to China are limited by national, EU-level, and international export control regulations, which include a non-binding arms embargo enacted in response to the 1989 Tiananmen Square massacre as a condemnation of “the brutal repression taking place in China.”[†]¹¹⁷ In addition to the embargo, European arms sales are governed by an EU-wide, legally binding export con-

on the China-Europe Relationship and Transatlantic Implications, written testimony of Christina Lin, April 19, 2012; Matthew J. Schwartz, “Facebook Social Engineering Attack Strikes NATO,” *InformationWeek*, March 12, 2012. <http://www.informationweek.com/security/government/facebook-social-engineering-attack-strike/232602419>.

* The Shanghai Cooperation Organization, established in 2001, is a Central and East Asian regional forum for cooperation on traditional and nontraditional security issues. China, and to a lesser extent, Russia, are generally seen as driving the agenda and development of the organization. Other permanent members include Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. For an overview of the SCO, see U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2009), pp. 220–221.

† Conditions for lifting the embargo include improvements both in China’s human rights record and in cross-Strait relations. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

trol regime* as well as a number of international arms control and dual-use agreements.† These regulations, guidelines, and agreements are all interpreted at the national level, which leads to inconsistent practices and enforcement. As a result of the embargo, European companies sell few defense articles to China. Since 2003, China has complained that the embargo undermines Sino-European relations and has called for the European Union to lift the embargo several times. At the 2012 EU-China Summit, Chinese Premier Wen Jiabao expressed disappointment that the embargo was still in effect, saying, “I deeply regret this.”¹¹⁸

The vague language of the embargo leaves room for the continued export of defense goods to China.¹¹⁹ Moreover, the embargo stipulates that existing contracts between European companies and Chinese purchasers will be honored. According to the Stockholm International Peace Research Institute Arms Transfers Database, turbofan engines, diesel engines, antisubmarine sonar, fire control radar, military helicopters, surface-to-air missiles, and air-to-air missiles were delivered to China from France, Germany, Italy, Ukraine, and the United Kingdom as late as 2011 based on pre-embargo contracts.¹²⁰ In 2010 (the most recent year for which data were available), EU defense exports to China totaled €69.5 million (about \$91 million).‡ See Addendum I for a list of arms transfers from European countries to China between 1975 and 2011.

The individual export control regimes of member states are based on divergent interpretations of the embargo and EU-wide regulations, and member states do not use uniform criteria for approval of exports to China.¹²¹ Some member states, such as France, have interpreted the embargo narrowly to cover only lethal military items and major weapons platforms while continuing to approve licenses for military-related equipment such as radar and avionics (according to the Stockholm International Peace Research Institute, France also licensed either the technology or components for naval guns to China in 2001).¹²² As of 2007, France was the biggest European arms exporter to China, constituting 65 percent of all EU arms transfers to China since the enactment of the embargo.¹²³ The United Kingdom and Germany, on the other hand, have more restrictive export control laws designed to prevent any lethal weapons or advanced technology transfers to China.¹²⁴

Several European entities have periodically advocated for lifting the embargo. As Sino-European relations flourished in the early 2000s, many European stakeholders, including powerful defense firms seeking access to China’s arms market, characterized the em-

*The 2008 “EU Common Position defining common rules governing control of exports of military technology and equipment” lists eight criteria for the denial of export licenses. Criterion One calls for “[r]espect for the international obligations and commitments of Member States, in particular the sanctions adopted by the UN Security Council or the European Union. . .” which reinforces the 1989 arms embargo. European Union, *Council Common Position 2008/944/CFSP* (Brussels, Belgium: Official Journal of the European Union, December 8, 2008). <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:335:0099:0103:En:PDF>.

†Export control regimes, including the Wassenaar Arrangement, the Missile Technology Control Regime, the Nuclear Suppliers Group, the Australia Group, and the Chemical Weapons Convention, are integrated into European export control regimes. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

‡In 2010, the European Union also sold defense items worth €103,661 (about \$136,000) and €54,040 (about \$70,900) to Hong Kong and Macau, respectively. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

bargo as an antiquated and awkward constraint on Europe's maturing relationship with China.¹²⁵ In testimony to the Commission, May-Britt Stumbaum, head of the research group "Asian EU Perceptions" at the Free University of Berlin in Berlin, Germany, conveyed that many Europeans believe that "maintaining an arms embargo . . . does not reflect the level of engagement that the European Union aspires to establish with China."¹²⁶ While lifting the embargo would only remove one of several layers of controls on European defense exports to China, Dr. Stumbaum posited that its removal could increase the likelihood that more defense export exemptions would be granted for China.¹²⁷

European support for lifting the embargo reached a high point in 2004 and 2005, with member states "reaffirm[ing] the political will to work towards lifting the arms embargo" during a European Council meeting in 2004.¹²⁸ This support was mitigated by strong U.S. opposition to lifting the ban. Several members of the U.S. Congress signaled that for Europe to lift the embargo would be an expression of support for China's repressive policies and a threat to U.S. security interests.¹²⁹ * Not wanting to jeopardize their business interests in the United States, many European defense companies have since refrained from selling defense goods to China.¹³⁰ According to Dr. Stumbaum, several EU countries remain interested in lifting the embargo,[†] but Germany and the United Kingdom remain firmly committed to keeping it in place. U.S. pressure to keep the embargo likely will ensure this.¹³¹ Moreover, Gudrun Wacker, senior fellow in the Asia division of the German Institute for International Security Affairs in Berlin, Germany, argues in her testimony to the Commission that intermittent statements by European leaders in favor of lifting the ban are "cheap talk" by European countries that want to be in China's good graces but know full well that EU unanimity is necessary to lift the ban. In this way, the "divide-and-conquer" strategy works to the benefit of the Europeans.¹³²

European Dual-Use Transfers to China

High-tech, dual-use ‡ technologies are intrinsic to modern, information-based warfare, making European dual-use exports to China a security concern, especially after the partial integration of China's civilian and military research organizations in 2006.¹³³ Much like Europe's laws and regulations governing defense exports, export controls for dual-use items are devised at the national, supra-

* Several resolutions passed by the U.S. House of Representatives and the U.S. Senate expressed concern about European arms transfers to China. In 2005, Representative Henry J. Hyde, then chairman of the House of Representatives' International Relations Committee (now the House of Representatives' Committee on Foreign Affairs), introduced the East Asia Security Act of 2005 (H.R. 3100) in the U.S. House of Representatives. The act, which did not pass, would have authorized "measures to deter arms transfers by foreign countries to the People's Republic of China." U.S. House of Representatives, *East Asia Security Act of 2005* (H.R. 3100), 109th Cong., 1st sess., June 29, 2005. <http://www.govtrack.us/congress/bills/109/hr3100/text>.

† Austria, Bulgaria, the Czech Republic, France, Greece, Italy, Malta, Romania, and Spain are "in favor of discussing lifting" the embargo. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

‡ "Dual-use" refers to items that can be used both for civil and military purposes. European Commission, *Green Paper: The dual-use export control system of the European Union: ensuring security and competitiveness in a changing world* (Brussels, Belgium: European Commission, 2011), p. 2. http://trade.ec.europa.eu/doclib/docs/2011/june/tradoc_148020.pdf.

national, and international levels. This fragmentation allows for different interpretations and implementation by individual member states, resulting in loopholes and creating conditions wherein countries act to undercut one another in obtaining contracts.¹³⁴ China sometimes exploits these different export regimes through “license shopping,” whereby Chinese entities attempt to acquire a particular controlled item in multiple European countries with the hope that at least one of those countries will issue a license.¹³⁵

Significantly, there exists no comprehensive assessment of EU-wide, dual-use transfers to China. Member states are required only to report denials of export licenses to the European Union but not the volume or types of licenses granted. Dr. Stumbaum argues that this is particularly problematic, since absent a comprehensive understanding of the nature of European dual-use exports to China, Europeans cannot determine whether a “critical mass” of dual-use exports may enable (or have previously enabled) China to build a formidable and otherwise unattainable defense item or system.¹³⁶

Diesel engines constitute the most significant contribution by Europe to China’s military modernization.¹³⁷ Drs. Duchâtel and Duplaix contend that Franco-German Pielstick civilian marine diesel engines “were key to China’s naval modernization,” powering every frigate, amphibious ship, and auxiliary vessel constructed in China during the time of its ninth and tenth Five-Year Plans (spanning 1996–2005).¹³⁸

European sales of satellites to China also are a concern for the United States. The U.S. Department of State is involved in a three-year-long disagreement with Franco-Italian satellite manufacturer Thales Alenia Space over whether the company sold satellites with U.S. components to China in violation of U.S. export control laws and regulations codified in the National Defense Authorization Act for Fiscal Year 1999* and the U.S. International Traffic in Arms Regulations.† These regulations’ restrictions on satellites include completed commercial satellites, most satellite components, ground control equipment, software to control satellites, and technical production data.¹³⁹ Many European satellites contain U.S. technologies and components, and the International Traffic in Arms Regulations prohibit them from being sold to China or launched on Chinese-made rockets. In response to State Department inquiries, Thales Alenia Space has maintained that none of its satellites exported to China contained any International Traffic in Arms Regulations-controlled components. At the time of the publication of this Report, the investigation remains ongoing.‡

*This legislation states that the United States should protect and enhance its national space launch industry and ensure that no restricted U.S. satellite or missile equipment be exported to China. U.S. House of Representatives, *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999* (H.R. 3616), Subtitle B: Satellite Export Controls, 105th Cong., 2nd sess., January 27, 1998. <http://www.gpo.gov/fdsys/pkg/BILLS-105hr3616enr/pdf/BILLS-105hr3616enr.pdf>.

†The International Traffic in Arms Regulations regulate the export of defense-related hardware containing U.S. technologies and components, including satellites. Peter B. de Selding, “U.S., Thales at Odds Over Request for ITAR [International Traffic in Arms Regulations]-free Satellite Design Information,” *Space News*, January 6, 2012. <http://www.spacenews.com/policy/120106-thales-request-itar-free-sat-info.html>.

‡The Department of State has requested data on the origin of each component of the satellites, a request Thales Alenia Space argues it cannot honor due to French law and contracts with satellite customers preventing the company from divulging information on the design of the satellites. Members of Congress sent a letter of inquiry to U.S. Secretary of State Hillary

In addition to arms sales and dual-use technology transfers, sensitive European technologies and processes with potential defense applications can be transferred to China through research initiatives, coproduction of technologies, joint venture technology licensing, and Chinese purchases of high-technology equipment for the purpose of reengineering.¹⁴⁰

One example of such problematic cooperation was China's involvement in the development of a European satellite navigation system, Galileo. In 2003, China became a contributing partner in the Galileo Joint Undertaking, the system's central body for project management and oversight. With the partnership came access to information and technology related to the Galileo project. While the project was intended to be commercial in nature, its satellite and positioning technologies have defense applications. After several years (and the expression of serious concern by the George W. Bush Administration), China's participation in the project diminished due to reservations by some Europeans about the military implications of the project.¹⁴¹ In a 2008 article in the *Armed Forces Journal*, Christopher Griffin, then research fellow at the American Enterprise Institute, and Joseph Lin, then associate editor of the Jamestown Foundation's *China Brief*, asserted that the "explosion of China's military space technology has been aided by rapidly expanding access to European suppliers."¹⁴²

Sino-European space cooperation continues. The 2012 EU-China Summit Joint Communiqué notes the establishment of an EU-China/European Space Agency Dialogue on Space Technology Cooperation "to enhance cooperation in the field of space technology, and on the civil aspects of their respective Global Navigation Satellite Systems."¹⁴³ In addition, the European Space Agency is considering possible joint space missions with China by 2020,¹⁴⁴ and the European Parliament and the European Chamber of Commerce in China are conducting a project to promote industrial cooperation between China and the European Union on global navigation satellite systems, according to a job vacancy notice posted on the chamber's website.¹⁴⁵

Implications for the United States

The divide in U.S. and European perceptions of China's rise poses challenges for transatlantic cooperation on security issues related to China. As the United States refocuses its economic and strategic attention to Asia, it is unclear how the transatlantic relationship will adapt.¹⁴⁶ Experts testified to the Commission that it remains to be seen whether Europe will play a role in great power politics in Asia or involve itself in a hypothetical future military contingency in the Asia-Pacific region.¹⁴⁷

European transfers of defense and dual-use items to China may improve the capabilities of the Chinese military. To the extent that some European countries remain relatively unconcerned about the modernization of the PLA, the provision of arms and dual-use tech-

Clinton about the status of the investigation in December 2011. Peter B. de Selding, "U.S., Thales at Odds Over Request for ITAR [International Traffic in Arms Regulations]-free Satellite Design Information," *Space News*, January 6, 2012. <http://www.spacenews.com/policy/120106-thales-request-itar-free-sat-info.html>.

nologies to China could persist or increase. This could raise concerns for the United States, which has numerous security commitments in the Pacific. It is also unclear if European actors appreciate the implications of China's capabilities in the space domain, wherein China is laboring to assemble a world-class intelligence, surveillance, and reconnaissance-based targeting architecture that will soon provide regional coverage. For those areas where U.S. and EU policies do align, unintended transfers of defense technologies could be mitigated with closer and more systematic transatlantic cooperation on export control issues.¹⁴⁸

Despite differences in perception of China's rise, U.S. and European security interests converge on the issue of maritime security in Asia. Approximately 90 percent of European trade is seaborne, and much of it transits the Strait of Malacca and the South China Sea. The United States is similarly reliant on shipping in the region, and both actors have an interest in preserving freedom of navigation and stable and secure sea lanes. Drs. Duchâtel and Duplaix suggest that the European Union is becoming more willing to orient its foreign and security policies toward China due to the increase in disruptive maritime events in East Asia in recent years, a trend that could negatively impact European trade and economic interests in the region.¹⁴⁹ This may prove to be an area for greater transatlantic and perhaps trilateral cooperation.

Conclusions

- Transfers of European arms and dual-use technologies to China have enhanced China's capabilities in the naval and space domains. Such advancements could contribute to the development of China's military in a way that runs counter to U.S. interests in stability in the western Pacific and global commons.
- European policymakers and leaders generally do not perceive that they have substantial strategic interests in the Asia-Pacific region, and they do not perceive China's military modernization to be a security threat. This view contrasts with that of the United States, a Pacific power with increasing security interests in the region that takes a more cautious view of China's military rise. As such, transatlantic alignment on security issues related to China and the Asia-Pacific is limited.

Addendum I: European Arms Transfers* to China, 1975–2011

Country	Item	Description	# Items ordered	# Items delivered	Year Ordered	Year(s) Delivered
FRANCE	SS-12	antisubmarine sonar	4	4	1986	1987
	HOT-2	antitank missile	240	240	1987	1988–1989
	SA-342 Gazelle	light helicopter	8	8	1987	1988–1989
	Compact 100 mm	naval gun	2	2	1988	1989
	DUBV-23	antisubmarine sonar	2	2	1988	1991
	DUBV-23	antisubmarine sonar	2	2	1990	1994–1996
	DUBV-43	antisubmarine sonar	2	2	1990	1994–1996
	RSS-12	antisubmarine sonar	25	25	1991	1993–2001
	DUBV-23	antisubmarine sonar	1	1	1996	1999
	PC-2.5	diesel engine †	4	4	2001	2004
	PC-2.5	diesel engine	10	14	2005	2007–2011
	<i>R-440 Crotale</i>	<i>surface-to-air missile system</i>	?	40	1978	1992–2011
	<i>AS-365/AS-565 Panther</i>	<i>helicopter</i>	30	30	1980	1989–1991
	<i>AS-565A Panther</i>	<i>antisubmarine helicopter</i>	?	39	1980	1989–2011
	<i>SA-321G Super Frelon</i>	<i>antisubmarine helicopter</i>	12	12	1981	1989–1997
	<i>SA-321 Super Frelon</i>	<i>helicopter</i>	?	33	1981	2001–2011
	<i>Castor-2</i>	<i>fire control radar</i>	14	14	1986	1994–2002
	<i>DRBV-15 Sea Tiger</i>	<i>Air/sea search radar</i>	8	7	1986	1987–2008
	<i>AS-365/AS-565 Panther</i>	<i>helicopter</i>	?	208	1988	1992–2011
	<i>PA-6</i>	<i>diesel engine</i>	97	81	1990	2011
<i>AS-350/AS-550 Fennec</i>	<i>light helicopter</i>	75	75	1992	1995–2011	
<i>Compact 100 mm</i>	<i>naval gun</i>	8	8	2001	2001–2007	
GERMANY	8RL-B66	diesel engine	3	3	1975	1979–1980
	MTU-1163	diesel engine	14	14	1987	1994–2005
	MTU-493	diesel engine	4	4	1989	1999
	MTU-883	diesel engine	?	350	1989	1998–2011
	MTU-396	diesel engine	4	4	1991	1997
	<i>BF8L</i>	<i>diesel engine</i>	4000	4000	1981	1982–2006

* In addition to whole items transferred, this list contains items for which technology was licensed by European countries to China, noted in italics. Licensed production can vary from primary assembly of foreign-supplied components to almost complete production following the transfer of technology.

† As reflected here, the Stockholm International Peace Research Institute considers diesel engines arms transfers by virtue of their ultimate use in People's Republic of China military assets. Aside from this table, this Report considers sales of diesel engines by European countries to China as dual-use transfers, not arms sales.

Addendum I: European Arms Transfers* to China, 1975–2011—*Continued*

Country	Item	Description	# Items ordered	# Items delivered	Year Ordered	Year(s) Delivered
	<i>BF-12L413</i>	<i>diesel engine</i>	100	100	1995	1996–2000
	<i>MTU-396</i>	<i>diesel engine</i>	48	48	2000	2001–2006
ITALY	A244	antisubmarine torpedo	40	40	1985	1986–1987
	Aspide	air-to-air missile	?	140	1995	1997–2011
SWITZERLAND	<i>GDF 35mm</i>	<i>antiaircraft gun</i>	?	280	1995	1997–2011
UNITED KINGDOM	Watchman	air search radar	1	1	1995	1997–2011
	Spey	turbofan	140	140	1988	1988–2004
	Searchwater	airborne early warning radar	6	6	1996	1999–2001
	<i>Spey</i>	<i>turbofan</i>	?	170	1988	2004–2011
UKRAINE	R-27/AA-10 Alamo	air-to-air missile	250	250	1991	1992–1994
	DT-59	gas turbine	4	4	1992	1996–1999
	R-27/AA-10 Alamo	air-to-air missile	2000	2000	1995	2000–2009
	AI-25/DV-2	turbofan	58	58	1997	1997–2004
	2S9 120mm	self-propelled gun	3	3	1999	2000
	R-73/AA-11 Archer	air-to-air missile	24	24	1999	2000
	Kh-55/AS-15 Kent	air-launched cruise missile	6	6	2000	2001
	Kolchuga	air search system	4	4	2000	2002
	DT-59	gas turbine	8	8	2001	2004–2005
	AI-25/DV-2	turbofan	42	42	2004	2005–2009
	AI-222	turbofan	?	250	?	2011
	<i>Fedko</i>	<i>tanker</i>	1	1	1992	1993
	<i>Zubr/Pomornik</i>	<i>air-cushion vehicle/landing craft</i>	?	4	?	2009

Source: Stockholm International Peace Research Institute, "SIPRI Arms Transfer Database." (Stockholm, Sweden). <http://www.sipri.org/databases/armstransfers>.

SECTION 2: CHINA'S DEMAND FOR AND CONTROL OF GLOBAL RESOURCES

Introduction

This section, which draws from a Commission hearing on China's demand for natural resources, surveys regional and international dimensions of China's resource interests and policies, focusing on energy imports, critical minerals, water, and fisheries. China's dependence on foreign energy is growing, driving China's state-owned oil companies to forge ties with and invest in energy-producing countries around the world, including the United States. While Beijing expands its energy interests overseas, it has tightened restrictions on several domestic mineral resources, limiting exports and causing anxiety among importing countries. Beijing's management of its scarce water resources is a source of friction between China and other Asian countries with which it shares rivers. China's fishing industry also has global reach, operating in waters off the coasts of Africa, Asia, and South America.

China's Global Energy Ties

China, formerly self-sufficient in its energy use,* increasingly relies on oil and gas imports to satisfy the energy demands of its export-led economy and large population.† These imports supplement China's domestic energy sources, namely coal, but also oil, natural gas, hydroelectric power, nuclear energy, and other renewable sources.

Coal, oil, and gas constitute the vast majority of China's energy consumption.‡ China is the world's top coal producer, and coal is China's primary energy source, accounting for about 70 percent of the country's primary energy consumption.¹⁵⁰ Its vast domestic reserves notwithstanding, China imported 10 percent of the coal it

*China has long prioritized self-sufficiency in energy. Although China became a net importer of petroleum in 1993, a 2012 white paper published by China's Information Office of the State Council reports that China's "rate of self-sufficiency reached around 90 percent." Information Office of the State Council of the People's Republic of China, *China's Energy Policy 2012* (Beijing, China: October 2012). http://www.chinadaily.com.cn/china/2012-10/24/content_15843745.htm; International Crisis Group, *China's Thirst for Oil* (Seoul, South Korea; Brussels, Belgium: June 2008), pp. 3–4. http://www.crisisgroup.org/media/Files/asia/north-east-asia/153_china_s_thirst_for_oil.

†China is the world's largest energy consumer. Spencer Swartz and Shai Oster, "China Tops U.S. in Energy Use," *Wall Street Journal*, July 18, 2010. <http://online.wsj.com/article/SB10001424052748703720504575376712353150310.html>. From 2001 to 2011, China's coal consumption has increased by 155 percent; oil consumption by 102 percent; and natural gas consumption by 376 percent. BP, *BP Statistical Review of World Energy June 2012* (London, England: BP, June 2012), pp. 11, 25, 33. http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf.

‡In addition to fossil fuels, hydroelectric power, nuclear energy, and other renewable energy sources make up 6 percent, 1 percent, and 0.3 percent of China's energy mix, respectively. U.S. Energy Information Administration, *Country Analysis Brief: China* (Washington, DC: September 2012). <http://www.eia.gov/countries/cab.cfm?fips=CH>.

consumed in 2011.*† Although growth in coal consumption in China likely will slow in the coming decade due to government carbon reduction targets, coal will continue to dominate China's energy mix in the foreseeable future.¹⁵¹ The second-largest source of energy in China is oil, over half of which is imported (in 2012, imports accounted for 57 percent of China's oil demand).¹⁵² Mikkal E. Herberg, research director of the National Bureau of Asian Research's Asian Energy Security Program, testified to the Commission that within two decades, China will rely on imports for 75 percent to 80 percent of its total oil consumption.¹⁵³ Chinese consumption of natural gas‡ surpassed domestic production in 2007.¹⁵⁴ China invests in natural gas import infrastructure such as natural gas pipelines and storage facilities, and liquefied natural gas terminals.¹⁵⁵

China's state-owned oil companies are major actors in China's energy policies and activities, domestically and overseas. Three state-owned oil companies dominate China's energy sector: China National Petroleum Corporation (CNPC), China Petrochemical Corporation (Sinopec), and China National Offshore Oil Corporation (CNOOC). According to data compiled by Bloomberg, Chinese energy companies purchased overseas oil and gas resources worth \$86.4 billion in the past ten years.¹⁵⁶ These state-owned firms allow China to gain a foothold in many of the world's major producing countries as it becomes more reliant on foreign energy.¹⁵⁷ The state-owned oil companies (as well as state-owned banks) secure supply contracts, loans-for-oil deals, ownership stakes in companies and projects, production-sharing agreements, and construction and funding of pipeline infrastructure.

These energy deals are often facilitated by political support from Beijing and the relevant host government.¹⁵⁸ For Beijing's purposes, the state-owned oil companies act to enhance China's energy security,¹⁵⁹ and the Chinese government guides or approves the state-owned oil companies' activities to that end. Government influence on the state-owned oil companies is administered through the presence of Chinese Communist Party (CCP) members in high-ranking positions in the companies, through official guidance, and

*This percentage was calculated based on data reported by BP and by the Carnegie Endowment for International Peace's Energy and Climate Program. BP, *BP Statistical Review of World Energy June 2012* (London, England: BP, June 2012), p. 33. http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf; Kevin Jianjun Tu and Sabine Johnson-Reiser, *Understanding China's Rising Coal Imports* (Washington, DC: Carnegie Endowment for International Peace, February 2012), p. 1. http://www.carnegieendowment.org/files/china_coal.pdf.

†China became a net importer of coal in 2009, despite its enormous domestic coal resources. Kevin Jianjun Tu and Sabine Johnson-Reiser of the Carnegie Endowment for International Peace's Energy and Climate Program suggest that this might be due to a combination of factors, including "transportation bottlenecks, environmental and safety considerations, economic factors, and concerns about depleting coking coal reserves." Kevin Jianjun Tu and Sabine Johnson-Reiser, *Understanding China's Rising Coal Imports* (Washington, DC: Carnegie Endowment for International Peace, February 2012), p. 1. http://www.carnegieendowment.org/files/china_coal.pdf.

‡Natural gas constitutes about 4 percent of total energy consumption in China. The government hopes that percentage will rise to 10 percent by 2020. Saltanat Berdikeeva, "China Turns to Natural Gas to Fuel their Economic Growth," Oilprice.com, June 19, 2012. <http://oilprice.com/contributors/Saltanat-Berdikeeva/articles>. The International Energy Agency expects that China's natural gas consumption will double by 2017, driving global gas demand upwards by 17 percent. Eileen Ng, "China natural gas demand to double by 2017," Associated Press, June 5, 2012. http://www.boston.com/business/articles/2012/06/05/iea_china_natural_gas_demand_to_double_by_2017.

through political and financial support.¹⁶⁰ It is unclear exactly how and to what extent the Chinese government dictates the activities of the state-owned oil companies.¹⁶¹ In a volume on Asian energy security, Philip Andrews-Speed, principal fellow at the Energy Studies Institute of the National University of Singapore, writes that China's state-owned oil companies have a "high degree of freedom to act according to their corporate interests, except when projects are either very large or in strategically important regions such as the Middle East or the former Soviet Union ... however, [the state-owned oil companies] still are subject to direct interference by the government and must respond positively to specific requests from the most senior political leaders."¹⁶²

Vulnerability of China's Energy Imports

China's leadership views the country's growing dependence on foreign energy as a strategic vulnerability.¹⁶³ Dr. Herberg testified to the Commission that energy security is a "critical political and economic concern" for China's leadership:

*The specter of heavy and growing dependence on imported oil and gas resources from a wide range of unstable regions of the world transported through lengthy sea lanes controlled by the U.S. Navy and other regional powers is deeply unsettling to the leadership in Beijing. Beijing distrusts international oil markets, perceiving them to be dominated by Western importing countries, powerful international oil companies, and unstable exporting countries.*¹⁶⁴

Aside from its exposure to global energy markets' forces, China's energy imports are vulnerable to supply and transport disruptions. The security of China's energy imports is contingent upon predictable, uninterrupted supply streams from producer countries. In reality, these conditions are uncertain because China sources much of its foreign energy from countries that are politically or economically unstable.* In 2011 and 2012, this vulnerability was highlighted when instability in Libya, Sudan, and South Sudan caused major disruptions in each country's exports to China.¹⁶⁵ More significantly, China's reliance on Iran, its third-largest supplier of oil in recent years, is increasingly risky given the obviously destabilizing impact of international sanctions on Iran's energy sector. China's energy relations with South Sudan and Iran, discussed below, illustrate the challenges Beijing faces in balancing energy needs with foreign policy priorities. Although China remains reliant on the Middle East and Africa for the majority of its oil imports (about 51 percent and 24 percent, respectively),¹⁶⁶ it seeks to source more of its supply from stable countries in less volatile regions.¹⁶⁷ China's growing energy interests in North, Central, and Southeast Asia and North America, discussed below, reflect this desire.

* Chinese energy companies did not have significant foreign operations or investments until the late 1980s and 1990s and, as such, they arrived late on a global energy scene that had been dominated by international companies for decades. Consequently, Chinese oil companies found themselves operating in less productive, more risky environments, many of them abandoned by the international companies. Bo Kong, *China's International Petroleum Policy: Energy and Security* (Santa Barbara, CA: Praeger Security International, 2010), p. 63.

China's energy imports, most of which travel by sea, also are vulnerable to transport disruptions. China's imports from the Middle East are vulnerable to disruptions in the Strait of Hormuz (see figure 1, below). Because of the high volume of oil that passes through it, and due to regular threats by Iran to close it, the Strait of Hormuz is one of the two most crucial oil chokepoints in the world.¹⁶⁸ If the Strait of Hormuz were to be blocked, China and other Asian countries would be particularly vulnerable to a potential disruption of oil trade.¹⁶⁹ The other crucial oil chokepoint is the Strait of Malacca (see figure 2, below).¹⁷⁰ Around 80 percent of China's energy imports traverse the Strait of Malacca and the global shipping routes of the South China Sea.¹⁷¹ Concerned that China's economy and security could be threatened by a blockage of the strait, People's Republic of China (PRC) President Hu Jintao referred to China's dependence on this maritime chokepoint as the "Malacca dilemma."¹⁷² Of particular concern to Beijing is U.S. naval supremacy in and around the waters through which China's energy imports pass.¹⁷³ The fast-growing Indian Navy, which operates throughout the Indian Ocean and which established a naval air station near the Strait of Malacca in July 2012, also patrols the sea lanes through which China's energy supplies transit.¹⁷⁴ In an effort to bypass maritime routes, China seeks to secure overland energy resources from its regional neighbors in North, Central, and Southeast Asia. China has five cross-border pipelines (either completed or under construction) to import oil and gas.¹⁷⁵ However, according to Andrew S. Erickson, associate professor at the U.S. Naval War College, and Gabriel B. Collins, founder of ChinaOilTrader.com, developing overland energy transport routes like pipelines will not significantly enhance China's energy security; even as overland imports increase, the country's net reliance on seaborne imports is projected to grow over time.¹⁷⁶ Nor are China's existing and planned pipelines free from security risks; pipelines traversing Burma and some politically unstable Central Asian countries may be vulnerable to supply disruptions.¹⁷⁷

Figure 1: Strait of Hormuz



Source: Google Maps, 2012. <https://maps.google.com/>, amended by the U.S.-China Economic and Security Review Commission.

Figure 2: Strait of Malacca

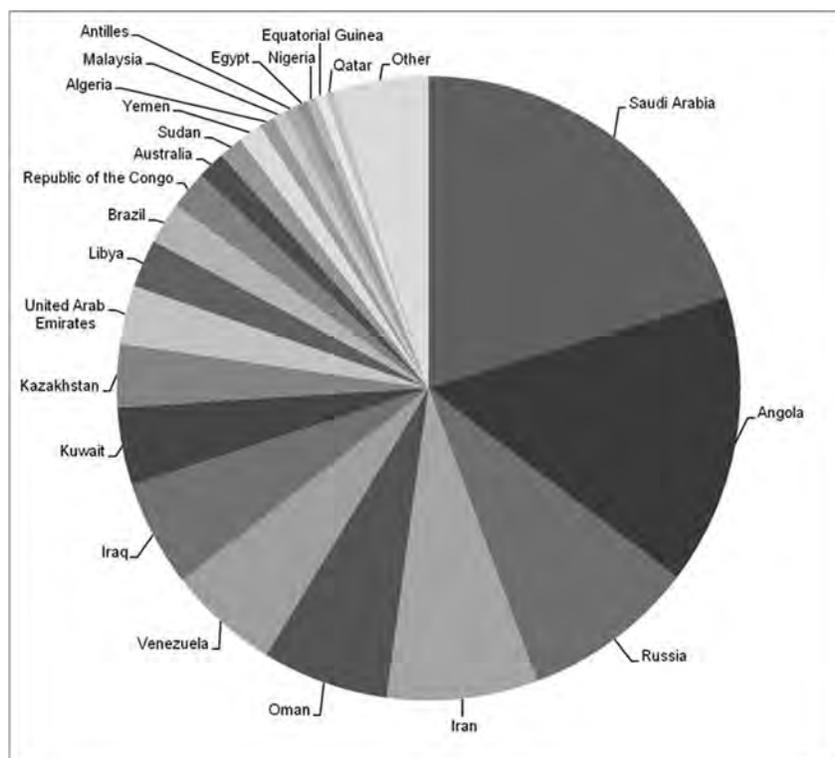


Source: Google Maps, 2012. <https://maps.google.com/>, amended by the U.S.-China Economic and Security Review Commission.

China has developed strategic petroleum reserves to attempt to mitigate the threat of a supply disruption. Beijing proposed the creation of a national stockpile in 2004¹⁷⁸ and since 2007 has been developing stockpiles in phases. Beijing aims to have 500 million barrels of reserves, the equivalent of 100 days of consumption, by 2020.¹⁷⁹ As of April 2012, China's stockpiles could supply 40 days of consumption.¹⁸⁰ Comparatively, the United States maintains a stockpile large enough to cover over 90 days of consumption.¹⁸¹ Reports note that strategic reserve sites have been constructed in Guangdong, Liaoning, Qinghai, Shandong, Xinjiang, and Zhejiang provinces.¹⁸² In addition to its strategic reserves, China also has commercial reserves, although it is unclear how, and to what extent, these two categories of reserves are distinct.*

Geography of China's Foreign Energy Interests

Figure 3: China's Crude Oil Imports by Country, January—July 2012



Source: Baiinfo.com, *Baichuan Information* [import and export data for January 2012 through July 2012] (Beijing, China). <http://baiinfo.com/Orders/NewsList/5827?pageid=1>.

The Middle East—About 51 percent of China's imported oil comes from the Middle East, with Saudi Arabia as its primary sup-

*The U.S. Energy Information Administration reports that in 2010, China had between 170 million and 310 million barrels of commercial oil reserve capacity. U.S. Energy Information Administration, "China Analysis Brief" (Washington, DC: September 4, 2012). <http://www.eia.gov/countries/analysisbriefs/China/china.pdf>.

plier.¹⁸³ Imports from Iran, Iraq, Kuwait, and Oman also are significant.*¹⁸⁴ China's consumption of Saudi Arabian oil has grown drastically for over a decade; in 2009, China overtook the United States as Saudi Arabia's largest crude oil customer.¹⁸⁵ As the United States reduces its dependence on imported oil, the Sino-Saudi energy trade is becoming more important, with each country looking to the other for security of supply or demand.¹⁸⁶ Saudi leaders have emphasized on multiple occasions their commitment to guarantee a steady flow of oil to China.¹⁸⁷ In November 2009, Saudi Arabia's minister of Petroleum and Mineral Resources made a speech in Beijing, saying, "Let me be as explicit as possible: China can rely on Saudi Arabia to provide it with the oil it will need to continue its projected growth for the coming decades."¹⁸⁸ This is a significant reassurance for Beijing, especially when its energy trade elsewhere in the region is fraught with political and logistical risks.¹⁸⁹ In January 2012, Chinese Premier Wen Jiabao made a state visit to Saudi Arabia during which the two countries further cemented energy ties, with Saudi oil company Saudi Aramco and Chinese state-owned oil company Sinopec signing an agreement to build an oil refinery in Yanbu, Saudi Arabia.¹⁹⁰

China-Iran Energy Relations: Developments in 2012 †

Energy is the primary driver of China's engagement with Iran, which supplies about 11 percent of China's oil imports.¹⁹¹ This constitutes about one-fifth of Iran's total oil exports, ‡¹⁹² making China Iran's top oil customer and trading partner.¹⁹³ Iran also is an attractive investment target for Chinese energy companies due to its abundance of oil and gas resources and the openness of its energy sector following the exit of western energy companies due to sanctions and overall instability in the country. Several investment deals by Chinese companies have been announced, but it is unclear whether they are being implemented. Some analysts assert that Beijing has quietly restricted the progress of investment projects in the country in recent years, perhaps to appease the United States.¹⁹⁴ According to Erica Downs, fellow at The Brookings Institution's John L. Thornton China Center, CNOOC abandoned a \$16 billion gas project; CNPC failed to commence work on a \$4.7 billion contract; and Sinopec is "behind schedule" in one of its oil field projects.¹⁹⁵ China also sells gasoline products to Iran (despite its endowment of oil, Iran does not have adequate refining capabilities).¹⁹⁶ Much of China's engagement with Iran, particularly in the energy sector, contravenes

* Iran, Iraq, Kuwait, and Oman were among the top 11 sources of Chinese oil imports from January to July 2012, according to Chinese customs data. Baiinfo.com, *Baichuan Information* (Beijing, China). <http://baiinfo.com/Orders/NewsList/5827?pageid=1>.

† For an in-depth discussion of China's relationship with Iran in general and its energy investments in Iran in particular, see U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 252–260.

‡ China's Iranian oil imports in 2012 fluctuated significantly, as discussed below. In July, for example, China imported about 41 percent of Iran's estimated total oil exports. Judy Hua and Nidhi Verma, "Update 3—China, India slash oil imports from Iran in July," Reuters, August 21, 2012. <http://uk.reuters.com/article/2012/08/21/china-oil-iran-idUKL4E8JL2DI20120821>.

**China-Iran Energy Relations: Developments in 2012—
Continued**

U.S. efforts to deter Tehran from supporting international terrorism, pursuing weapons of mass destruction, and abusing human rights.¹⁹⁷ Since 2005, U.S. authorities have sanctioned several Chinese entities for their dealings with Iran. In 2012, China's energy trade with Iran played prominently as the United States and the European Union (EU) leveled renewed sanctions against Iran's central bank and energy sector.* China's compliance with sanctions is uneven.

The United States sanctioned two Chinese entities in 2012 for their dealings with Iran. In January, the United States sanctioned Chinese oil trader Zhuhai Zhenrong Company under the Iran Sanctions Act, as amended by the Comprehensive Iran Sanctions, Accountability, and Divestment Act, for selling \$500 million in gasoline products to Iran from 2010 to 2011.¹⁹⁸ Zhuhai Zhenrong, a state-owned company based in Beijing, is one of China's top four oil trading companies.¹⁹⁹ According to its website, Zhuhai Zhenrong "has built a stable and long-standing channel for crude oil supply [*sic*] has not only made great contributions to energy security of the nation, but also developed bilateral trade and political relations with middle-east countries."²⁰⁰ In July, the United States sanctioned China's Bank of Kunlun for providing hundreds of millions of dollars to "more than six Iranian banks that were designated by the United States in connection with Iran's weapons of mass destruction programs or its support for international terrorism," according to the U.S. Department of the Treasury.²⁰¹ Chinese national oil company CNPC owns 82 percent of the Bank of Kunlun, originally based in China's Xinjiang Province.²⁰² Some analysts deemed the sanctions on Zhuhai Zhenrong and the Bank of Kunlun largely symbolic in nature, since neither entity has significant business dealings in the United States and as such would not suffer significantly from sanctions.²⁰³ However, the sanctions are meaningful given the political and economic prominence of both Zhuhai Zhenrong and CNPC. The Chinese government has forcefully opposed sanctions on both companies.²⁰⁴

The Bank of Kunlun and Zhuhai Zhenrong aside, China was able to avoid sweeping U.S. sanctions on foreign financial institutions involved in Iran's energy sector in 2012. In June, China was one of several countries exempted from these sanctions because, according to the U.S. Department of State, China had "significantly reduced" its imports of crude oil from Iran.† China's oil imports from Iran for the first five months of 2012

* An EU embargo on imports of Iranian oil, which went into effect on July 1, 2012, stipulates that European insurers and reinsurers may not cover tankers carrying Iranian oil. Because European insurers cover the majority of maritime trade, the embargo has had costly impacts on China's oil trade with Iran. Osamu Tsukimori and Chen Aizhu, "Asian Oil Buyers Help Iran Stave Off the Worst, For Now," Reuters, August 10, 2012. <http://uk.reuters.com/article/2012/08/13/uk-iran-asia-oil-idUKBRE87C04A20120813>.

† The exemption, issued on June 28, lasts for 180 days and can be renewed. Julian Pecquet, "State Department Exempts China from Iranian oil sanctions," *Hill* (Washington, DC), June

Continued

**China-Iran Energy Relations: Developments in 2012—
Continued**

dropped by 25 percent from the previous year (China made up for its reduced Iranian imports by importing more oil and gas from other producing countries, including Angola, Russia, Saudi Arabia, and Vietnam).^{205,206} However, this reduction seems to have been related to a protracted dispute between Sinopec and the National Iranian Oil Company over their 2012 contract for oil purchases,²⁰⁷ and Beijing denied that the cuts were related to U.S. sanctions.²⁰⁸ (Beijing is opposed in principle to the application of domestic law to foreign entities and sees it as an infringement of a foreign state's sovereignty.)²⁰⁹

It remains to be seen whether China will qualify for another exemption from U.S. sanctions upon termination of its 180-day waiver. By May, imports normalized to predispute levels of approximately 550,000 barrels per day, a number on par with China's imports in 2011 (when Iran supplied 11 percent of China's crude oil imports).²¹⁰ In June, imports reached an 11-month high but fell sharply again in July and August.²¹¹ According to *The Wall Street Journal*, the reduction of imports in the early months of 2012 will likely result in a 12 percent year-on-year reduction of Iranian oil imports to China from 2011 to 2012.²¹²

Oman and Iraq provide the majority of China's other energy imports from the Middle East. Oman supplied about 7 percent of China's oil imports in 2010,²¹³ and the value of the country's exports to China (89 percent of which is oil) grew by 53 percent from 2010 to 2011.²¹⁴ Iraq, with the fourth-largest proven oil reserves in the world,²¹⁵ provides 5 percent of China's oil imports.²¹⁶ As the country emerges from war, Iraq has the potential to increase its oil production, and Chinese oil companies have eagerly established a foothold in the sector. The logistical, security, and political challenges of Iraq's postwar oil industry limit this potential, however.²¹⁷

Africa—Natural resources are a key driver of Chinese economic engagement in Africa.²¹⁸ The continent is an important source of oil for China, with African oil producers accounting for about 24 percent of Chinese oil imports in 2011.²¹⁹ The top five African suppliers in the first seven months of 2012 were, respectively, Angola, Libya, Republic of the Congo, Sudan, and Algeria.²²⁰ Angola, China's top producer in Africa by a wide margin, sometimes exceeds Saudi Arabian exports to China.²²¹

Chinese entities often pursue "loans-for-oil" deals in resource sectors in foreign countries, including several in Africa.* These deals generally involve a Chinese financial institution providing a loan (often in the form of infrastructure development) to a country that is paid back in oil exports to China. While Beijing celebrates this form of engagement as a "win-win" scenario in which Africans and Chinese benefit economically, critics note that Chinese loans-for-oil

28, 2012. <http://thehill.com/blogs/global-affairs/middle-east-north-africa/235447-us-exempts-china-from-iran-oil-sanctions>.

*For a thorough examination of China's oil-backed loans, see Erica Downs, *Inside China, Inc.: China Development Bank's Cross-Border Energy Deals* (Washington, DC: The Brookings Institution, March 2011). http://www.brookings.edu/~media/research/files/papers/2011/3/21%20china%20energy%20downs/0321_china_energy_downs.pdf.

arrangements often lack emphasis on good governance, transparency, or social and environmental responsibility.²²² China International Fund, a network of companies based in Hong Kong and Singapore, also known as the 88 Queensway Group or the Queensway syndicate,* often makes opaque deals with regimes in fragile African states, promising to provide the financing and know-how needed to develop large-scale infrastructure projects in return for access to lucrative oil and mining rights. These deals often enrich and empower elites, and many of the infrastructure projects promised by the group have failed to materialize or be fully completed.[†]²²³

In African nonenergy resource sectors as well, Chinese investments and operations often have been accused of labor abuses or illegal activity. Notably, in late 2011, Human Rights Watch reported that at Zambian copper mines, “[m]iners at several Chinese-run companies spoke of poor health and safety standards, including poor ventilation that can lead to serious lung diseases, hours of work in excess of Zambian law, the failure to replace workers’ personal protective equipment that is damaged while at work, and the threat of being fired should workers refuse to work in unsafe places.”²²⁴ Unrest over labor issues resulted in violence at Chinese-run mines in Zambia in 2010 and 2012, leaving both Chinese and Zambian workers dead or wounded.²²⁵ In 2012 alone, hundreds of Chinese miners were arrested in Ghana for illegally mining gold.²²⁶

China’s Oil Interests in Sudan and South Sudan: Beijing’s Evolving “Noninterference” Policy

China’s involvement in 2011 and 2012 with the governments and oil sectors of Sudan and South Sudan illustrates the level of importance Beijing ascribes to China’s energy interests in the two countries.[‡] The emergence of South Sudan as the world’s newest country in July 2011, and the resultant disputes over oil transport and pricing between Khartoum and Juba, the respective capitals of Sudan and South Sudan, prompted Beijing to play a role in the dispute in order to protect its energy interests

* A 2009 U.S.-China Economic and Security Review Commission staff report dubbed this network of companies the 88 Queensway Group based on the address of the network’s main location in Hong Kong. For an in-depth discussion of the network and its operations in Africa, see U.S.-China Economic and Security Review Commission, *The 88 Queensway Group: A Case Study in Chinese Investors’ Operations in Angola and Beyond* (Washington, DC: July 2009). http://www.uscc.gov/The_88_Queensway_Group.pdf; *Economist*, “China International Fund: The Queensway syndicate and the Africa trade,” August 13, 2011. <http://www.economist.com/node/21525847>; and Patrick Martin-Menard et al., “African Safari: CIF’s [China International Fund’s] Grab for Oil and Minerals,” *Caixin* (Beijing) online, October 17, 2011. <http://english.caixin.com/2011-10-17/100314766.html>.

[†] In Tanzania, for example, 1,300 families were evicted from their homes in 2010 to make way for an airport terminal to be constructed by China Sonangol, one of the brands frequently used by the 88 Queensway Group. The terminal reportedly was part of a deal that granted China Sonangol licenses to explore two oil fields in the country. As of March 2012, however, construction on the terminal had not begun, and several of the evicted families had complained about insufficient compensation for their forced relocation. Beibei Yin, “Chinese investment in Tanzania bears bitter fruit,” *Guardian* (United Kingdom), March 2, 2012. <http://www.guardian.co.uk/global-development/2012/mar/02/chinese-investment-tanzania-airport-eviction>.

[‡] In 2010, Sudan supplied 5 percent of China’s imported oil. Zhang Jian, *China’s Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.

China's Oil Interests in Sudan and South Sudan: Beijing's Evolving "Noninterference" Policy—Continued

in both countries. This development diverges from Beijing's long-held policy of "nonintervention" in other states' internal affairs and sheds light on the importance of energy security to Beijing.

China has had significant dealings in Sudan's energy sector since the 1990s, when many international oil companies began divesting from the sector because of Sudan's ongoing civil war and associated human rights abuses.²²⁷ In 2006, during the height of the crisis in Darfur, China was Sudan's top foreign investor,²²⁸ and in 2011, China imported 66 percent of Sudan and South Sudan's total oil production.²²⁹ Soon after South Sudan's independence, however, managing the two countries' oil industries became difficult. Between the two countries, most of the oil reserves are in South Sudan, and South Sudanese oil must pass through Sudan to reach maritime export routes.²³⁰ In 2012, South Sudanese oil exports stagnated due to failure by the two countries to agree on a pricing and transport regime for oil flowing from South Sudan to Sudan for export. The dispute became so contentious that in February 2012 South Sudan shut down its oil sector, and exports to China dropped sharply as a result.²³¹

As a leading investor with an interest in stability between Sudan and South Sudan, China reluctantly has played a mediating role in the dispute. This represents an evolution in foreign engagement for Beijing.²³² Beginning in 2011 and ongoing throughout 2012, CNPC executives and Chinese officials worked with Khartoum and Juba to attempt to alleviate tensions and resume normal oil production and exports.* In August, a Chinese special envoy designated by Beijing reportedly played a key role in brokering a preliminary agreement on transit fees between the two countries.²³³ At the time of publication of this Report, however, South Sudan has not yet resumed oil production.

In its role as mediator, Beijing has been careful to preserve its relationship with Khartoum while simultaneously working to strengthen its ties with Juba. A desire to safeguard its own oil interests continues to guide Beijing's policies toward Sudan and South Sudan. For example, China reportedly sided with Juba in a pricing dispute with Khartoum in an effort to ensure that CNPC could renew oil contracts it was negotiating with South Sudan at the time.²³⁴ On another occasion, however, Beijing dismissed a request by South Sudanese President Salva Kiir to support the construction of a pipeline from South Sudan through Kenya to allow South Sudan to export oil without having to transit through Sudan. Beijing's unwillingness reflected its desire not to undermine its relations with Khartoum or disadvantage

* CNPC is China's primary energy actor in Sudan and South Sudan. Sinopec also operates there, although to a far lesser extent. International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 21. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>.

China's Oil Interests in Sudan and South Sudan: Beijing's Evolving "Noninterference" Policy—Continued

CNPC's existing oil infrastructure in Sudan.²³⁵ China likely will continue to be intimately involved in the development of the oil sectors in both Sudan and South Sudan. So long as Beijing considers Sudanese oil exports a priority for China's energy security, Beijing will sustain its political involvement in the two countries to support that priority.

North and Central Asia—In the past decade, China increasingly looked to North and Central Asia to satisfy its energy demands and diversify China's imports away from the Middle East, Africa, and vulnerable sea lanes. China currently derives about 10 percent of its fossil fuel imports from this region.* Imports from the region likely will grow in the future as existing pipelines reach their capacity and new ones come online and as Chinese (and other) investment in Russian and Central Asian energy leads to more production.²³⁶ The region has vast, and largely untapped, hydrocarbon resources. Russia is the world's second-largest oil producer and exporter and the world's largest natural gas producer and exporter.²³⁷ Mongolia has rich coal reserves.²³⁸ Central Asian states, particularly Kazakhstan and Turkmenistan, also have large and unexplored oil and gas resources.†

China imports Russian oil via the East Siberian-Pacific Ocean Pipeline and by rail.‡ Russia and China have been negotiating the construction of gas pipelines since the mid-1990s, but pricing disputes have stymied plans in recent years.²³⁹ In Kazakhstan, CNPC has been instrumental in developing oil resources by helping to fund and construct a cross-border oil pipeline and through its partial ownership of Kazakh oil companies.§²⁴⁰ Another gas pipeline from Kazakhstan to China is planned and reportedly will begin operating in 2013.²⁴¹ China, largely through CNPC, financed the Central Asia-China gas pipeline, which runs from Turkmenistan through Uzbekistan and Kazakhstan to China, facilitating the flow of 40 billion cubic meters of gas annually into China.²⁴² Turkmenistan plans to expand its natural gas exports to China, and in 2011, the two countries issued a joint statement estab-

*In 2010, 6 percent of China's oil imports came from Russia, and 4 percent came from Kazakhstan. Zhang Jian, *China's Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.

†Azerbaijan, Kazakhstan, Turkmenistan, and Uzbekistan contain 3.5 percent of the world's proven oil reserves and 7 percent of the world's proven gas reserves. These numbers likely will be revised upwards as hydrocarbon exploration activity in the region grows. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), p. 22. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

‡The East Siberian-Pacific Ocean Pipeline includes a spur (an offshoot pipeline) to Daqing, a Chinese refinery hub. The spur was part of a deal reached by China and Russia in 2009, whereby the China Development Bank would lend Russian oil companies \$25 billion to be paid back in 300 million tons of oil shipped through the pipeline between 2011 and 2030. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 21–45. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

§By the end of 2009, 19 percent of Kazakh oil was being produced by Chinese government-owned entities. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 40–41. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

lishing a strategic energy partnership.²⁴³ In late 2011, CNPC won a contract to explore oil fields in Afghanistan's Amu Darya Basin, initially valued at \$700 million, making China the first foreign country to exploit Afghan oil.²⁴⁴

China is replacing Russia as the most powerful economic influence in Central and North Asia.²⁴⁵ As China expands its influence in the region, existing distrust and competition between Beijing and Moscow likely will persist.²⁴⁶ Meanwhile, Sino-Russian energy ties remain underdeveloped despite their geographic proximity and complementary needs for security of energy supply (China) and demand (Russia).²⁴⁷ The two countries' inability to advance energy ties is most evident in the negotiations over a gas pipeline from Russian Siberia to China. Plans for the pipeline began in 2006, but disputes over pricing have delayed the start of the project.²⁴⁸ Analysts suggest this dearth of energy cooperation reflects a fear in Moscow that Russia could become an "energy appendage" to China, fuelling the rising power's growth at Russia's expense.²⁴⁹

The emergence of China as the dominant market for regional fossil fuel exports could mean that some countries previously beholden to Russia for their energy trade find themselves dependent upon China.²⁵⁰ For example, some observers believe that Mongolia's coal industry is too closely tied to the Chinese market: China invests heavily in Mongolia's coal projects and imports 99 percent of Mongolia's coking coal.*²⁵¹ A May 2012 law limiting foreign ownership in Mongolia's "strategic industries," including mining, seems to target Chinese investors in particular.²⁵² In September 2012, Aluminum Corporation of China Limited (known as Chalco) abandoned two acquisition bids for Mongolian coal companies worth a combined \$1.25 billion. In both cases, Chalco cited failure to obtain regulatory approval from the Mongolian government.²⁵³

North America—China is becoming more active in the North American energy sector. Chinese companies invested over \$17 billion in North American energy from 2010 to early 2012; in 2011, North America was China's top regional destination for oil and gas acquisitions.†²⁵⁴ In the United States, most of China's energy investments have taken the form of minority stakes in companies or projects. This is largely the case in Canada as well, with the exception of three companies that Sinopec and CNOOC purchased outright.²⁵⁵ These investments were made in a range of specialized sectors including shale gas, oil sands, offshore oil and gas, as well as oil field services and related technologies. To Chinese companies, North American energy presents opportunities to diversify assets and gain managerial and technical expertise in new energy fields.²⁵⁶

*Coking coal, derived from bituminous coal, is used in industrial processes, including making steel. Aspire Mining Limited, "What is Coking Coal." <http://www.aspiremininglimited.com/index.php?page=40>.

†China also imports coal from the United States. China may import as much as 250 million tons of U.S. coal in 2012. Andrew S. Erickson and Gabriel B. Collins, "Wyoming and Montana Could Become Major New Coal Suppliers to China and the Asian Market—If They Can Obtain Port Access," *China SignPost*, September 4, 2012. <http://www.chinasignpost.com/2012/09/wyoming-and-montana-could-become-major-new-coal-suppliers-to-china-and-the-asian-market-if-they-can-obtain-port-access/>.

Figure 4: Select Chinese Investments in the North American Energy Sector, 2009—Present

Year	Chinese Firm	North American Firm	Sector	Asset Location (if applicable)	Commercial Activity	Value
United States						
2009	China Investment Corporation (sovereign wealth fund)	AES Corp.	power company		15% stake in company	\$1.58 billion
2010	CNOOC	Chesapeake Energy	shale gas	Texas	33% stake in assets (600,000 acres)	\$1.08 billion (followed by additional \$1.08 in investments)
2010	CNPC	Inova Geophysical Equipment Ltd.	advanced geophysical equipment and technology		51% stake in company	\$180 million
2010	Hopu Investment Management Company Ltd.	Chesapeake Energy	oil and gas		1% stake in company	\$100 million
2010	China Communications Construction Co. Ltd.	Friede Goldman United	offshore drilling equipment design		100% acquisition	\$125 million
2010	Huaneng Power	InterGen	power utility		50% stake in company	\$1.23 billion
2011	CNOOC	Chesapeake Energy	oil and gas	Colorado and Wyoming	33% stake in assets (800,000 acres)	\$570 million (followed by an additional \$697 million in investments)
2012	China Investment Corporation	EIG Global Energy Partners	energy asset management		less than 10% stake in company; no associated voting rights	undisclosed
2012	China Investment Corporation	Cheniere Energy Partners	natural gas export	Texas and Louisiana	confidential co-investment in liquefied natural gas export plant	~\$500 million
2012	Sinopec	Devon Energy	shale oil and gas fields	Louisiana, Michigan, Ohio, and Oklahoma	33% stake in assets encompassing 4 shale plays and one limestone field	\$900 million (followed by an additional \$1.6 billion in investments)
U.S.-China Economic and Security Review Commission						

Figure 4: Select Chinese Investments in the North American Energy Sector, 2009—Present—Continued

Year	Chinese Firm	North American Firm	Sector	Asset Location (if applicable)	Commercial Activity	Value
Canada						
2010	China Investment Corporation	Penn West Energy Trust	conventional oil and natural gas	Alberta	45% stake in a joint venture project, and 5% stake in parent company	\$747 million (followed by an additional \$505 million in investments)
2010	Sinopec	ConocoPhillips	oil sands	Alberta	9% stake in Syncrude Canada Ltd.	\$4.65 billion
2011	Sinopec	Daylight Energy Ltd.	conventional oil and natural gas	British Columbia and Alberta	100% acquisition	\$2.1 billion
2011	CNOOC	OPTI Canada, Inc.	oil sands		100% acquisition	\$2.1 billion
2012	PetroChina	Royal Dutch Shell	shale gas	British Columbia	20% stake in Groundbirch shale gas project	undisclosed, rumored to be ~\$1 billion
2012	Sinopec	Talisman Energy Inc.	oil and natural gas	North Sea (UK)	49% stake in North Sea operations	\$1.5 billion
2010, 2012	PetroChina	Alhambra Oil Sands Corp	oil sands	Alberta	100% acquisition (60% stake in 2010, 40% stake in 2012) in McKay River and Dover projects	\$~90 million, \$674 million
2012	China Investment Corporation and Sinopec	Sunshine Oilsands	oil sands		undisclosed	\$150 million each
2012*	CNOOC	Nexen Inc.	oil and gas	Canada, UK, U.S., Gulf of Mexico, West Africa	100% acquisition	\$15.1 billion
U.S.-China Economic and Security Review Commission						

* planned investment, not yet approved

Sources: AES Corporation, "AES Announces Close of Transaction with China Investment Corporation," March 15, 2010. <http://investor.aes.com/phoenix.zhtml?c=76149&p=irol-newsArticle&ID=1402516&highlight=>; Kerri Shannon, "CNOOC Creates Biggest China-U.S. Oil Deal For Stake in Shale Gas Industry," MoneyMorning.com, October 12, 2010. <http://moneymorning.com/2010/10/12/shale-gas-2/>; ChinaKnowledge.com, "CNPC's unit, Ion Geophysical set up JV [joint venture]," March 30, 2010. <http://news.alibaba.com/article/detail/business-in-china/100269933-1-cnpc%2527s-unit%252C-ion-geophysical-set.html>; The Heritage Foundation, "China Global Investment Tracker" (Washington, DC). <http://www.heritage.org/research/projects/china-global-investment-tracker-interactive-map/>; Darrell Delamaide, "Chesapeake Energy Investment Signals Sovereign Wealth Fund Appetite for Global Resources," OilPrice.com, May 13, 2010. <http://oilprice.com/Energy/Natural-Gas/Chesapeake-Energy-Investment-Signals-Sovereign-Wealth-Fund-Appetite-For-Global-Resources.html>; ChinaKnowledge.com, "CCC [China Communications Construction] acquires Friede Goldman United for US\$125 mln," August 13, 2012. <http://news.alibaba.com/article/detail/business-in-china/100378564-1-ccc-acquires-friede-goldman-united.html>; Business Standard, "Huaneng buys GMR stake in Intergen for \$1.2 bn," November 28, 2010. <http://www.business-standard.com/india/news/huaneng-buys-gmr-stake-in-intergen-for-12-bn/416383/>; Wyoming Business Report, "Chesapeake Energy, China team up for Niobrara play," February 11, 2011. <http://www.wyomingbusinessreport.com/article.asp?id=55837>; Ryan DeZember and James T. Areddy, "China Foothold in U.S. Energy," Wall Street Journal, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>; PRNewswire, "EIG Global Energy Partners Announces Sale of Minority Interest to CIC [China Investment Fund]," February 1, 2012. <http://www.prnewswire.com/news-releases/eig-global-energy-partners-announces-sale-of-minority-interest-to-cic-138480174.html>; Stephen Aldred, "CIC [China Investment Corporation], GIC [Singapore Investment Corporation] jointly invest \$1 billion in U.S. Cheniere's LNG [liquefied natural gas] plant: source," August 20, 2012. <http://www.reuters.com/article/2012/08/21/us-cic-cheniere-idUSBRE87K03F20120821>; Angel Gonzalez

and Ryan Dezember, "Sinopec Enters U.S. Shale," January 4, 2012. <http://online.wsj.com/article/SB10001424052970203550304577138493192325500.html>; Marketwire, "Penn West Energy Trust and China Investment Corporation Announce Strategic Partnership," May 13, 2010. <http://www.marketwire.com/press-release/penn-west-energy-trust-china-investment-corporation-announce-strategic-partnership-tsx-pwt.un-1259607.htm>; Edward Klump, "Sinopec Agrees to Buy ConocoPhillips's Stake in Syncrude for \$4.65 Billion," April 12, 2010. <http://www.bloomberg.com/news/2010-04-12/sinopec-to-buy-conocophillips-s-syncrude-canada-holding-for-4-65-billion.html>; Colin McClelland and Bradley Olson, "Sinopec Buys Canada's Daylight for \$2.1 Billion to Gain Shale-Gas Assets," Bloomberg, October 10, 2011. <http://www.bloomberg.com/news/2011-10-09/sinopec-agrees-to-buy-daylight-energy-for-2-1-billion-to-meet-fuel-demand.html>; Sinopec Daylight Energy, 2011 Management Annual Report, p. 1. [http://www.sinopecdaylight.com/en/financials/2011 annual report - april 30 2012.pdf](http://www.sinopecdaylight.com/en/financials/2011%20annual%20report%20-%20april%202012.pdf); Leslie Hook and Bernard Simon, "Cnooc to acquire Opti-Canada for \$2.1bln," *Financial Times*, July 20, 2011. <http://www.ft.com/intl/cms/s/0/164c9e2c-b2d9-11e0-bc28-00144feabdc0.html#axzz2A9gpl8gP>; Yvonne Lee, "PetroChina Buys 20% Stake in Shell's Groundbirch Shale Asset," Dow Jones Newswires, February 2, 2012. http://www.rigzone.com/news/article.asp?a_id=114805; Scott Haggett, "Sinopec pays \$1.5 billion for Talisman North Sea Stake," Reuters, July 23, 2012. <http://www.reuters.com/article/2012/07/23/us-sinopec-talisman-idUSBRE86M0IL20120723>; Edward Welsch, "PetroChina Buys Oil-Sands Project," *Wall Street Journal*, January 4, 2012. <http://online.wsj.com/article/SB10001424052970203462304577138644252057100.html>; Yvonne Lee and Prudence Ho, "UPDATE: Sunshine Oilsands Secures US\$350 Million Cornerstone Investments For Hong Kong IPO—Sources," Dow Jones Newswires, February 8, 2012. <http://english.capital.gr/News.asp?id=1404447>; and Derek Scissors and Dean Cheng, "China Buys Canadian Energy: Lessons for the U.S." (Washington, DC: The Heritage Foundation, *Issue Brief #3680*, July 26, 2012. <http://www.heritage.org/research/reports/2012/07/china-buys-canadian-energy-lessons-for-the-us>).

In the midst of the ongoing economic slowdown, China's state-owned oil companies are particularly well positioned to infuse the U.S. and Canadian energy sectors with much-needed capital. A *Wall Street Journal* article quotes Sinopec Chairman Fu Chengyu: "The slowdown of the global economy brings us new opportunity to go overseas, expand overseas [mergers and acquisitions] and introduce advanced technologies and talent."²⁵⁷ Heavy financial and political support from Beijing allows these companies to overpay for their acquisitions.²⁵⁸ For example, in July 2012, CNOOC announced a bid to acquire Canadian energy company Nexen Incorporated for \$15.1 billion, a 60 percent premium over Nexen's share price at the time of the announcement.²⁵⁹ Such overpayments give China's state-owned oil companies a distinct advantage in their bids for foreign companies or projects.²⁶⁰ If completed, this deal will be the largest foreign investment by a Chinese company.²⁶¹

This trend points to an evolution in the interests of China's energy actors and the competitiveness of China's state-owned oil companies. The recent involvement of Chinese companies in the U.S. energy sector in particular stands in stark contrast to the failed attempt by CNOOC to acquire the U.S. energy company Unocal in 2005. At that time, CNOOC issued an \$18.5 billion bid for Unocal but then withdrew it amid political opposition in the United States.²⁶² Fu Chengyu, who had been the chief executive of CNOOC in 2005, reflected on the failed bid in 2012, noting that CNOOC "learned [it needed] to be more prudent in terms of public relations and political lobbying when dealing with such a big deal. We now understand American politics better."²⁶³ Currently, CNOOC has investments in three U.S. states and the Gulf of Mexico.²⁶⁴ Should CNOOC acquire Nexen, it could gain access to additional Gulf of Mexico assets. According to Nexen's website, it is one of the largest leaseholders in the Gulf of Mexico.²⁶⁵ In the second quarter of 2012, approximately 6.6 percent of the company's total

production came from U.S. assets;²⁶⁶ Nexen accounts for less than 0.5 percent of U.S. oil production.²⁶⁷

Chinese energy companies are particularly active in the U.S. shale sector. Sarah M. Forbes, senior associate at the World Resources Institute's Climate and Energy Program, testified to the Commission that China's shale gas reserves "could be a game changer in China's energy future."^{*} However, China currently does not possess the technical or managerial capacity to extract shale gas and bring it to market,[†] so Chinese policymakers and companies are looking to the U.S.'s successful shale gas sector to help exploit their own, a development that officials from the Chinese Ministry of Science and Technology emphasized to Commissioners during a meeting in Beijing. Bilateral cooperation in this area is supported in part by the government-led U.S.-China Shale Gas Resource Initiative, which promotes commercial, technological, and environmental cooperation between American and Chinese researchers, policymakers, and businesses.²⁶⁸

According to Ms. Forbes, between November 2010 and January 2012, CNOOC and Sinopec formed five joint ventures with U.S. shale gas operators at a total cost of over \$5 billion.²⁶⁹ These investments and partnerships between Chinese and U.S. shale gas operators create mutual benefits: They diffuse financial risk and provide capital for costly U.S. projects and assist Chinese companies in their efforts to diversify and enhance domestic energy production in China.²⁷⁰ U.S. companies are involved in China's domestic shale gas sector as well. In 2011, Chevron Corporation signed a joint study agreement with an undisclosed Chinese partner to explore for shale gas in Guizhou Province.²⁷¹ In July 2012, U.S. oil service company Schlumberger Ltd. purchased a 20.1 percent stake in China's Anton Oilfield Services Group.²⁷² In her testimony, Ms. Forbes pointed out that China historically has limited foreign companies' access to onshore resources.²⁷³ The Chinese government identifies "oil and petrochemicals" as one of seven strategic industries for which the state must maintain "absolute control through dominant state-owned enterprises."²⁷⁴ As such, foreign companies are not permitted to participate in China's domestic strategic industries except through joint ventures.²⁷⁵

East and Southeast Asia—Currently, China sources very little of its foreign energy from East and Southeast Asia. However, China's imports of energy from the region are set to grow in the coming years when China begins importing oil and gas from Burma. Twin oil and gas pipelines running from Burma's western coast to Chi-

^{*}The U.S. Energy Information Administration estimates that China has 1,275 trillion cubic feet of technically recoverable shale gas reserves (it estimated that the United States has 862 trillion cubic feet). U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Sarah M. Forbes, January 26, 2012.

[†]Global energy and mining consultancy Wood Mackenzie estimates that China will not produce shale gas in significant amounts until after 2020. According to the consultancy, key challenges facing the development of shale gas in China include "a need for deeper geological understanding of China's shale potential and know-how to exploit this; uncertainty of the [state-owned oil company-] dominated landscape for efficient allocation of capital where a dramatic increase in capital spend [*sic*] is required; a lack of supply chain services and infrastructure; complicated issues around land access; and environmental [and] regulation challenges." Wood Mackenzie, "China: Wood Mackenzie Says Shale Gas Will Not Satisfy Demand, Requiring CTG [coal to gas] and 130bcm of Additional Imports by 2030," June 6, 2012. <http://www.woodmacresearch.com/cgi-bin/wmprod/portal/corp/corpPressDetail.jsp?oid=10598941>.

na's Yunnan Province are set to come online in March 2013.²⁷⁶ The gas pipeline will transport natural gas from Burma's offshore Shwe natural gas fields, and the pipeline will pump African and Middle Eastern oil arriving at Burma's ports.²⁷⁷ The pipelines, as well as related projects like a deepwater port and unloading facilities, are being constructed and operated in part by CNPC and one of its subsidiaries, and CNPC is the majority owner of the oil pipeline.²⁷⁸ A 2008 agreement awarded China purchasing rights to the offshore gas of 6.5 trillion cubic feet over the course of 30 years.²⁷⁹

The pipelines have mixed impacts on local communities and present security and foreign policy challenges for China. The pipelines could earn revenues of \$1 billion each year for Burma, and CNPC is donating several million dollars to fund new schools, clinics, and wells for communities affected by the pipeline construction.²⁸⁰ However, local Burmese communities and human rights activists criticize the projects and report cases of forced relocation and land confiscation, forced labor, insufficient social and environmental impact assessments, and the use of Chinese rather than local labor.²⁸¹ The pipelines also pose challenges in the security realm, since they run through Burma's conflict-ridden Kachin State. The conflict has direct implications for China, as it has a large expatriate population in Burma.²⁸² The reported crossing of refugees from Kachin State into Yunnan Province in 2012 presents foreign policy and border security challenges for China as well.²⁸³ As of March 2012, Chinese officials claimed that fighting between the Burmese military and Kachin rebels had not impacted the construction or security of the pipelines.²⁸⁴ However, according to a July 2012 article in Chinese media outlet *Global Times*, a CNPC official indicated that the pipeline projects had been impacted by the armed conflicts.²⁸⁵

Maritime Asia's offshore oil and gas deposits could provide large amounts of energy for China, but access to these resources is complicated by territorial disputes and rising nationalism in the region. The East China Sea and the South China Sea are rich in oil and gas resources. (For an in-depth discussion of the South China Sea in particular, and China's energy and other interests there, see chap. 3, sec. 1, of this Report.) Estimates for oil in the East China Sea range from 70 billion to 160 billion barrels and as much as 210 trillion cubic feet of natural gas,²⁸⁶ while the South China Sea could hold 28 billion to 105 billion barrels of oil and significant reserves of natural gas.²⁸⁷ China claims extensive rights in these maritime areas including the natural resources they contain, as do several other countries in the region: Japan and Taiwan contest China's claims over part of the East China Sea; Brunei, the Philippines, Malaysia, Taiwan, and Vietnam each claim areas in the South China Sea that overlap with China's claims. In recent years, China and the other countries more actively asserted their claims to contested areas. Dr. Herberg testified to the Commission that energy concerns "are not the root cause but contribute significantly to growing tensions over maritime territorial disputes in the South and East China Seas and also to tensions over control of the major sea lines of communications through Southeast Asia and the Indian Ocean."²⁸⁸

Critical Minerals

China is the primary driver of global increases in production and consumption of minerals.²⁸⁹ China is also a major producer of the world's raw minerals and mineral products. According to testimony to the Commission from W. David Menzie, chief of the Global Minerals Section in the National Minerals Information Center of the U.S. Geological Survey, China ranks as a leading producer of several of the 80 mineral commodities surveyed by the U.S. Geological Survey.²⁹⁰ China produces more than 90 percent of the world's rare earth elements (discussed below and henceforth referred to as "rare earths"); 80 percent of the world's antimony, magnesium metal, and tungsten; and between 50 percent and 80 percent of 15 additional materials.*²⁹¹ China also aggressively buys and invests in minerals across the globe, much as it does with energy resources. According to Dr. Menzie, Chinese companies have made significant investments in minerals in Afghanistan, Australia, Canada, Chile, the Democratic Republic of Congo, Mexico, Mongolia, Papua New Guinea, Peru, the Philippines, South Africa, Vietnam, Zambia, and Zimbabwe.²⁹² The scale of China's role in global mineral markets necessarily bestows significant political and economic weight on China's patterns of production and consumption. It also prompts questions about whether critical minerals—key mineral resources that are central to economic growth and national defense—are vulnerable to China's actions as a major supplier.

What Is a Critical Mineral?

Whether a specific mineral is considered critical † varies greatly and is dependent upon a number of factors. Since 1999, several U.S. government agencies and entities, including the Government Accountability Office, the Defense Logistics Agency, the Department of Defense, the Congressional Research Service, the Institute for Defense Analyses, the National Research Council, and the Department of Energy, have published studies on critical minerals.²⁹³ These organizations categorize critical minerals differently; the United States lacks a governmentwide definition.‡²⁹⁴

* China produces 50 percent to 80 percent of the world's barite, bismuth, cement, fluorspar, fused alumina, germanium, indium, lime, magnesium compounds, mercury, natural graphite, natural zeolites, pig iron, silicon, and wollastonite. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

† The terms "critical" and "strategic" are used interchangeably by subject matter experts; this Report will use the term "critical."

‡ At the time of publication of this Report, legislation has been introduced in both the U.S. Senate and the U.S. House of Representatives regarding the definition, production, protection, and analysis of critical or strategic minerals. Valerie Bailey Grasso, *Rare Earth Elements in National Defense: Background, Oversight Issues, and Options for Congress* (Washington, DC: Congressional Research Service, September 2012), pp. 23–30. <http://www.fas.org/sgp/crs/natsec/R41744.pdf>.

What Is a Critical Mineral?—Continued

Daniel McGroarty and Sandra Wirtz of the American Resources Policy Network assessed these studies in their paper *Reviewing Risk: Critical Metals and National Security*. The authors noted several common themes that explain critical minerals: “unique properties necessary for key defense applications,” § “substitution difficulties,” “supply chain vulnerabilities,” “import dependency,” and “over-concentration of supply from a single country.”²⁹⁵

Drawing from the aforementioned U.S. government reports, Mr. McGroarty and Ms. Wirtz compiled a list of 47 minerals critical to U.S. national security as well as a “watch list” of 23 slightly less critical minerals.[†]²⁹⁶

The 47 critical minerals listed were aluminum, antimony, bauxite, beryllium, beryl ore, bismuth, cadmium, cerium,* chromite ore, chromium, cobalt, copper, dysprosium,* europium,* fluor spar, gadolinium,* gallium, germanium, indium, iridium, lanthanum,* lead, lutetium,* manganese, mercury, molybdenum, neodymium,* niobium/columbium, nickel, palladium, platinum, praseodymium,* rhenium, rhodium, rubber, samarium,* scandium,* silicon, silver, tantalum, terbium,* tin, titanium, tungsten, vanadium, yttrium,* and zinc.

“Watch list” minerals listed were arsenic, boron, chrome, diamond stone, erbium,* hafnium, holmium,* lithium, magnesium, mica, promethium,* quartz, quartz crystals, quindindine, ruthenium, selenium, strontium, talc, tellurium, thulium,* VTE, ytterbium,* and zirconium.

The United States is dependent on China for many of its critical minerals. Mr. McGroarty and Ms. Wirtz found that China was the primary supplier to the United States of 22 percent of the 47 critical minerals listed above, making China the U.S.’s single largest supplier (the next-largest supplier was Canada, with 13 percent).²⁹⁷ The United States is 100 percent dependent on imports for 21 of the 47 critical minerals, and China is a primary supplier of all 21.²⁹⁸

China and Rare Earths ‡

Seventeen elements of the periodic table are referred to as rare earths.[¶] Several subject matter experts consider some or all of the

§ While Mr. McGroarty and Ms. Wirtz limit their definition to apply to minerals used in defense applications, other experts classify minerals used in applications outside the defense sphere, including in high technology or “green” industries, as critical.

† Mr. McGroarty and Ms. Wirtz’s lists include three nonmineral materials: rubber, quindindine, and VTE. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 11. http://americanresources.org/wp-content/uploads/2012/06/ARNP_Quarterly_Report_WEB.pdf.

* Minerals marked with asterisks are rare earths, discussed below.

‡ For an in-depth discussion of China’s rare earth industries and policies, see Lee Levkowitz and Nathan Beauchamp-Mustafaga, *China’s Rare Earths Industry and its Role in the International Market* (Washington, DC: U.S.-China Economic and Security Review Commission, November 2010). <http://www.uscc.gov/researchpapers/2011/RareEarthsBackgrounderFINAL.pdf>.

¶ The International Union of Pure and Applied Chemistry lists 17 rare earths. All of these elements, except for scandium and yttrium, are lanthanoids and are grouped together in the periodic table. Some industry analysts do not consider scandium and yttrium to be rare earths, but they will be regarded as such for the purposes of this Report. Gareth Hatch, *Critical Rare*

17 rare earths to be critical minerals (12 of them appear on Mr. McGroarty and Ms. Wirtz's list of 47 critical minerals; the other five are on the "watch list").²⁹⁹ Technology Metals Research, a research firm focused on rare commodities, defines rare earth minerals as "a unique group of chemical elements that exhibit a range of special electronic, magnetic, optical, and catalytic properties. These elements are enablers; their use in components manufactured from a wide range of alloys and compounds can have a profound effect on the performance of complex engineered systems."³⁰⁰ The different rare earth elements often are found clumped together, and several of them may be mined at a single site; however, they have varying chemical properties and applications.³⁰¹ These applications include catalysts, electronics, magnets, glass polishing compounds, metal alloys, water treatment, lighting, medical devices, and so on.³⁰² Many of these high-tech applications are in the fields of energy and defense, both strategically important sectors.* Rare earths are generally categorized by their chemical composition as "heavy" or "light" rare earths, with heavy rare earths being the scarcer of the two categories. As such, global competition for heavy rare earths is particularly high.³⁰³

China produces nearly all of the world's rare earths, including 94 percent of all rare earth oxides³⁰⁴ and almost 100 percent of commercial rare earth metal.³⁰⁵ Jeffery A. Green, president and founder of J.A. Green and Company, a strategic materials consultancy, testified to the Commission that China produces the "vast majority" of rare earth alloys and magnets.³⁰⁶

After recognizing the value of China's abundant rare earth reserves in the 1970s, Beijing began encouraging the sector's development.³⁰⁷ By the 1990s, China had flooded the global rare earth market and replaced the United States as the leading producer of the minerals.³⁰⁸ China's ascent in the rare earth sector is a result of several factors, including low labor costs, lax environmental standards, and heavy financial and political support.³⁰⁹ Mining rare earths is costly, and Chinese rare earth-producing companies were unable to profit in the years that the industry was scaling up, but direct and indirect support from the Chinese government enabled the continued growth of the industry.³¹⁰ Rare earth mining and production operations in the United States and elsewhere were unable to compete with China's highly subsidized industry (which, unlike the U.S. rare earth mining sector, historically has not been held to strict and costly environmental standards).³¹¹ Mountain Pass, a rare earths mine operated by Molycorp Minerals (formerly a unit of the oil company Unocal), was shut down in 2002, ending the production of rare earths in the United States until December 2010, when mining resumed at Mountain Pass (Molycorp expects the mine to be fully operational by mid-2013).³¹²

Earths: Global supply & demand projections and the leading contenders for new sources of supply (Carpentersville, IL: Technology Metals Research, August 2011), p. 7.

* For a more comprehensive listing of rare earth applications, see Gareth Hatch, *Critical Rare Earths: Global supply & demand projections and the leading contenders for new sources of supply* (Carpentersville, IL: Technology Metals Research, August 2011), pp. 8–11; Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 4. <http://www.fas.org/sgp/crs/row/R42510.pdf>; and Jeffery A. Green, *The Defense Implications of Rare Earth Shortages* (Washington, DC: National Center for Policy Analysis, August 2012). <http://www.ncpa.org/pdfs/ib112.pdf>.

Since becoming the world's leading rare earths producer, China has reversed its rare earth policies and is attempting to consolidate the industry, limit production, impose export restrictions, and import rare earths. These policies, codified in China's June 2012 white paper on rare earths, reflect the importance Beijing affords to the minerals.³¹³ Beijing justifies its efforts to more tightly manage its rare earth sector by citing environmental concerns and the need for sustainable rare earth production in China.³¹⁴ According to testimony to the Commission from Mr. Green, China announced plans in 2009 to reduce permits for mines from 123 to less than ten and reduce processing companies from 73 to 20.³¹⁵ Four state-owned companies are poised to dominate China's rare earths sector: Baotou Steel Rare Earth Hi-Tech Company will dominate production in northern China, and three companies—China Minmetals Corporation, Aluminum Corporation of China, and Ganzhou Rare Earth Minerals Industry Company Limited—will control 80 percent of production in southern China.³¹⁶ An April 2012 Congressional Research Service report on China's rare earth policies assesses that “if these state-owned companies . . . were to control China's rare earths industry, they may limit sales or impose other restrictions on foreign buyers, a ‘business’ tactic that some maintain may not be easy to challenge.”³¹⁷ Furthermore, foreign companies are prohibited from participating in rare earth mining; foreign companies can only participate in rare earth smelting or separation activities in China through joint ventures with Chinese companies.³¹⁸

Starting in the early- to mid-2000s, China began to decrease rare earth exports, eventually reversing its export and production promotion policies and implementing export restrictions.³¹⁹ In 2007, the Chinese government began to apply export duties to rare earth exports (up until 2005, Chinese rare earth producers were offered export tax rebates on rare earth exports).³²⁰ In 2011, export duty rates ranged from 15 percent to 25 percent and were applied to several rare earth products.³²¹ China more than halved export quotas from 2005 (65,580 tons) to 2011 (30,184 tons).^{* 322} Joint ventures, subject to significantly lower quotas than domestic companies, absorbed a disproportionate amount of the reductions.^{† 323} In response to China's restrictive policies for rare earths (as well as for molybdenum and tungsten), the United States, the European Union, and Japan requested World Trade Organization (WTO) consultations with China in March 2012; after consultations failed to resolve the issue, the three powers requested a WTO dispute settlement panel in June.³²⁴ The chief complaints of the United States, the European Union, and Japan were that China distorted trade with its limitations on rare earth exports and that China pressured foreign companies to move their operations or technology to China.³²⁵ (For further discussion of this WTO dispute, see chap. 1,

* China's export quota allocations have steeply decreased in recent years, especially between 2009 and 2010. China's export quota for 2012 is 30,996 tons, up from 30,246 tons in 2011. Gareth Hatch, “The Final Rare-Earth Export-Quota Allocations for 2012” (Carpentersville, IL: Technology Metals Research, August 23, 2012). <http://www.techmetalsresearch.com/2012/08/the-final-chinese-rare-earth-export-quota-allocations-for-2012/>.

† Gareth Hatch of Technology Metals Research uses Chinese Ministry of Commerce data to calculate that of China's total quota of 30,996 tons for 2012, 8,590 tons are allocated to joint ventures. Gareth Hatch, “The Final Rare-Earth Export-Quota Allocations for 2012” (Carpentersville, IL: Technology Metals Research, August 23, 2012). <http://www.techmetalsresearch.com/2012/08/the-final-chinese-rare-earth-export-quota-allocations-for-2012/>.

sec. 1, of this Report.) Mr. Green testified that in addition to rare earths, “there are a host of other materials which have tended to follow [a] trend of increasing export quotas” in China, including fluor spar and vanadium, both of which appear on Mr. McGroarty and Ms. Wirtz’s critical minerals list.*³²⁶

In light of growing demand for rare earths in China, Beijing increasingly looks to import more of the minerals, especially heavy rare earths, and could be a net importer of some of them by 2014 or 2015.†³²⁷ According to Technology Metals Research, rare earth mining projects were underway in 14 countries outside China as of mid-September 2012.‡ China’s future rare earth imports are likely to come from some of these countries, including the United States. Mark Smith, chief executive of Molycorp Minerals, which owns the only rare earth mine currently operating in the United States, has indicated that the U.S. company looks to sell rare earths to China in the future.³²⁸ South Africa is poised to be a significant supplier for rare earths to China as well. Chinese company Ganzhou Qiongan Rare Earth has a joint venture with Canadian firm Great Western Minerals Group Ltd. to process rare earths in South Africa,³²⁹ and one South African rare earth company, Frontier Rare Earths, has an office in Shanghai, reportedly for the purpose of facilitating South African rare earth exports to China.³³⁰ China has also looked to Laos for rare earths; however, a Chinese company’s bid to build a rare earths plant there was rejected in April 2012. A Laotian mining official cited environmental concerns as a reason for rejecting the bid.³³¹ Western news reports suggest that China may also be looking to Greenland, where retreating ice has revealed rare earth deposits, for future supply.³³² Analysts note that China’s interest in Arctic resources (including oil, gas, and other minerals) has grown in recent years.³³³

China’s control of much of the global rare earths supply chain poses challenges for future U.S. demand for several rare earths. According to a December 2011 Department of Energy *Critical Materials Strategy* report, supply chain disruptions for five rare earths (dysprosium, neodymium, terbium, europium, and yttrium) could pose risks to the deployment of some clean energy technologies (such as those used in wind turbines, electric vehicles, and energy-efficient lighting) in the short term (until 2015).³³⁴ A March 2012 Department of Defense report on the criticality of rare earths in defense supply chains found that seven rare earths (dysprosium, erbium, europium, gadolinium, neodymium, praseodymium, and yttrium) were either “critical to the production, sustainment, or oper-

*The United States is 100 percent dependent on imports of fluor spar, of which China is a primary import source; the United States is 80 percent dependent on imports of vanadium; however, China is not a major import source. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

†According to Chen Zhanheng, vice secretary general of the China Rare Earth Industry Association, China imported 5,000 tons of rare earths in 2011. China consumed 83,000 tons and exported 16,900 tons in 2011. Wang Zhuoqing, “Appeal to boost rare earth imports,” *China Daily* (Beijing), August 22, 2012. http://www.chinadaily.com.cn/china/2012-08/22/content_15694920.htm.

‡These countries are: Australia, Brazil, Canada, Denmark (Greenland), Kyrgyzstan, Madagascar, Malawi, Mozambique, Namibia, South Africa, Sweden, Tanzania, Turkey, and the United States. Technology Metals Research, *TMR Advanced Rare-Earth Metals Projects Index* (Carpentersville, IL: September 19, 2012). <http://www.techmetalsresearch.com/metrics-indices/tmr-advanced-rare-earth-projects-index/>.

ation of significant United States military equipment” or “subject to interruption of supply, based on actions or events outside the control of the Government of the United States.”³³⁵ The report concluded that U.S. production of six of the seven minerals (excepting yttrium) would be sufficient to cover U.S. defense needs in 2012.³³⁶ China has an effective monopoly over production of the minerals listed by the Department of Energy and the Department of Defense.

China has taken advantage of its dominant position in the rare earths market to use its exports as leverage for political purposes. In September 2010, a collision between a Chinese fishing boat and two Japan Coast Guard vessels sparked a diplomatic row that ultimately resulted in China informally restricting its rare earth exports to Japan for a period of weeks.³³⁷ China refuted claims that it had issued an unofficial embargo on rare earths to Japan,³³⁸ but customs data suggest otherwise. For almost two months following the September 2010 collision, Chinese rare earth exports to Japan sharply decreased.³³⁹ The incident suggests that China is willing to use its position as the world’s primary source of these minerals as a political weapon. As China continues to tighten control over its rare earth industry, this threat becomes more acute.

If China were to use or threaten to use its role as the dominant player in mineral product supply chains as leverage in a political dispute, as it did in 2010 with Japan, impacts in the form of market uncertainty and instability, diplomatic tensions, or shortfalls in critical mineral supplies could undermine economic performance or national security in other countries. The United States is vulnerable to such developments due to its reliance on minerals imported from China.

Water

Water Scarcity in China

With one-fifth of the world’s population and only 7 percent of the world’s water resources, China faces significant challenges related to water scarcity.³⁴⁰ In ten out of 33 provincial-level divisions, water availability remains below the World Bank’s water poverty level of 1,000 square meters per person per year.*³⁴¹ Today, over 40 mid- to large-sized Chinese cities,† including Beijing, suffer from significant water shortages.³⁴² The Asian Development Bank reports that over the last 50 years, water resources per capita in China decreased by 60 percent; an additional 10 percent decrease likely will occur by 2025.³⁴³ Estimates of economic output lost due to China’s water shortages range from \$6.3 billion to \$28 billion annually.³⁴⁴ A September 2012 study by HSBC Bank and nonprofit environmental organization China Water Risk determined that “provincial water caps could force a change in [China’s] economic mix since 45% of China’s GDP [gross national product] is produced

*North China and Beijing have particularly scarce water resources per capita, with 500 square meters and 100 square meters, respectively. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 146. <http://www.china-greentech.com/report>.

†Mid- to large-sized cities are cities with populations between 200,000 and 500,000, and over 500,000 people, respectively. China Data Center, “China City List.” http://chinadataonline.org/member/city/city_md.asp.

in water-scarce provinces. Facilities may have to relocate because arable land cannot be moved, and water quotas and pollution reduction targets could be enforced more strictly than in the past.”³⁴⁵

China’s rapid development accounts for a large part of China’s current water shortage. Over a quarter of total water consumption in China is taken up by industrial use, largely for energy production purposes.³⁴⁶ The process of mining and consuming coal, China’s largest energy source, accounts for between 15 percent and 20 percent of China’s total water consumption.³⁴⁷ According to testimony to the Commission from Elizabeth Economy, director of Asia Studies at the Council on Foreign Relations, China’s industrial water usage as a unit of GDP is four to ten times greater than other nations with competitive economies.*³⁴⁸ Agriculture is even more water intensive, constituting 62 percent of China’s total water consumption.³⁴⁹ Significantly, the bulk of China’s industrial and agricultural activity is concentrated in China’s arid north. This exacerbates regional water disparities within China and puts additional pressure on the most water-scarce areas of the country.† In an effort to address this challenge, Beijing is undertaking a \$62 billion South-North Water Transfer Project, a series of canals to divert water from China’s southern rivers to northern China.³⁵⁰ (See below for a discussion of China’s water diversion projects’ impacts on downstream states.)

In addition to China’s water shortages, many of the nation’s water resources are severely polluted. Dr. Economy testified to the Commission that 90 percent of ground water in China is polluted by industrial waste, refuse, and urban sewage.³⁵¹ A 2010 study deemed over half of the ground water tested in 183 major Chinese cities undrinkable.‡³⁵² Furthermore, scientists have found high rates of cancer in populations living alongside many of China’s polluted rivers. A 2010 study pinpointed 459 “cancer villages” in China, most of which clustered around polluted rivers; some of these villages had cancer rates 17 times higher than China’s national average.³⁵³ Widespread health problems associated with pollution (including water pollution) are a major cause of social unrest in China. Christina Larson, a contributing editor to *Foreign Policy* magazine, reported that there were 90,000 “mass incidents” related to environmental concerns in 2010.³⁵⁴ In Tibet, such protests are heavily suppressed. According to written testimony submitted to the Commission by the Environmental and Development Desk of the Central Tibetan Administration, in 2010 and 2011 there were

* Due to its export-oriented economy, China absorbs the “water cost” of producing much of the world’s manufactured goods (for example, one cotton T-shirt requires 13.5 bathtubs full of water to produce). In addition to contributing to the overall scarcity of water in China, this presents implications for foreign firms operating in China that require water to produce goods. A water shortage or price spike could substantially affect pricing and profits. Debra Tan, “Agriculture: A Prosperous Ever After?” (Hong Kong, China: *China Water Risk*, February 9, 2012). <http://china.waterrisk.org/resources/analysis-reviews/agriculture-a-prosperous-ever-after>.

† Water-deprived provinces in the north contribute 45 percent of China’s GDP and 40 percent of its agricultural output; however, 80 percent of China’s available water resources exist south of the Yangtze River. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 146. <http://www.china-greentech.com/report>; U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

‡ A different surface water test in 2010 revealed that over a quarter of surface water is polluted beyond even industrial use. Elizabeth Economy, “China’s Growing Water Crisis,” *World Politics Review* (August 9, 2011): 2. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

“several protests by local residents related to mining activities, mostly when the local water supply [was] diverted and polluted for mining activities. Unlike the environmental protests in many parts of China, such protests in Tibet are suppressed by armed forces, and in many cases the locals are silenced by firearms.”* 355

Water stress is exacerbated by inefficient transport, pricing, and treatment of water supplies. Water transport systems are so inefficient that a 2002 survey of 408 cities in China determined that 21.5 percent of water supplies were lost to leakage or evaporation before reaching customers.³⁵⁶ Government subsidies keep the price of water artificially low, which discourages efficient water use by industrial and agricultural actors.³⁵⁷ To address this problem, Beijing in 2009 initiated water price reform programs in some municipalities.³⁵⁸ It is unclear whether the programs will be implemented on a larger scale; according to written testimony submitted to the Commission by the Central Tibetan Administration, China’s failure to reform artificially low water prices reflects Beijing’s concern that a price increase will elicit protests from the agricultural and industrial sectors.³⁵⁹ Water treatment, while mandated by the government, is underutilized because of high operation costs, and many water treatment plants are idle except when inspections are anticipated.³⁶⁰

Beijing recognizes the immense water crisis it faces and has taken measures to abate the problem.† China’s 12th Five-Year Plan (2011–2015) sets targets for water efficiency and water pollution reduction.³⁶¹ In 2011, the Chinese State Council and Central Committee of the Chinese Communist Party highlighted the severity of China’s water-related challenges by dedicating the first policy document of the year, called the “No. 1 Central Document,”‡ to water issues.³⁶² The 2011 document announces a national cap on water consumption at 670 billion cubic meters by 2020 and 700 billion cubic meters by 2030.³⁶³ To achieve this cap, the document calls for a reduction in industrial water use; improvements in irrigation efficiency and groundwater preservation; and sets targets for pipeline leakage, desalination, water treatment, wastewater, and rainwater collection.

China’s Hydropower Dams

China exploits many of its large rivers to generate hydroelectric power. Over the course of several decades, China has constructed 25,800 large dams, more than any other country.³⁶⁴ China has the greatest hydropower capacity in the world by a wide margin,³⁶⁵ and in 2010 hydropower accounted for about 17 percent of electricity generated in China.³⁶⁶ According to the 12th Five-Year Plan, Beijing aims to increase hydropower dam capacity.³⁶⁷ Deutsche Bank Group experts estimate that by 2020 China will have set into

*During an August 2012 protest opposing a mining project in Markham, Tibet, Chinese security personnel shot and killed a Tibetan protester and detained six others. Richard Finney and Parameswaran Ponnudurai, “Tibetan Shot Dead in Protest,” Radio Free Asia, August 16, 2012. <http://www.rfa.org/english/news/tibet/mine-08162012000425.html>.

†The year 2011 marked the country’s first water census report, with results forthcoming. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 147. <http://www.china-greentech.com/report>.

‡The No. 1 Central Document is widely considered to be a policy blueprint for the year to come. CNTV, “No. 1 Central Document focuses on rural issues,” February 2, 2012. <http://english.cntv.cn/program/newsupdate/20120202/106676.shtml>.

motion approximately 86 percent of the country's viable hydropower resources with a generation capacity of 348 gigawatts, fulfilling 15 percent of the country's projected annual electricity demand by that time.³⁶⁸ While the proportion of hydropower as a source of energy will decrease, the real amount of hydropower generated will increase substantially.

Notwithstanding the benefits of China's hydropower boom, China's enthusiasm for hydropower dams raises concerns for environmentalists and local communities. Dams can create pollution and accumulate silt, cause landslides and ecological harm, and present geological hazards (reservoirs have been known to induce seismic activity).³⁶⁹ In the aftermath of the 2008 Sichuan earthquake, the stability of nearby dams was a major concern. Within one day of the earthquake, 391 reservoirs close to the epicenter had reported structural safety problems.³⁷⁰ For hydropower projects to be successful, they must run on predictable water flows. However, in 2011, severe droughts and flooding introduced unforeseen fluctuations in water flows and undermined the power generation capabilities of some dams.³⁷¹ Water shortages across China in 2011 reduced total hydropower generation by 20 percent.³⁷²

The Three Gorges Dam is the most well-known hydropower project in China. The dam, which began construction in 1994, took 18 years to build and became fully operational in July 2012 when it turned on its last turbines.³⁷³ It is the largest and most powerful hydropower dam in the world, with the capacity to generate 22,500 megawatts, the equivalent of 15 nuclear reactors.³⁷⁴ International Rivers, an environmental advocacy nonprofit organization based in Berkeley, California, has called the Three Gorges Dam a "model for disaster."³⁷⁵ Aside from environmental costs, the project displaced over 1.2 million people, hundreds of thousands of whom have been poorly compensated for their forced relocation.³⁷⁶ In August 2012, reports emerged that a number of previously displaced residents in communities around the dam would be required to move again due to "geological risks" associated with the dam.³⁷⁷

China's Overseas Dam Industry

China houses half of the world's dams on its own soil,³⁷⁸ and its expertise in the sector has allowed the industry to become a part of Beijing's "going out" policy. Today, China dominates the international hydropower dam construction industry.³⁷⁹ It also plays a large role in funding through the Export-Import Bank of China and through contracting and equipment supply.³⁸⁰ China's dam industry operates in Africa (with 86 ongoing projects), Southeast Asia (127), and Latin America (22).³⁸¹ In all, China has been involved in over 300 hydropower projects in 66 countries.³⁸² State-owned enterprise Sinohydro is by far the largest Chinese corporation in the dam business, having approximately half the market share internationally and 80 percent domestically.³⁸³

China's Overseas Dam Industry—Continued

Chinese hydropower companies operate overseas for several reasons.³⁸⁴ First, the Chinese government, through political and financial incentives, encourages these state-owned companies to “go out” into the world and compete with world-class brands to become successful international companies. The companies themselves are motivated to seek projects outside China for commercial reasons. Sometimes China's hydropower projects support other Chinese activities overseas. For example, China's Merowe Dam in Sudan supports China's oil operations there. Some Chinese dams in Southeast Asia generate power that is transported back to China. According to the Burma Rivers Network, an advocacy group for Burmese communities affected by dams, seven working or planned Chinese-made dams in Burma may be transporting some or all of their generated electricity back to China.³⁸⁵

Grace Mang, China program director at International Rivers, testified to the Commission that Chinese damming in the developing world can be problematic because impacts on the environment and local communities' civil and political rights are not always considered. Chinese hydropower companies operate in countries where civil society and resource governance institutions are weak or nonexistent.³⁸⁶ Chinese firms have struggled to involve local communities in their projects abroad and often are unprepared to deal with community concerns and complaints.³⁸⁷ Li Fusheng, an assistant general manager of the Export-Import Bank of China, commented in a January 2011 editorial in a Chinese newspaper that Chinese companies “are not good at dealing [with] local communities, non-governmental organizations, and local and foreign media, apart from local governments and partners. Some companies have not made any efforts to communicate with different voices and have even refused to do so.”³⁸⁸

China's Overseas Dam Industry—Continued

Ms. Mang testified to the Commission that China's Myitsone Dam project in Burma was demonstrative of the negative impacts that some Chinese hydropower projects can have on local communities.³⁸⁹ The \$3.6 billion dam is financed and constructed in part by state-owned company China Power Investment Corporation and enjoyed political support in Beijing and Naypyidaw from 2006, when an initial deal on the dam was made.³⁹⁰ In late 2011, however, the project was halted by the Burmese government due to strong local opposition, to the apparent surprise of Chinese investors.³⁹¹ The project, according to Ms. Mang, reflected a "complete lack of transparency around the environmental and societal impacts" on Burmese communities: The dam would displace 12,000 people, and the environmental implications of the project were not fully assessed by the company prior to construction.*³⁹² The Chinese reacted negatively to news of the project's suspension, warning of legal consequences and demanding an "appropriate solution."³⁹³ It is unclear if and when the project will resume.

Downstream Impacts of China's Activities on Transboundary Rivers

All of China's major rivers (including three of the world's five largest rivers measured by discharge) originate in the Tibetan plateau (see figure 5, below).³⁹⁴ According to the Central Tibetan Administration's written testimony submitted to the Commission, "Tibet is strategically important to China due to its centrality in Asia's hydrological cycle: Tibet's glaciers, underground springs, lakes and high altitude makes it the freshwater repository, water supplier, and rainmaker of China, Southeast Asia and South Asia."³⁹⁵ China's management of these important transboundary waterways has significant economic, environmental, and health ramifications for downstream users in contiguous areas. China has been involved in disputes over water rights with several of its neighbors, including India, Kazakhstan, North Korea, Russia, and Vietnam.³⁹⁶ Some analysts predict that tensions over water resource issues in Asia could lead to open conflict.³⁹⁷

*Nevertheless, Chinese hydropower firms do not want to be perceived as the contractors of "last resort" and have made efforts to build a good international reputation. In 2006, the Chinese State Council issued nine "Principles Governing the Activities of Foreign Investment Firms" in an effort to encourage more responsibility abroad. The principles included such tenets as supporting local communities, environmental protection, compliance with local laws, and an emphasis on safety. In 2010, Sinohydro approached International Rivers for assistance in crafting a "world-class" environmental policy and meeting international responsibilities by, for instance, having "no-go" zones such as World Heritage sites and safeguarding local communities. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012; Nicole Brewer, "The New Great Walls: A Guide to China's Overseas Dam Industry" (Berkeley, CA: International Rivers, July 2008), p. 20. http://www.internationalrivers.org/files/attached-files/new_great_walls_report.pdf.

Figure 5: Major Asian Rivers Originating in Tibet

Source: Michael Buckley, "Major Rivers Sourced in Tibet," *Meltdown in Tibet* (film) (February 21, 2012). <http://www.meltdownintibet.com/images/plateaumap-Lg.jpg>.

China's lack of transparency regarding its damming and water diversion projects is especially troubling to its downstream neighbors. In India, Minister of State for Environment and Forests Jairam Ramesh expressed concern that the western section of China's South-North Water Diversion Project could divert huge amounts of water from the Brahmaputra River, causing potentially devastating damage in India.³⁹⁸ Although Chinese officials have stated that China has no plans for damming or diversion projects on the Brahmaputra River, Brahma Chellaney, professor of Strategic Studies at the Center for Policy Research in New Delhi, submitted written testimony to the Commission noting that, in executing hydropower projects, China "begins work quietly, almost furtively, and then presents the project as a fait accompli and as holding transboundary flood-control benefits."³⁹⁹ China has built upstream dams on the Salween, Mekong, Brahmaputra, Arun, Amur, Irtysh, and Ili rivers, generally without knowledge, consent, or input from downstream countries.⁴⁰⁰ China's largest project on the Brahmaputra River (which begins in Tibet and flows through India and Bangladesh) is the Zangmu Dam, located 124 miles from the Indian border.⁴⁰¹ Beijing did not acknowledge the existence of the project until it was several months underway.⁴⁰² In 2009, India and Pakistan discovered a large Chinese dam on the tributary of the Indus River less than 62 miles from Jammu and Kashmir. Moreover, India suspects an additional four Chinese dams are planned for the middle reaches of the Brahmaputra.⁴⁰³ Given these precedents, China's downstream neighbors doubt they would receive notice from China about its future water diversion projects.⁴⁰⁴

China and Kazakhstan have been somewhat successful in managing a dispute over the Irtysh River.⁴⁰⁵ During the 1990s, China began diverting water from the Irtysh River for agricultural and industrial purposes. The Irtysh River, which runs from Xinjiang through Kazakhstan to Siberia, supports the livelihoods of one quarter of Kazakhstan's population. According to testimony to the Commission from Dr. Economy, the Kazakh press reported widely on the pollution caused by the Chinese diversion project, which prompted Beijing to take a more cooperative approach to the shared river. The two countries signed a framework agreement in 1998, and by 2006 they had agreed to share information on water quality. Officials discussed the plan at the 2007 Shanghai Cooperation Organization Forum and signed a final agreement in 2011. Teams from China and Kazakhstan have together started preparatory work on a water allocation project that is scheduled for completion in 2014. Dr. Economy suggests that both external pressure (in the form of heavy media coverage of China's damaging activities in the Kazakh press) and the Kazakh government's leveraging of mineral resources (China imports large amounts of oil and copper from Kazakhstan) may have motivated China to negotiate over the conflict.⁴⁰⁶ The China-Kazakhstan Friendship Joint Water Diversion Project on the Ili River, for which both countries invested a total of \$9.56 million, is another example of cooperation.⁴⁰⁷ The project has the capacity to draw 50 cubic meters of water per second from the river, with each country using half of the diverted water to improve irrigation, supplement water supplies, and mitigate floods.⁴⁰⁸

Communication between Beijing and Southeast Asian countries on water issues has not been as successful. The Mekong River flows through (or is a border boundary for) Burma, Cambodia, China, Laos, Thailand, and Vietnam.⁴⁰⁹ These countries have no way of knowing when or how much water China will release from its upstream dams on the Mekong River.⁴¹⁰ This makes it particularly difficult to identify whether changes in river flows are man-made or natural.⁴¹¹ China's Mekong River dams impact the crucial, nutrient-rich river flows to the Mekong Delta as far as 1,200 miles south. The river provides water, food, and transportation for 60 million people in the region.⁴¹² Richard Cronin and Timothy Hamlin of the Henry L. Stimson Center's Southeast Asia program warn that China's Mekong River dams could disrupt river flows and impact the reproductive cycles of fish and other aquatic species.⁴¹³ The Mekong River's fish stocks are crucial to the diet of Lower Mekong populations, and the effects of China's upstream dams could put at risk the livelihoods of nearly one million people.⁴¹⁴ Milton Osborne, visiting fellow at the Lowy Institute for International Policy, asserts that China's dams on the Mekong River illustrate Beijing's "selfish lack of concern for the serious damage" the dams will inflict downstream.⁴¹⁵ Despite this, Chinese firms are still contracted by downstream countries to construct dams locally. (See the above textbox on China's overseas dam industry.)

China and India are reluctant to discuss multilateral treaties on the use of transboundary rivers. As an upstream country that is not dependent on its neighbors for water resources, China has no incentive to bind itself to treaties that will limit its use of the riv-

ers.⁴¹⁶ China is one of only three countries that have not signed onto the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses.*⁴¹⁷ Dr. Economy explains that rather than adhering to the principle of “national integrity,” which asserts that states “have the right not to be adversely affected in their development potential by activities” of upstream riparian countries, China asserts that it has sovereign rights to fully exploit its riparian resources without taking into account downstream countries.† Thus far, four memoranda of understanding from 2002 to 2008 promoting hydrological information-sharing between China and India are the only evidence of cooperation between the two countries on transboundary water issues.⁴¹⁸ The two countries lack a water-sharing treaty similar to the Kazakhstan-China agreement. The 2002 memorandum of understanding only states that China must notify the Indian Water Ministry of any plans to divert water from the Brahmaputra.⁴¹⁹ China and India continue to slowly work toward strengthening communication and sharing more hydrological data.⁴²⁰

China’s Global Fishing Activities

China is the world’s largest marine fishing country⁴²¹ and top producer of seafood, accounting for 16 percent of global production in 2009.‡⁴²² As incomes in China rise, more Chinese have incorporated fish protein into their diets, and between 1970 and 2010 Chinese consumption of seafood grew five-fold.§⁴²³ China is also a major player in the global seafood trade. Its imports and exports of seafood have increased in recent years (to \$4.5 billion and \$13.2 billion, respectively, in 2010), with exports rising more quickly than imports.⁴²⁴

China’s fishing sector has taken on a global dimension since the 1980s, when depleted resources in China’s traditional fishing grounds began to force fishermen to operate farther from China’s shores.⁴²⁵ One consequence has been the expansion of China’s fishing activities into disputed waters in the East China Sea and South China Sea. This expansion has embroiled Chinese fishermen (and fisheries patrol vessels) in a number of conflicts with foreign maritime actors in disputed waters.⁴²⁶ While many of these fishermen are unwitting participants in clashes at sea, others play a more deliberate, strategic role in China’s territorial disputes in the East

* Burundi, China, and Turkey are the only countries that have not signed the United Nations Convention on the Law of Non-Navigational Uses of International Watercourses. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

† Although tensions over water use are most serious between China and India, India is resistant to treaties as well, because it is a middle riparian nation that seeks to achieve two mutually exclusive objectives depending on whether its disputes are with an upstream country (China) or downstream country (Pakistan and Bangladesh). In fact, India’s own plans for its rivers include damming and diverting rivers that will likely be damaging to countries downstream. Gopal Siwakoti (“Chintan”), “Trans-boundary River Basins in South Asia: Options for Conflict Resolution” (Berkeley, CA: International Rivers, 2011). <http://www.internationalrivers.org/resources/trans-boundary-river-basins-in-south-asia-options-for-conflict-resolution-2445>.

‡ The terms “fish” and “seafood” appear interchangeably throughout this section, and this report does not differentiate between specific fish or seafood products.

§ A 2012 report for the European Parliament on China’s fisheries notes that China’s fish consumption has peaked. Roland Blomeyer et al., *The Role of China in World Fisheries* (Brussels, Belgium: European Parliament Directorate General for Internal Policies, Policy Department B: Structural and Cohesion Policies, 2012), p. 77. <http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=74791>.

and South China seas.⁴²⁷ China's fishing activities in disputed waters are discussed in depth in chapter 3, section 1, of this Report.

Also born of China's overfished domestic stocks was the country's distant water fishing industry. Distant water fishing, or fishing in other countries' maritime territory through bilateral fishing access agreements or on the high seas, represents a relatively small share of China's overall marine production.⁴²⁸ However, China possesses the world's largest distant water fleet, and the industry is set to grow due to significant political and financial support from the Chinese government.⁴²⁹ The industry encompasses 108 companies, 50,000 workers, and approximately 1,900 vessels.⁴³⁰ The Chinese Ministry of Agriculture's 12th Five-Year Plan calls for the expansion of the industry's fleet to 2,300 vessels, enhanced quality of Chinese fishing operations, and a larger and more diverse set of fisheries locations for China's fishing operations.⁴³¹ Government support, in the form of corporate tax relief, reduced import duties and value-added taxes, reduced taxes on some imported fishing equipment, subsidies for the development of new fisheries, fuel subsidies, and subsidies to renovate vessels allow for this expansion.[‡]⁴³² Tabitha Grace Mallory, PhD candidate at The Johns Hopkins School of Advanced International Studies, testified to the Commission that China's distant water fishing operations likely would not be profitable without the vast subsidies that the Chinese government has allocated to the industry.⁴³³

China's distant water fishing industry operates in foreign countries' waters as well as on the high seas throughout Africa, Asia, and South America.* Fisheries access agreements with foreign countries allow specific Chinese vessels to operate in designated areas of their maritime territory.⁴³⁴ China's distant water fishing activities are most prevalent in Africa, where China has access agreements with ten countries: Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mauritania, Morocco, Senegal, Sierra Leone, and South Africa.⁴³⁵ In West Africa alone, 375 Chinese fishing boats produced 190,000 tons of seafood in 2009.⁴³⁶ China is the largest foreign fishing presence in Liberia, and a subsidiary of China National Fisheries Corporation, Sénégal Pêche, is Senegal's largest commercial fishing company.⁴³⁷

Fisheries experts report that Chinese distant water fleets engage in illegal, unreported, and unregulated (IUU) fishing.⁴³⁸ IUU fishing refers to marine fishing activities that do not comply with national or international laws or regulations or with bilateral, multilateral, or international agreements.[†] While China is party to sev-

[‡] China's fishing industry is the third-most-subsidized fishing industry in the world; the Chinese government invested over \$1.57 billion annually in China's fishing industry from 2001 to 2005. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

* According to Ms. Mallory, China's distant water fleets operate off the coasts of several countries, including (but not necessarily limited to) Argentina, Australia, Burma, Ghana, Guinea, Guinea-Bissau, India, Indonesia, Kiribati, Liberia, Madagascar, Malaysia, Marshall Islands, Mauritania, Morocco, Oman, Papua New Guinea, the Philippines, Russia, Senegal, Sierra Leone, South Africa, Suriname, Thailand, United Arab Emirates, and Yemen. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

[†] In 2000, the United Nations Food and Agriculture Organization put forward a voluntary International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing. This document advances methods by which countries and the Food and Agriculture Organization can act to combat destructive fishing practices. The action plan includes

eral regional fisheries management organizations that aim to regulate fishing activities and promote lawful fishing, China's fishing industry often fails to meet related commitments.⁴³⁹ China is not party to some other international agreements that aim to limit IUU fishing.⁴⁴⁰

Chinese IUU fishing in Africa is widespread. A European Parliament report on China's global fishing activities estimates that China's unreported catch from around Africa could be as high as 2.5 million tons annually.⁴⁴¹ Chinese fishermen reportedly overfish, fish for endangered species, operate illegal vessels, mislabel catch, fish in unauthorized areas, use environmentally inappropriate gear or fishing methods, displace local fishermen, and resort to violence against local fishermen.⁴⁴² In Liberia, for example, Chinese fishermen regularly collide with domestic fishing canoes, knocking Liberian fishermen off their boats, and on at least one occasion, Chinese fishermen detained and beat a Liberian fisherman.⁴⁴³ According to testimony from Ms. Mallory, for African countries with poor governance, fisheries access agreements are often nontransparent, inviting corruption and undermining economic and environmental stability in host countries.⁴⁴⁴ Moreover, some host countries are economically dependent on their fisheries access agreements with China, and host governments often find it difficult to punish Chinese IUU fishing activities, since fisheries access agreements are often linked to much-needed loans or aid.⁴⁴⁵

China's Global Fishing and Foreign Policy

China's fishermen and fishing companies operating away from China's shores are international actors, and their actions can have international consequences. As China's fishermen operate in foreign waters in greater numbers, they increasingly impact other countries' environments, economies, and sociopolitical circumstances.

Chinese fishermen are increasingly involved in low-level interstate conflicts. In most cases, these run-ins have little impact, but in some cases, they can threaten individual lives or strain bilateral relations. In 2012 alone, over 200 Chinese fishermen were reportedly involved in some level of conflict at sea. In May, 28 Chinese fishermen were kidnapped, robbed, and detained for 13 days by North Koreans.⁴⁴⁶ In July, Russian border authorities arrested and detained at least 65 Chinese fishermen for twice crossing into Russian waters illegally.⁴⁴⁷ In August, 37 Chinese fishermen aboard two vessels were arrested by the Sri Lankan Navy in Sri Lankan waters.⁴⁴⁸ In October, a Chinese fisherman was shot with a rubber bullet and died during a raid by South Korean coast guard officials to crack down on illegal fishing in the Yellow Sea.⁴⁴⁹ As discussed elsewhere in this Report, several dozen Chinese fishing vessels and fisheries patrol vessels were involved in minor clashes or confronta-

a definition of "illegal, unreported, and unregulated" fishing. United Nations Food and Agriculture Organization, *Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing* (Rome, Italy: 2000). <http://www.fao.org/docrep/003/y1224e/y1224e00.htm#NATURE>. The U.S. Department of Commerce has adopted its own definition of illegal, unreported, and unregulated fishing. U.S. Federal Register, NOAA-2007-0266 Vol. 72, No. 70 (Washington, DC: April 12, 2007). <http://www.regulations.gov/#!documentDetail;D=NOAA-2007-0266-0001;oldLink=false>.

tions related to China's territorial disputes in the East and South China seas throughout the year.

Implications for the United States

China, by virtue of its immense capacity to produce and consume raw materials, drives both supply and demand for several global commodities. This has positive and negative consequences for the United States as well as other producers and consumers of raw materials. China's role as a dominant energy consumer leads it to invest a significant amount of capital into global energy production, driving availability of energy resources in the global marketplace and supporting emerging industries. For example, China's investments in the U.S. shale gas sector help buoy emerging projects and develop assets.⁴⁵⁰ Alternately, China's position as the dominant supplier of several minerals and mineral products upon which other countries, including the United States, are dependent creates market uncertainty.⁴⁵¹

China's resource sectors are subject to varying levels of government control. In the case of China's state-owned oil companies, Beijing provides political and financial support and guidance that enhances the companies' competitiveness, allowing them to invest in high-risk ventures and overpay in their bids for attractive assets in North America and elsewhere. This government support gives China's state-owned oil companies a competitive advantage over U.S. and international oil companies.⁴⁵² China's rare earth trade also is distorted by government restrictions that drive international prices up and encourage foreign companies to transfer technology and operations to China. Such restrictions could leave rare earth importers in the United States and elsewhere vulnerable to shortages.⁴⁵³ A shortage in rare earth materials could impact high-technology, green energy, and critical defense manufacturing in the United States.⁴⁵⁴ A June 2012 American Resources Policy Network report finds that the United States is dependent on China more than any other country for a basket of 47 critical minerals.⁴⁵⁵ Given China's willingness to withhold rare earths from Japan over a diplomatic dispute, Beijing could seek to use its dominant position in critical mineral supply chains as a political tool against the United States.

Conclusions

- China's leaders view China's growing dependence on foreign energy as a strategic vulnerability. China depends on unreliable producer states (like Iran, Sudan, and South Sudan) for much of its oil imports. China also relies heavily on maritime trade routes for its energy imports, exposing China's energy trade to crucial chokepoints like the Strait of Malacca and the Strait of Hormuz. Beijing's insecurity about these circumstances leads China to diversify its foreign sources of oil and transport routes.
- China's overseas energy interests are expanding as China seeks new sources of supply and places to invest. The majority of China's foreign energy comes from the Middle East and Africa. China also has significant energy interests in North, Central,

and Southeast Asia. North America has emerged as the top destination for Chinese energy investments in recent years.

- China's state-owned oil companies are major players in China's foreign energy activities. The state-owned oil companies' recent success in their North American deals illustrates their growing international prestige as well as their competitiveness. While the state-owned oil companies often behave like commercial actors, significant political and financial support from the Chinese government gives the companies an unfair advantage when competing with U.S. or foreign energy companies for deals.
- The United States is heavily dependent on China for much of its mineral imports. China is a primary supplier of 21 mineral commodities upon which the United States is 100 percent dependent. Beijing demonstrated during a diplomatic row with Japan that it was willing to use its dominant role in the rare earths supply chain as leverage against Tokyo.
- China faces several challenges related to water scarcity and pollution. China's use of hydropower dams and water diversion projects on transboundary rivers can have detrimental economic, environmental, health, and security impacts in downstream states in Central, South, and Southeast Asia. This creates tensions between China and its regional neighbors.
- China is the world's largest fishing nation. In addition to domestic fishing, China has the world's largest distant water fleet, which operates on the high seas and in the maritime territories of several countries throughout Asia, Africa, and South America. China's distant water fishing industry often engages in illegal, unreported, and unregulated fishing, especially in waters off the coast of Africa.

RECOMMENDATIONS

China and Europe

The Commission recommends that:

- Members of Congress and congressional bodies participating in transatlantic legislative dialogues such as the Transatlantic Policy Network or the Transatlantic Legislators Dialogue promote the discussion of economic, political, and security issues as they relate to China and Asia within these dialogues.
- Congress direct the Department of Defense to survey NATO's current and planned exchanges and interactions with China to ensure that U.S. contributions are in compliance with the limitations enumerated in the National Defense Authorization Act of 2000.
- Congress urge the administration to strengthen transatlantic cooperation on investment screening regimes and trade policy related to China with the European Union and individual EU member states through appropriate venues.
- Congress urge the European Union and EU member states to strengthen the implementation of the 1989 Tiananmen arms embargo.

China's Demand for and Control of Global Resources

The Commission recommends that:

- Congress direct the administration to establish an interagency task force with the secretaries of Commerce, Defense, Energy, the Interior, and State and the director of the U.S. Geological Survey to (a) develop a governmentwide definition and list of "critical minerals"; (b) develop a plan regarding those minerals to reduce the vulnerability of the United States to pressure from China or any other country for political or economic advantage; and (c) require federal agencies to use existing statutory and regulatory tools to encourage critical minerals extraction and manufacture in the United States.
- Congress assess the mandate, activities, and effectiveness of the Department of Defense's Strategic Materials Protection Board in order to ensure that the board meets its statutory responsibilities as mandated in 10 U.S.C. § 187.*

*The Strategic Materials Protection Board was created by statute (10 U.S.C. § 187) in 2007. The board, which includes the Secretary of Defense; the Undersecretary of Defense for Acquisition, Technology, and Logistics; the Undersecretary of Defense for Intelligence; and the secretaries of the Army, Navy, and Air Force, is mandated to meet no less than once every two years to issue a report and recommendations on the security of supply for materials considered critical to national defense.

- Congress maintain support for the U.S.-initiated Mekong River Initiative's Mekong Partnership for the Environment.
- Congress maintain support for nongovernmental organizations involved in the U.S. Agency for International Development's Economic Support Fund for Tibet and the agency's Environmental Cooperation—Asia (ECO-Asia) programs for Water and Sanitation and Environmental Governance.
- Congress direct the U.S. Department of State to assess the utility, interest of affected countries, and significance for the United States of creating an Asian regional water security framework to facilitate cooperative agreements among riparian countries and to promote transparency and information sharing on water security issues.

ENDNOTES FOR CHAPTER 4

1. Eurostat (Luxembourg: European Commission). http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113366.pdf. Please note that all conversions are in current U.S. dollars (as of September 15, 2012) and are for reference purposes only.
2. Judy Dempsey, "In Search of Leverage with China," *New York Times*, November 21, 2011. <http://www.nytimes.com/2011/11/22/world/europe/22iht-letter22.html?pagewanted=all>.
3. Fredrik Erixon, "Mercantilist Misconceptions: A Détente Strategy for EU-China Relations" (Brussels, Belgium: European Centre for International Political Economy, *Policy Brief 08/2012*, September 19, 2012).
4. Zheng Lifei, "China Risks 4-Point Growth-Rate Cut in Case of Europe Worsening: Economy," Bloomberg, February 6, 2012. <http://www.bloomberg.com/news/2012-02-06/china-may-see-deeper-economic-slowdown-if-europe-crisis-worsens-imf-says.html>.
5. Tom Orlik and Bob Davis, "Beijing Diversifies Away from U.S. Dollar," *Wall Street Journal*, March 1, 2012.
6. François Godement and Jonas Parello-Plesner, "The Scramble for Europe," *ECFR/37* [European Council on Foreign Relations] (July 2011); Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012).
7. *China Central Television*, "China: EFSF [European Financial Stability Facility] Bond Purchase Not on G20 [Group of 20] Agenda," October 27, 2011; BBC News, "China Refuses to Commit to EFSF [European Financial Stability Facility] Amid Greek Concerns," November 3, 2011.
8. Nick Edwards and Benjamin Kang Lim, "Beijing Risks Public Backlash if it Rescues Europe," Reuters, November 3, 2011. <http://www.reuters.com/article/2011/11/03/us-china-europe-newspro-idUSTRE7A236S20111103>.
9. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.
10. Francesco Fontemaggi, "Eurozone split over Chinese help in debt crisis," *Agence France-Presse*, October 23, 2011; Simon Rabinovitch, "EFSF [European Financial Stability Facility] Head Optimistic of China's Support," *Financial Times*, October 28, 2011.
11. Ingrid Melander and Harry Papachristou, "China's Wen Offers to Buy Greek Debt," Reuters, October 2, 2010. <http://www.reuters.com/article/2010/10/02/us-greece-china-idUSTRE69112L20101002>; Shrikesh Laxmidas and Kevin Yao, "China Offers to help Portugal but Silent on Debt," Reuters, November 7, 2010. <http://www.reuters.com/article/2010/11/07/china-portugal-hu-idUSLDE6A60A220101107>; BBC News, "China Backs Spain in New Eurozone Support," January 5, 2011. <http://www.bbc.co.uk/news/business-12120069>; and Michael P. Regan and Rita Nazareth, "Stocks Gain on Report that China May Purchase Italian Bonds; Treasuries Retreat," Bloomberg, September 12, 2011. <http://www.bloomberg.com/news/2011-09-12/asian-stocks-futures-fall.html>.
12. For more on the EU's investment reporting standards, see François Godement and Jonas Parello-Plesner, "The Scramble for Europe," *ECFR/37* [European Council on Foreign Relations] (July 2011); Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), pp. 68–72.
13. Aileen Wang and Nick Edwards, "China to Keep Investing in Euro Zone Debt: China Central Bank," Reuters, February 15, 2012. <http://www.reuters.com/article/2012/02/15/us-china-europe-idUSTRE81E07J20120215>.
14. Tom Orlik and Bob Davis, "Beijing Diversifies Away from U.S. Dollar," *Wall Street Journal*, March 1, 2012.
15. The European Financial Stability Facility numbers can be found at <http://www.efsf.europa.eu/>.
16. The European Financial Stability Facility (Luxembourg) issuances, various series. http://www.efsf.europa.eu/investor_relations/issues/index.htm.
17. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Jonas Parello-Plesner, April 19, 2012.
18. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

19. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.
20. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Jonas Parello Plesner, April 19, 2012.
21. Aileen Wang and Lucy Hornby, "China Eyes European Assets as Debt Crisis Bites: Minister," Reuters, November 28, 2011. <http://www.reuters.com/article/2011/11/28/us-china-economy-inflation-idUSTRE7AR0XE20111128>.
22. Zheng Yangpeng, "Chinese Firms Get Good Deals in Europe," *China Daily*, February 27, 2012.
23. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 32.
24. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 33.
25. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 35.
26. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 4.
27. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.
28. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), pp. 36–37.
29. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), pp. 39–44.
30. European Commission, "Article 346," *Treaty on the Functioning of the European Union* (Brussels, Belgium; Luxembourg). <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:12008E346:EN:NOT>.
31. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 8.
32. Deborah Orr, "Danone: Not For Sale," *Forbes*, July 25, 2005.
33. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 71.
34. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 72.
35. EUObserver.com, "EU Industry Chief Claims Support for Foreign Investment Review Board," February 16, 2011. <http://euobserver.com/884/31821>.
36. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.
37. Thilo Hanemann and Daniel H. Rosen, "China Invests in Europe: Patterns, Impacts and Policy Implications" (New York: Rhodium Group, June 2012), p. 4.
38. China Investment Corporation, *2010 Annual Report* (Beijing, China: July 26, 2011), p. 31. http://www.china-inv.cn/cicen/annals/aboutcic_annals2010.html.
39. Jamil Anderlini and Lifan Zhang, "Wen Sets Preconditions to Help Europe," *Financial Times*, September 11, 2012; Open Source Center Analysis, "PRC [People's Republic of China] Media Suggest China Seeks Trade Concessions for EU Debt Funding," February 12, 2012.
40. Benjamin Kang Lim and Nick Edwards, "Politics Stymie China's EU Aid Offer," Reuters, November 11, 2011. <http://www.reuters.com/article/2011/11/11/us-china-europe-idUSTRE7AA1Q820111111>.
41. Jonathan Soble and Leslie Hook, "Japan Sees Chinese Ban on Mineral Exports," *Financial Times*, September 24, 2010.
42. Meera Bhatia and Josiane Kremer, "Nobel Peace Prize for Dissident Liu Has China Warning Norway on Relations," Bloomberg, October 8, 2010; *Economist*, "Cold Shoulder: Norway Considers Avenging Chinese Bullying," February 18, 2012.
43. Keith Bradsher, "China Ties Aiding Europe to Its Own Trade Goals," *New York Times*, September 14, 2011.
44. James Kirkup, "Britain Prepared to Block Eurozone Move to Relax Arms Embargo on China," *Telegraph* (United Kingdom), November 4, 2011. <http://www.telegraph.co.uk/news/politics/8868652/Britain-prepared-to-block-Eurozone-move-to-relax-arms-embargo-on-China.html>.
45. François Godement and Jonas Parello-Plesner, "The Scramble for Europe," *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 1; Judy Dempsey,

“In Search of Leverage with China,” *New York Times*, November 21, 2011. <http://www.nytimes.com/2011/11/22/world/europe/22iht-letter22.html?pagewanted=all>.

46. Patrick Donahue, “Euro Area Could Address Crisis Without China, Juncker Says,” Bloomberg, October 30, 2011. <http://www.bloomberg.com/news/2011-10-30/euro-area-could-address-crisis-without-china-juncker-says.html>; Philip Bowring, “Europe Doesn’t Need China’s Money,” *Wall Street Journal*, November 2, 2011. <http://online.wsj.com/article/SB10001424052970204528204577011473701131672.html>.

47. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

48. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

49. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

50. European Parliament, Directorate-General for External Policies, “Trade and Economic Relations with China 2012” (Strasbourg, France: June 2012), p. 19. <http://www.europarl.europa.eu/delegations/es/studiesdownload.html?languageDocument=EN&file=74455>. Also see European Commission, “Council Regulation (EC) No. 1225/2009 of 30 November 2009 on protection against dumped imports from countries not members of the European Community,” *Official Journal of the European Union* (November 30, 2009): 55. http://trade.ec.europa.eu/doclib/docs/2010/april/tradoc_146035.pdf.

51. European Parliament, Directorate-General for External Policies, “Trade and Economic Relations with China 2012” (Strasbourg, France: June 2012), p. 19. <http://www.europarl.europa.eu/delegations/es/studiesdownload.html?languageDocument=EN&file=74455>.

52. Agence France-Presse, “China’s Wen Demands Lift of EU Arms Embargo at Summit,” September 20, 2012. <http://www.defensenews.com/article/20120920/DEFREG03/309200006/China-8217-s-Wen-Demands-Lift-EU-Arms-Embargo-Summit?odysey=tab|topnews|text|FRONTPAGE>.

53. François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011).

54. François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 2.

55. François Godement, “China Plays Hardball,” *YaleGlobal* online, September 19, 2011. <http://yaleglobal.yale.edu/content/china-plays-hard-ball>.

56. François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 6.

57. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Jonas Parello-Plesner, April 19, 2012.

58. For further discussion on the fault lines between various European states, see François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011), pp. 7–9.

59. General Secretariat, “Guidelines on the EU’s Foreign and Security Policy in East Asia” (Brussels, Belgium: The Council of the European Union, June 15, 2012.).

60. Matthew Dalton, “Europe Weighs Trade Probes amid Beijing Threats,” *Wall Street Journal*, March 22, 2012. <http://online.wsj.com/article/SB10001424052702303812904577297603947883314.html>.

61. Joshua Chaffin, “Commerce: Tempestuous Trade Winds,” *Financial Times*, May 28, 2012; Joshua Chaffin, “Brussels Sidesteps China Trade Dispute,” *Financial Times*, September 19, 2012.

62. Joshua Chaffin, “Beijing Threatens Trade Action,” *Financial Times*, July 8, 2012.

63. Joshua Chaffin, “Brussels Sidesteps China Trade Dispute,” *Financial Times*, September 19, 2012.

64. Kathrin Hille and Joshua Chaffin, “Merkel Faces EU Clash Over China,” *Financial Times*, August 30, 2012.

65. Kathrin Hille and Joshua Chaffin, “Merkel Faces EU Clash Over China,” *Financial Times*, August 30, 2012.

66. Doug Palmer and Sebastian Moffett, “U.S., EU, Japan Challenge China at WTO Over Rare-Earth Curbs,” Reuters, March 13, 2012.

67. François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 6.

68. François Godement and Jonas Parello-Plesner, “The Scramble for Europe,” *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 6.

69. European Chamber of Commerce in China, *Public Procurement in China: European Business Experiences Competing for Public Contracts in China* (Beijing, China: April 2011), p. 15. http://www.europeanchamber.com.cn/images/documents/marketing_department/beijing/publications/2011/PP%20Study%20EN%20Final_0421.pdf.

70. European Chamber of Commerce in China, *Public Procurement in China: European Business Experiences Competing for Public Contracts in China* (Beijing, China: April 2011). http://www.europeanchamber.com.cn/images/documents/marketing_department/beijing/publications/2011/PP%20Study%20EN%20Final_0421.pdf.

71. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

72. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Andrew Small, April 19, 2012.

73. Tim Hetherington, "China Halts 10 More Airbus Orders: Sources," Reuters, March 15, 2012.

74. Barbara Lewis, "Top Emitter China Agrees to Work with EU to Cut Carbon," Reuters, September 20, 2012.

75. U.S. Department of State, *Media Note: U.S.-EU Statement on the Asia-Pacific Region* (Washington, DC: Office of the Spokesperson of the U.S. Department of State), July 12, 2012. <http://www.state.gov/r/pa/prs/ps/2012/07/194896.htm>.

76. François Godement and Jonas Parello-Plesner, "The Scramble for Europe," *ECFR/37* [European Council on Foreign Relations] (July 2011), p. 2.

77. Michael Yahuda, "The Sino-European encounter: historical influences and contemporary relations," in David Shambaugh et al., eds., *China-Europe Relations: Perceptions, Policies, and Prospects* (New York, NY: Routledge, 2008), p. 21; U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

78. General Secretariat, "Guidelines on the EU's Foreign and Security Policy in East Asia" (Brussels, Belgium: The Council of the European Union, June 15, 2012). http://eeas.europa.eu/asia/docs/guidelines_eu_foreign_sec_pol_east_asia_en.pdf.

79. General Secretariat, "Guidelines on the EU's Foreign and Security Policy in East Asia" (Brussels, Belgium: The Council of the European Union, June 15, 2012). http://eeas.europa.eu/asia/docs/guidelines_eu_foreign_sec_pol_east_asia_en.pdf.

80. U.S. Department of State, *Media Note: U.S.-EU Statement on the Asia-Pacific Region* (Washington, DC: Office of the Spokesperson of the U.S. Department of State), July 12, 2012. <http://www.state.gov/r/pa/prs/ps/2012/07/194896.htm>.

81. Kurt Campbell, "Keynote Address" (Center for Strategic and International Studies conference on "The South China Sea and Asia Pacific in Transition," Washington, DC, June 26, 2012). http://csis.org/files/attachments/129627_SOUTHCHINA_SEA_CAMPBELL_TRANSCRIPT.pdf.

82. Jonathan Holslag, *The elusive axis: Evaluating the Sino-European partnership* (Brussels, Belgium: Brussels Institute of Contemporary China Studies, 2009), p. 4. <http://www.vub.ac.be/biccs/documents/Holslag,%20Jonathan%20%282009%29,%20The%20elusive%20axis.pdf>.

83. Jonathan Holslag, *The elusive axis: Evaluating the Sino-European partnership* (Brussels, Belgium: Brussels Institute of Contemporary China Studies, 2009), p. 4. <http://www.vub.ac.be/biccs/documents/Holslag,%20Jonathan%20%282009%29,%20The%20elusive%20axis.pdf>.

84. European Union, "EU Relations with China: EU-China Summit Factsheet" (Beijing, China: February 8, 2012). <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/12/85>; Council of the European Union, "Joint Press Communiqué of the 14th EU-China Summit" (Beijing, China: February 14, 2012). http://europa.eu/china/summit/summit_docs/120214_joint_statement_14th_eu_china_summit_en.pdf.

85. Mathieu Duchâtel and Alexandre Sheldon Duplaix, *The European Union and the Modernization of the People's Liberation Army Navy* (Hong Kong, China: *China Perspectives*, 2011), p. 31; Jonathan Holslag, *The elusive axis: Evaluating the Sino-European partnership* (Brussels, Belgium: Brussels Institute of Contemporary China Studies, 2009), p. 2. <http://www.vub.ac.be/biccs/documents/Holslag,%20Jonathan%20%282009%29,%20The%20elusive%20axis.pdf>; and Matthias Stepan and Falk Ostermann, "EU-China Relations: Strategic or pragmatic, the future or already the past?" *Atlantisch perspectief* 35:2 (2011): 19–24.

86. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of Gudrun Wacker, April 19, 2012.

87. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

88. Mathieu Duchâtel and Alexandre Sheldon Duplaix, *The European Union and the Modernization of the People's Liberation Army Navy* (Hong Kong, China: *China Perspectives*, 2011), p. 31.

89. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of Jonathan Holslag, April 19, 2012.

90. Mathieu Duchâtel and Alexandre Sheldon Duplaix, *The European Union and the Modernization of the People's Liberation Army Navy* (Hong Kong, China: *China Perspectives*, 2011), p. 31.

91. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

92. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

93. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

94. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

95. Nicolle LaFleur, "EU's top humanitarian official stresses cooperation and learning with National Society" (Geneva, Switzerland: International Federation of Red Cross and Red Crescent Societies, July 4, 2012). <http://www.ifrc.org/news-and-media/news-stories/asia-pacific/china/eus-top-humanitarian-official-stresses-cooperation-and-learning-with-national-society-58039/>; Asia-Europe Meeting, "ASEM [Asia-Europe Meeting] Workshop on Cooperation and Capacity Building of Disaster Relief," July 24, 2009. <http://www.aseminfoboard.org/2011-12-20-06-03-03/announcements/item/105-asem-workshop-on-cooperation-of-capacity-building-of-disaster-relief.html>.

96. For details of China's antipiracy operations, see U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2009), pp. 117–127; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 162.

97. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

98. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

99. *PLA Daily*, "PLA Navy commander visits Turkey," September 3, 2012. <http://eng.mod.gov.cn/MilitaryExchanges/2012-09/03/content4396865.htm>; *PLA Daily*, "Ma Xiaotian meets with Swiss guests," August 29, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-08/29/content_4395870.htm; Xinhua, "China, Croatia vow to push forward military cooperation," August 28, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-08/28/content_4395326.htm; Xinhua, "Chinese navy ship visits Bulgaria for first time," August 6, 2012. http://eng.mod.gov.cn/TopNews/2012-08/06/content_4389547.htm; *PLA Daily*, "Xu Caihou wraps up visit to Lithuania and Belarus," July 17, 2012. http://eng.mod.gov.cn/DefenseNews/2012-07/17/content_4385589.htm; Zhou Sa'ang and Geng Ruibin, "Belarusian prime minister meets with Xu Caihou," Xinhua, July 13, 2012. http://eng.mod.gov.cn/DefenseNews/2012-07/13/content_4384863.htm; *PLA Daily*, "Chen Yong meets with president of Romania National Defense University," July 12, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-07/12/content_4384559.htm; Xinhua, "Top Chinese military official meets Lithuanian leaders on ties, cooperation," July 11, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-07/11/content_4384172.htm; Xinhua, "China, EU pledge to strengthen defense, security cooperation," July 10, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-07/10/content_4383975.htm; *PLA Daily*, "PLA Navy 'Zheng He' ship leaves for Spain," June 5, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-06/05/content_4374202.htm; *PLA Daily*, "Qi Jianguo holds talks with Finnish deputy chief of defense staff," May 22, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-05/22/content_4369909.htm; Xinhua, "Chinese, Polish DMs [defense ministers] vow to enhance military ties," May 17, 2012. http://eng.mod.gov.cn/DefenseNews/2012-05/17/content_4368311.htm; Xinhua, "China, Latvia pledge to boost military

ties,” May 16, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-05/16/content_4367605.htm; China Military online, “Chinese and French captains of naval escort warships meet for exchanges,” May 16, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-05/16/content_4368134.htm; Xinhua, “Chinese DM [defense minister] met Latvian president over ties,” May 15, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-05/15/content_4367259.htm; Zhang Xiaoqi, “Chang Wanquan meets with Belarusian guests,” *PLA Daily*, April 26, 2012. http://eng.mod.gov.cn/DefenseNews/2012-04/26/content_4362189.htm; Xinhua, “PLA delegation visits Hungary and Finland,” April 26, 2012. http://eng.mod.gov.cn/DefenseNews/2012-04/26/content_4362187.htm; Xinhua, “Senior military official meets with German defence secretary,” April 17, 2012. http://eng.mod.gov.cn/DefenseNews/2012-04/17/content_4359135.htm; Xinhua, “China, Lithuania pledge to strengthen military ties,” March 29, 2012. http://eng.mod.gov.cn/DefenseNews/2012-03/29/content_4354743.htm; Xinhua, “Chinese Defense Minister meets with Swedish Commander of the Armed Forces,” March 24, 2012. http://eng.mod.gov.cn/DefenseNews/2012-03/24/content_4353745.htm; Xinhua, “China enhancing military cooperation with Canada, France,” March 6, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-03/06/content_4350157.htm; *PLA Daily*, “Ma Xiaotian meets with German guests,” February 27, 2012. http://eng.mod.gov.cn/DefenseNews/2012-02/27/content_4348726.htm; Zhang Xiaoqi, “Chang Wanquan meets with Italian guests,” *PLA Daily*, February 23, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-02/23/content_4347782.htm; Xinhua, “Chinese and Ukrainian armies to boost cooperation,” February 16, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-02/16/content_4345651.htm; China Military online, “NATO military delegation visits Chinese barracks,” February 16, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-02/16/content_4345932.htm; and *PLA Daily*, “Wu Shengli meets with Ukraine navy commander,” February 15, 2012. http://eng.mod.gov.cn/MilitaryExchanges/2012-02/15/content_4345534.htm.

100. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: May 2012), pp. 35–36. http://www.defense.gov/pubs/pdfs/2012_CMPR_Final.pdf.

101. Information Office of the State Council, “Appendix I: Major International Exchanges of the Chinese Military (2009–2010),” *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/02/content_4415546.htm; Information Office of the State Council, “Appendix III: Joint Exercises and Training with Foreign Armed Forces (2009–2010),” *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.china mil.com.cn/special-reports/2011-04/06/content_4416714.htm.

102. Information Office of the State Council, “Appendix I: Major International Exchanges of the Chinese Military (2009–2010),” *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/02/content_4415546.htm; Information Office of the State Council, “Appendix II: Participation in Strategic Consultations and Dialogues (2009–2010),” *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/06/content_4416682.htm.

103. Information Office of the State Council, “Appendix III: Joint Exercises and Training with Foreign Armed Forces (2009–2010),” *China's National Defense White Paper 2010* (Beijing, China: March 2011). http://eng.chinamil.com.cn/special-reports/2011-04/06/content_4416714.htm; Chris Zambelis, “Sino-Turkish Strategic Partnership: Implications of Anatolian Eagle 2010,” *China Brief* 11:1 (Washington, DC: The Jamestown Foundation, January 14, 2011). [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=37369](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=37369).

104. Chris Zambelis, “Sino-Turkish Strategic Partnership: Implications of Anatolian Eagle 2010,” *China Brief* 11:1 (Washington, DC: The Jamestown Foundation, January 14, 2011). [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=37369](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=37369).

105. Bill Gertz, “Inside the Ring—Turkish-Chinese war games,” *Washington Times*, October 6, 2010. <http://www.washingtontimes.com/news/2010/oct/6/inside-the-ring-488593726/print/>.

106. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Christina Lin, April 19, 2012.

107. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Christina Lin, April 19, 2012; U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012.

108. Assen Agov, *The Rise of China and Possible Implications for NATO* (Brussels, Belgium: NATO Parliamentary Assembly Political Committee, 2011), p. 9. http://www.tbmm.gov.tr/ul_kom/natopa/docs/raporlar_2011/183.pdf.

109. Richard Weitz, "China and NATO: Destined to Diverge and Cooperate" (Hong Kong, China: *China-US Focus*, June 28, 2012). <http://chinausfocus.com/slider/china-and-nato-destined-to-diverge-and-cooperate/>.

110. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of Øystein Tunsjø, April 19, 2012; Volker Rühle and Ulrich Weisser, "A New Role for a New Century: Can NATO Yet Be Saved?" *European Leadership Network*, May 3, 2012. <http://www.europeanleadershipnetwork.org/a-new-role-for-a-new-century-can-nato-yet-be-saved-374.html>; and Barry Pavel and Jeff Lightfoot, "The Transatlantic Bargain after Gates" (Chicago Council on Global Affairs conference on *Smart Defense and the Future of NATO: Can the Alliance Meet the Challenges of the Twenty-First Century?*, Chicago, IL, March 28–30, 2012), pp. 2–3. http://www.thechicagocouncil.org/userfiles/file/NATO/Pavel_&_Lightfoot_Transatlantic_Bargain.pdf.

111. FY2000 National Defense Authorization Act (P.L. 106–65), section 1201 (a). 106th Cong., 1st sess., October 5, 1999. <http://www.gpo.gov/fdsys/pkg/PLAW-106publ65/pdf/PLAW-106publ65.pdf>.

112. Andrew Small, "China's Afghan Moment," *Foreign Policy*, October 3, 2012. http://www.foreignpolicy.com/articles/2012/10/03/chinas_afghan_moment.

113. Rob Taylor, "Top China official visits Afghanistan, signs security deal," Reuters, September 23, 2012. <http://in.reuters.com/article/2012/09/23/afghanistan-china-idINDEE88M03620120923>; BBC, "China and Afghanistan sign economic and security deals," September 23, 2012. <http://www.bbc.co.uk/news/world-asia-china-19693005>.

114. Zhang Haizhou, "SCO can play 'bigger role' in Afghanistan," *China Daily*, December 6, 2011. http://www.chinadaily.com.cn/cndy/2011-12/06/content_14217254.htm.

115. Associated Press, "Central Asian bloc gives Afghans observer status," June 6, 2012. <http://www.google.com/hostednews/ap/article/ALeqM5io4YmYPnO9GbwZLNGP6MKSlpMw?docId=2278f6fd48034d07811f9819b27190fb>.

116. Xinhua, "SCO accepts Afghanistan as observer, Turkey dialogue partner," June 7, 2012. http://news.xinhuanet.com/english/china/2012-06/07/c_131637206.htm.

117. Stockholm International Peace Research Institute, "Council of Ministers Declaration on China" (Madrid, Spain: March 26–27, 1989). http://www.sipri.org/databases/embargoes/eu_arms_embargoes/china/declaration.

118. BBC, "China premier Wen Jiabao urges end to EU arms embargo," September 20, 2012. <http://www.bbc.co.uk/news/world-asia-19657940>.

119. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

120. Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database" (Stockholm, Sweden). <http://www.sipri.org/databases/armstransfers/>.

121. Wang Peiran, "A Tough Sell: Overcoming the EU Arms Embargo," *China Security* 6:2 (2010): 52–55. http://www.chinasecurity.us/images/stories/WangPeiran_EU_Arms_Embargo_2.pdf.

122. May-Britt Stumbaum, *The European Union and China: Decision-Making in EU Foreign and Security Policy towards the People's Republic of China* (Baden-Baden, Germany: Nomos, 2009), pp. 170–173; Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database" (Stockholm, Sweden). <http://www.sipri.org/databases/armstransfers/>.

123. May-Britt Stumbaum, *The European Union and China: Decision-Making in EU Foreign and Security Policy towards the People's Republic of China* (Baden-Baden, Germany: Nomos, 2009), pp. 170–173.

124. May-Britt Stumbaum, *The European Union and China: Decision-Making in EU Foreign and Security Policy towards the People's Republic of China* (Baden-Baden, Germany: Nomos, 2009), pp. 170–173.

125. Wang Peiran, "A Tough Sell: Overcoming the EU Arms Embargo," *China Security* 6:2 (2010): 52–55. http://www.chinasecurity.us/images/stories/WangPeiran_EU_Arms_Embargo_2.pdf; U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

126. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

127. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

128. May-Britt Stumbaum, *The European Union and China: Decision-Making in EU Foreign and Security Policy towards the People's Republic of China* (Baden-Baden, Germany: Nomos, 2009), pp. 177–179.

129. Kristin Archick et al., “European Union’s Arms Embargo on China: Implications and Options for U.S. Policy” (Washington, DC: Congressional Research Service, April 15, 2005), p. 3. <http://fpc.state.gov/documents/organization/45458.pdf>.

130. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

131. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

132. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Gudrun Wacker, April 19, 2012.

133. May-Britt Stumbaum, *Risky Business? The EU, China and dual-use technology* (Paris, France: European Union Institute for Security Studies, 2009), p. 11. <http://www.iss.europa.eu/uploads/media/op80.pdf>.

134. May-Britt Stumbaum, *Risky Business? The EU, China and dual-use technology* (Paris, France: European Union Institute for Security Studies, 2009), p. 5. <http://www.iss.europa.eu/uploads/media/op80.pdf>; May-Britt Stumbaum, *Toward a Transatlantic Approach to Technology Transfers in China* (Washington, DC: The German Marshall Fund of the United States, 2010). http://www.gmfus.org/wp-content/blogs.dir/1/files_mf/galleries/ct_publication_attachments/Stumbaum_Jul10_final.pdf.

135. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, testimony of May-Britt Stumbaum, April 19, 2012.

136. May-Britt Stumbaum, *Risky Business? The EU, China and dual-use technology* (Paris, France: European Union Institute for Security Studies, 2009), p. 13. <http://www.iss.europa.eu/uploads/media/op80.pdf>.

137. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

138. Mathieu Duchâtel and Alexandre Sheldon Duplaix, *The European Union and the Modernization of the People's Liberation Army Navy* (Hong Kong, China: *China Perspectives*, 2011), p. 37.

139. U.S. Department of State, “The International Traffic in Arms Regulations (ITAR)” (Washington, DC: Directorate of Defense Trade Controls). http://www.pmd.dtc.state.gov/regulations_laws/itar.html.

140. May-Britt Stumbaum, *The Security and Technology Relationship between Europe and China* (La Jolla, CA: June 24, 2010).

141. May-Britt Stumbaum, *Risky Business? The EU, China and dual-use technology* (Paris, France: European Union Institute for Security Studies, 2009), pp. 21–26. <http://www.iss.europa.eu/uploads/media/op80.pdf>; U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

142. Christopher Griffin and Joseph E. Lin, “China’s Space Ambitions,” *Armed Forces Journal* (2008). <http://www.aei.org/article/foreign-and-defense-policy/regional/asia/chinas-space-ambitions/>.

143. Council of the European Union, *Joint Press Communiqué, 15th EU-China Summit: Towards a stronger EU-China Comprehensive Strategic Partnership* (Brussels, Belgium: September 20, 2012), p. 3. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/132507.pdf.

144. Associated Press, “European astronauts learning Chinese to prepare for possible joint mission by end of decade,” September 11, 2012. http://www.washingtonpost.com/business/european-astronauts-learning-chinese-to-prepare-for-possible-joint-missions-by-end-of-decade/2012/09/11/70c0b6d8-fc4b-11e1-98c6-ec0a0a93f8eb_story.html.

145. European Chamber of Commerce in China, “Assistant to Global Navigation Satellite System Project” (Beijing, China). <http://www.euccc.com.cn/en/job-vacancies/419>.

146. Volker Rühle and Ulrich Weisser, “A New Role for a New Century: Can NATO Yet Be Saved?” *European Leadership Network*, May 3, 2012. http://www.europeanleadershipnetwork.org/a-new-role-for-a-new-century-can-nato-yet-be-saved_

374.html; Barry Pavel and Jeff Lightfoot, "The Transatlantic Bargain after Gates" (Chicago Council on Global Affairs conference on *Smart Defense and the Future of NATO: Can the Alliance Meet the Challenges of the Twenty-First Century?*, Chicago, IL, March 28–30, 2012), pp. 2–3. [http://www.thechicagocouncil.org/userfiles/file/NATO/Pavel & Lightfoot Transatlantic Bargain.pdf](http://www.thechicagocouncil.org/userfiles/file/NATO/Pavel%20&%20Lightfoot%20Transatlantic%20Bargain.pdf).

147. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of Øystein Tunsjø, April 19, 2012; U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

148. U.S.-China Economic and Security Review Commission, *Hearing on the China-Europe Relationship and Transatlantic Implications*, written testimony of May-Britt Stumbaum, April 19, 2012.

149. Mathieu Duchâtel and Alexandre Sheldon Duplaix, *The European Union and the Modernization of the People's Liberation Army Navy* (Hong Kong, China: *China Perspectives*, 2011), p. 32.

150. Jianjun Tu, *Industrial Organization of the Chinese Coal Industry* (Stanford, CA: Stanford University Program on Energy and Sustainable Development, July 2011), p. 1. http://carnegieendowment.org/files/China_Coal_Value_Chain_Kevin_Tu2.pdf.

151. Deborah Seligsohn, *Experts Weigh in on the Future of Coal Use in China* (Washington, DC: World Resources Institute ChinaFAQs, October 6, 2010). <http://www.chinafaqs.org/blog-posts/experts-weigh-future-coal-use-china>; Bloomberg, "China to Restrict Coal Demand, Output to 3.9 Billion Tons," March 22, 2012. <http://www.businessweek.com/news/2012-03-22/china-to-restrict-coal-demand-output-to-3-dot-9-billion-tons>.

152. Information Office of the State Council of the People's Republic of China, *China's Energy Policy 2012* (Beijing, China: October 2012). http://www.china-daily.com.ch/china/2012-10/24/content_15843745.htm.

153. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

154. Linda Jakobson et al., *China's Energy and Security Relations with Russia: Hopes, Frustrations, and Uncertainties* (Stockholm, Sweden: Stockholm International Peace Research Institute, October 2011), p. 34. http://books.sipri.org/product/info?c_product_id=431#.

155. International Energy Agency, *2012 Oil and Gas Security Emergency Response of the IEA [International Energy Agency] Countries: People's Republic of China* (Paris, France: International Energy Agency, 2012), p. 3. http://www.iea.org/publications/freepublications/publication/China_2012.pdf.

156. Pratih Narayanan, "China Gains as \$17.5 Billion Subsidy Curbs ONGC [Oil and Natural Gas Corporation] Buyouts," Bloomberg, August 16, 2012. <http://www.bloomberg.com/news/2012-08-15/china-gains-as-17-5-billion-subsidy-curbs-ongc-buyouts.html>.

157. Chen Shaofeng, "Has China's Foreign Energy Quest Enhanced its Energy Security?" *China Quarterly* 207 (September 2011): 606.

158. Julie Jiang and Jonathan Sinton, *Overseas Investments by Chinese National Oil Companies: Assessing the drivers and impacts* (Paris, France: International Energy Agency, February 2011), pp. 17–24. http://www.iea.org/papers/2011/overseas_china.pdf.

159. Erica Downs, *Inside China, Inc.: China Development Bank's Cross-Border Energy Deals* (Washington, DC: The Brookings Institution, March 2011), pp. 65–66. http://www.brookings.edu/~media/research/files/papers/2011/3/21%20china%20energy%20downs/0321_china_energy_downs.pdf.

160. Erica Downs and Michal Meidan, "Business and Politics in China: The Oil Executive Reshuffle of 2011," *China Security* 19:3. <http://www.chinasecurity.us/images/stories/DownsMeidanCS19.pdf>; U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

161. Philip Andrews-Speed, "Do Overseas Investments by National Oil Companies Enhance Security at Home? A View from Asia," in Philip Andrews-Speed et al., *Oil and Gas for Asia: Geopolitical Implications of Asia's Rising Demand* (Seattle, WA: National Bureau of Asian Research, September 2012), p. 36.

162. Philip Andrews-Speed, "Do Overseas Investments by National Oil Companies Enhance Security at Home? A View from Asia," in Philip Andrews-Speed et al., *Oil and Gas for Asia: Geopolitical Implications of Asia's Rising Demand* (Seattle, WA: National Bureau of Asian Research, September 2012), p. 36.

163. Ryan Clarke, *Chinese Energy Security: The Myth of the PLAN's* [People's Liberation Army Navy's] *Frontline Status* (Carlisle, PA: U.S. Army War College, August 2010), pp. 2–3.

164. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

165. International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 28. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>; Javier Blas, "Libya highlights China's lack of strategic reserves," *Financial Times*, February 28, 2011. <http://www.ft.com/intl/cms/s/0/74e962d6-4316-11e0-ae2-00144feabdc0.html#axzz25WEwUKRE>.

166. U.S. Energy Information Administration, *Country Analysis Briefs: China* (Washington, DC: Department of Energy, September 2012). <http://www.eia.gov/countries/cab.cfm?fips=CH>.

167. Zhang Jian, *China's Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 15. http://www.brookings.edu/-/media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.

168. William Komiss and LaVar Huntzinger, *The Economic Implications of Disruptions to Maritime Oil Chokepoints* (Alexandria, VA: CNA, March 2011), p. 7. <http://www.cna.org/sites/default/files/research/The%20Economic%20Implications%20of%20Disruptions%20to%20Maritime%20Oil%20Chokepoints%20D0024669%20A1.pdf>.

169. William Komiss and LaVar Huntzinger, *The Economic Implications of Disruptions to Maritime Oil Chokepoints* (Alexandria, VA: CNA, March 2011), pp. 7, 11, 38–39. <http://www.cna.org/sites/default/files/research/The%20Economic%20Implications%20of%20Disruptions%20to%20Maritime%20Oil%20Chokepoints%20D0024669%20A1.pdf>.

170. William Komiss and LaVar Huntzinger, *The Economic Implications of Disruptions to Maritime Oil Chokepoints* (Alexandria, VA: CNA, March 2011), p. 7. <http://www.cna.org/sites/default/files/research/The%20Economic%20Implications%20of%20Disruptions%20to%20Maritime%20Oil%20Chokepoints%20D0024669%20A1.pdf>.

171. Ryan Clarke, *Chinese Energy Security: The Myth of the PLAN's* [People's Liberation Army Navy's] *Frontline Status* (Carlisle, PA: U.S. Army War College, August 2010), p. 23.

172. William Komiss and LaVar Huntzinger, *The Economic Implications of Disruptions to Maritime Oil Chokepoints* (Alexandria, VA: CNA, March 2011), p. 12. <http://www.cna.org/sites/default/files/research/The%20Economic%20Implications%20of%20Disruptions%20to%20Maritime%20Oil%20Chokepoints%20D0024669%20A1.pdf>.

173. U.S.-China Economic and Security Review Commission, *Hearing on China's Energy Consumption and Opportunities for U.S.-China Cooperation to Address the Effects of China's Energy Use*, written testimony of James Holmes, June 14, 2007; U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

174. GlobalSecurity.org, "Indian Navy." <http://www.globalsecurity.org/military/world/india/navy-intro.htm>; David Axe, "Allies Offer US Strong Advantages, And Some Risk, In China Rivalry," *AOL Defense*, September 11, 2012. http://defense.aol.com/2012/09/11/allies-offer-us-strong-advantages-and-some-risk-in-china-rivalry/a_dgi; and Vinay Kumar, "Naval Air Station opened in Campbell Bay," *Hindu* (India), July 31, 2012. <http://www.thehindu.com/news/national/article3707955.ece>.

175. Chen Shaofeng, "Has China's Foreign Energy Quest Enhanced its Energy Security?" *China Quarterly* 207 (September 2011): 610.

176. Andrew S. Erickson and Gabriel B. Collins, "Pipelines versus Sea Lanes: Challenges and Opportunities for Securing Sea Lanes," in Carrie Liu Currier and Manochehr Dorraj, eds., *China's Energy Relations with the Developing World* (London, UK: The Continuum International Publishing Group, 2011), pp. 177–178.

177. Andrew S. Erickson and Gabriel B. Collins, "Pipelines versus Sea Lanes: Challenges and Opportunities for Securing Sea Lanes," in Carrie Liu Currier and Manochehr Dorraj, eds., *China's Energy Relations with the Developing World* (London, UK: The Continuum International Publishing Group, 2011), pp. 177–178; Pratish Narayanan, "China Gains as \$17.5 Billion Subsidy Curbs ONGC [Oil and Natural Gas Corporation] Buyouts," *Bloomberg*, August 16, 2012. <http://www.bloomberg.com/news/2012-08-15/china-gains-as-17-5-billion-subsidy-curbs-ongc-buyouts.html>.

178. Wayne Ma and Rakesh Sharma, "China and India Stock Up on Oil," *Wall Street Journal*, December 21, 2011. <http://online.wsj.com/article/SB10001424052970203686204577112252937374184.html>; *China Daily* online, "Tianjin Oil Storage

Facility in Train,” March 5, 2011. OSC ID: CPP20110305968124. <http://www.open-source.gov>.

179. Carolyn Cui, “China Seen Bolstering Oil Reserves,” *Wall Street Journal*, April 11, 2012. <http://online.wsj.com/article/SB10001424052702304587704577335722040019632.html>; Mandip Singh, *China’s Strategic Petroleum Reserves: A Reality Check* (New Delhi, India: Institute for Defence Studies and Analysis, May 21, 2012). http://www.idsa.in/system/files/IB_China’sStrategicPetroleumReserves_MandipSingh_210512.pdf.

180. Carolyn Cui, “China Seen Bolstering Oil Reserves,” *Wall Street Journal*, April 11, 2012. <http://online.wsj.com/article/SB10001424052702304587704577335722040019632.html>.

181. Carolyn Cui, “China Seen Bolstering Oil Reserves,” *Wall Street Journal*, April 11, 2012. <http://online.wsj.com/article/SB10001424052702304587704577335722040019632.html>.

182. Wayne Ma and Rakesh Sharma, “China and India Stock Up on Oil,” *Wall Street Journal*, December 21, 2011. <http://online.wsj.com/article/SB10001424052970203686204577112252937374184.html>; *China Daily* online, “Oil Reserve Project Picks up Speed,” January 26, 2011. OSC ID: CPP20110126968074. <http://www.open-source.gov>.

183. U.S. Energy Information Administration, *Country Analysis Brief: China* (Washington, DC: Department of Energy, September 2012). <http://www.eia.gov/countries/cab.cfm?fips=CH>.

184. Zhang Jian, *China’s Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper; Brian Spegele, “As U.S. Leaves, Oil-Hungry China Stuck in Middle East,” *Wall Street Journal China Real Time Report*, June 27, 2012. <http://blogs.wsj.com/chinarealtime/2012/06/27/as-u-s-leaves-oil-hungry-china-stuck-in-middle-east/>.

185. Erica Downs, “China-Gulf Energy Relations,” in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 63. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.

186. Erica Downs, “China-Gulf Energy Relations,” in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), pp. 63–65. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf; Damien Ma, “Dependence on Middle Eastern Oil: Now It’s China’s Problem, Too,” *Atlantic*, July 19, 2012. <http://www.theatlantic.com/international/archive/2012/07/dependence-on-middle-eastern-oil-now-its-chinas-problem-too/259947/>.

187. Erica Downs, “China-Gulf Energy Relations,” in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), pp. 62–63. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.

188. Erica Downs, “China-Gulf Energy Relations,” in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), pp. 62–63. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.

189. Zhang Jian, *China’s Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 15. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.

190. David D. Kirkpatrick, “Chinese Visit to Saudi Arabia Touches on Oil and Politics,” *New York Times*, January 15, 2012. http://www.nytimes.com/2012/01/16/world/middleeast/chinas-uen-jiabao-mixes-oil-and-politics-in-saudi-visit.html?_r=0; Saudi Aramco.com, “Yanbu Aramco Sinopec Refining Company.” <http://www.saudiaramco.com/en/home/our-operations/projects/yasref.html#our-operations%257C%252Fen%252Fhome%252Ffour-operations%252Fprojects%252Fyasref.baseajax.html>.

191. Florence Tan, “Update 4—China Buys Russia, Vietnam oil as Iran supply cut,” Reuters, January 3, 2012. <http://www.reuters.com/article/2012/01/03/russia-crude-china-idUSL3E8C31W120120103>; Erica Downs, “China-Gulf Energy Relations,” in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 68. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.

192. Bloomberg, "China's Iran Crude Imports Drop 45% in February," March 21, 2012. <http://www.bloomberg.com/news/2012-03-21/china-s-iran-crude-imports-drop-45-in-february.html>.

193. Osamu Tsukimori and Chen Aizhu, "Asian Oil Buyers Help Iran Stave Off the Worst, For Now," Reuters, August 10, 2012. <http://uk.reuters.com/article/2012/08/13/uk-iran-asia-oil-idUKBRE87C04A20120813>.

194. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012; U.S.-China Economic and Security Review Commission, *Hearing on The China-Europe Relationship and Transatlantic Implications*, written testimony of Michal Meidan, April 19, 2012; and U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 254–257.

195. Erica Downs, "China, Iran and the Nexen Deal," *Policy Options* (October 2012): 26–27. <http://www.irpp.org/po/archive/oct12/downs.pdf>.

196. Erica Downs, "China-Gulf Energy Relations," in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 69. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.

197. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 252–260.

198. U.S. Department of State, "Three Companies Sanctioned Under the Amended Iran Sanctions Act" (Washington, DC: January 12, 2012). <http://www.state.gov/e/eb/rls/ifs/2012/180645.htm>.

199. Andrew Quinn, "U.S. slaps sanctions on China state energy trader over Iran," Reuters, January 12, 2012. <http://www.reuters.com/article/2012/01/12/us-iran-usa-sanctions-idUSTRE80B1DW20120112>.

200. Zhuhai Zhenrong Company, "Group Overview" (Beijing, China). <http://www.zhrgs.com.cn/index.php?id=105>.

201. U.S. Department of the Treasury, "Treasury Sanctions Kunlun Bank in China and Elaf Bank in Iraq for Business with Designated Iranian Banks" (Washington, DC: July 31, 2012). <http://www.treasury.gov/press-center/press-releases/Pages/tg1661.aspx>.

202. Platts, "China opposes Iran-based U.S. sanctions on CNPC's [China National Petroleum Company's] Bank of Kunlun," August 1, 2012. <http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Oil/8583144>.

203. Andrew Quinn, "U.S. slaps sanctions on China state energy trader over Iran," Reuters, January 12, 2012. <http://www.reuters.com/article/2012/01/12/us-iran-usa-sanctions-idUSTRE80B1DW20120112>; Wayne Ma, "China Scolds U.S. Over Iran-Related Bank Sanctions," *Wall Street Journal*, August 1, 2012. <http://online.wsj.com/article/SB10000872396390444320704577562330527832056.html>.

204. Platts, "China opposes Iran-based U.S. sanctions on CNPC's [China National Petroleum Company's] Bank of Kunlun," August 1, 2012. <http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Oil/8583144>; BBC, "China angry at US sanctions on oil firm Zhuhai Zhenrong," January 15, 2012. <http://www.bbc.co.uk/news/world-asia-china-16565563>.

205. Erica Downs, "China's Oil Cutbacks May Be Only Temporary" (Washington, DC: U.S. Institute of Peace, *The Iran Primer*, July 2, 2012). <http://www.brookings.edu/research/opinions/2012/07/02-iran-oil-downs>; Manash Goswami, "Saudi Arabia, Venezuela Gain from Iran's Shrinking Oil Sales to Asia," Reuters, July 31, 2012. <http://www.lignet.com/Wire/REFILE-Saudi,-Venezuela-gain-from-Iran-s-Shrinking>.

206. Brian Spegele and Wayne Ma, "U.S., China Find Path on Iran," *Wall Street Journal*, June 29, 2012. <http://online.wsj.com/article/SB10001424052702303649504577496140484643540.html>.

207. Bloomberg, "China's Iran Crude Imports Drop 45% in February," March 21, 2012. <http://www.bloomberg.com/news/2012-03-21/china-s-iran-crude-imports-drop-45-in-february.html>.

208. Keith Johnson, "U.S. Clears China from Iran Oil Sanctions," *New York Times*, June 28, 2012. <http://online.wsj.com/article/SB10001424052702303561504577494892256215500.html>.

209. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), pp. 253–254.

210. Brian Spegele and Wayne Ma, "U.S., China Find Path on Iran," *Wall Street Journal*, June 29, 2012. <http://online.wsj.com/article/SB10001424052702303649504577496140484643540.html>.
211. Judy Hua and Nidhi Verma, "Update 3—China, India slash oil imports from Iran in July," Reuters, August 21, 2012. <http://uk.reuters.com/article/2012/08/21/china-oil-iran-idUKL4E8JL2DI20120821>; Rhodium Group, "Iran Oil Desk" (New York, NY: October 16, 2012). <http://rhgroup.net/interactive/iran-oil-desk>.
212. Brian Spegele and Wayne Ma, "U.S., China Find Path on Iran," *Wall Street Journal*, June 29, 2012. <http://online.wsj.com/article/SB10001424052702303649504577496140484643540.html>.
213. Zhang Jian, *China's Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.
214. *Muscat Daily* (Oman), "Oman-China Bilateral Trade Surges Almost 50% in 2011," May 14, 2012. <http://www.muscatdaily.com/Archive/Business/Oman-China-bilateral-trade-surges-almost-50-in-2011>.
215. Erica Downs, "China-Gulf Energy Relations," in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 66. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.
216. Zhang Jian, *China's Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.
217. Erica Downs, "China-Gulf Energy Relations," in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 66. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.
218. Ian Taylor, "China's oil diplomacy in Africa," *International Affairs* 82:5 (2006): 944. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2006/inta_579.pdf.
219. U.S. Energy Information Administration, *Country Analysis Brief: China* (Washington, DC: Department of Energy, September 2012). <http://www.eia.gov/countries/cab.cfm?fips=CH>.
220. Baiinfo.com, *Baichuan Information* [import and export data for January 2012 through July 2012] (Beijing, China). <http://baiinfo.com/Orders/NewsList/5827?pageid=1>.
221. Jean-Francois Seznec, "China and the Gulf in 2010: A Political Economic Survey," in Bryce Wakefield and Susan L. Levenstein, eds., *China and the Persian Gulf: Implications for the United States* (Washington, DC: Woodrow Wilson International Center for Scholars, 2011), p. 49. http://www.wilsoncenter.org/sites/default/files/ASIA%20Program_China%20and%20the%20PG.pdf.
222. Ian Taylor, "China's oil diplomacy in Africa," *International Affairs* 82:5 (2006): 947. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2006/inta_579.pdf.
223. U.S.-China Economic and Security Review Commission, *The 88 Queensway Group: A Case Study in Chinese Investors' Operations in Angola and Beyond* (Washington, DC: July 2009). http://www.uscc.gov/The_88_Queensway_Group.pdf; *Economist*, "China International Fund: The Queensway syndicate and the Africa trade," August 13, 2011. <http://www.economist.com/node/21525847>; and Patrick Martin-Menard et al., "African Safari: CIF's [China International Fund's] Grab for Oil and Minerals," *Caixin* (Beijing) online, October 17, 2011. <http://english.caixin.com/2011-10-17/100314766.html>.
224. Human Rights Watch, *You'll be Fired if You Refuse: Labor Abuses in Zambia's Chinese State-owned Run Copper Mines* (New York, NY: Human Rights Watch, November 2011), p. 1. <http://www.hrw.org/sites/default/files/reports/zambia1111ForWebUpload.pdf>.
225. David Blair, "Zambian miners crush a Chinese manager to death. Remember that when Beijing boasts about its 'win-win' African partnerships," *Telegraph* (United Kingdom), August 6, 2012. <http://blogs.telegraph.co.uk/news/davidblair/100175001/zambian-miners-crush-a-chinese-manager-to-death-remember-that-when-beijing-boasts-about-its-win-win-african-partnerships/>.
226. Li Lianxing, Zhao Shengang, "Ghana detains 100 Chinese for 'illegal' mining," *China Daily* (Beijing), October 10, 2012. http://www.chinadaily.com.cn/cndy/2012-10/15/content_15816410.htm.

227. Ian Taylor, "China's oil diplomacy in Africa," *International Affairs* 82:5 (2006): 950. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2006/inta_579.pdf.
228. Ian Taylor, "China's oil diplomacy in Africa," *International Affairs* 82:5 (2006): 949. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2006/inta_579.pdf.
229. U.S. Energy Information Administration, *Country Analysis Brief: Sudan and South Sudan* (U.S. Department of Energy, March 2012). <http://www.eia.gov/countries/cab.cfm?fips=SU/>.
230. International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 26. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>.
231. Colum Lynch, "China Brokers Tentative Oil Agreement Between the Sudans," *Foreign Policy*, August 14, 2012. http://turtlebay.foreignpolicy.com/posts/2012/08/14/china_brokers_tentative_oil_agreement_between_the_sudans; International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 26. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>.
232. Steven C. Kuo, "Not Looking to Lead: Beijing's View of the Crisis Between the Two Sudans," in *Saferworld Briefing: China and South Sudan* (London, UK: Saferworld, August 2012), p. 3. <http://www.saferworld.org.uk/downloads/pubdocs/China-South%20Sudan%20briefing%20English.pdf>.
233. Colum Lynch, "China Brokers Tentative Oil Agreement Between the Sudans," *Foreign Policy*, August 14, 2012. http://turtlebay.foreignpolicy.com/posts/2012/08/14/china_brokers_tentative_oil_agreement_between_the_sudans.
234. International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 28. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>.
235. International Crisis Group, *Africa Report No. 186: China's New Courtship in South Sudan* (Juba, South Sudan; Beijing, China; Nairobi, Kenya; Brussels, Belgium: April 2012), p. 28. <http://www.crisisgroup.org/-/media/Files/africa/horn-of-africa/sudan/186-chinas-new-courtship-in-south-sudan>.
236. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 21–23. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.
237. Erica Downs, "Sino-Russian Energy Relations: An Uncertain Courtship," in James Bellacqua, ed., *The Future of China-Russia Relations* (Lexington, KY: The University Press of Kentucky, 2010), p. 143.
238. Kevin Jianjun Tu and Sabine Johnson-Reiser, *Understanding China's Rising Coal Imports* (Washington, DC: Carnegie Endowment for International Peace, February 2012), p. 4. http://www.carnegieendowment.org/files/china_coal.pdf.
239. Li Xiaokun and Ma Liyao, "Energy links with Russia strengthened," *China Daily* (Beijing), October 12, 2011. http://www.chinadaily.com.cn/cndy/2011-10/12/content_13873677.htm.
240. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 40–41. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.
241. Vladimir Socor, "Kazakhstan Expands Gas Transit Pipeline Capacities and Own Exports to China" (Washington, DC: The Jamestown Foundation, August 10, 2012). [http://www.jamestown.org/single!no_cache=1&tx_ttnews\[tt_news\]=39758](http://www.jamestown.org/single!no_cache=1&tx_ttnews[tt_news]=39758).
242. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 41–42. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.
243. Zhou Yan and Wang Qian, "Turkmenistan to expand natural gas supply to China," *China Daily* (Beijing), November 25, 2011. http://www.china.org.cn/business/2011-11/25/content_24002229.htm.
244. Graham Bowley, "Lucrative Afghan Oil Deal was Awarded Properly, Karzai Says," *New York Times*, June 24, 2012. <http://www.nytimes.com/2012/06/25/world/asia/lucrative-afghan-oil-deal-was-awarded-fairly-karzai-says.html>; Slobodan Lekic, "Afghanistan, China sign first oil contract," Associated Press, December 28, 2011. <http://www.usatoday.com/money/industries/energy/story/2011-12-28/china-afghanistan-oil-contract/52251500/1>.

245. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 39–45. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

246. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), pp. 14–15. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

247. Linda Jakobson et al., *China's Energy and Security Relations with Russia: Hopes, Frustrations, and Uncertainties* (Stockholm, Sweden: Stockholm International Peace Research Institute, October 2011), pp. 26–27. http://books.sipri.org/product/info?c_product_id=431#.

248. Michael Lelyveld, “China-Russia Gas Plan Lags,” *Radio Free Asia*, June 11, 2012. http://www.rfa.org/english/energy_watch/gas-06112012115307.html.

249. Linda Jakobson et al., *China's Energy and Security Relations with Russia: Hopes, Frustrations, and Uncertainties* (Stockholm, Sweden: Stockholm International Peace Research Institute, October 2011), p. 33. http://books.sipri.org/product/info?c_product_id=431#; Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), p. 15. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

250. Alexandros Petersen and Katinka Barysch, *Russia, China and the Geopolitics of Energy in Central Asia* (London, UK: Centre for European Reform, November 2011), p. 4. http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/rp_010-4118.pdf.

251. Aegis Advisory, “Strategic risk alert: Mongolia’s resource nationalism” (London, UK: July 16, 2012). <http://strategicriskindex.com/pdf/Mongolia%27s%20resource%20nationalism%2016%20Jul%202012.pdf>.

252. Aegis Advisory, “Strategic risk alert: Mongolia’s resource nationalism” (London, UK: July 16, 2012). <http://strategicriskindex.com/pdf/Mongolia%27s%20resource%20nationalism%2016%20Jul%202012.pdf>; Ashley Lee, “Open Access—Mongolia’s new foreign investment law explained,” *International Financial Law Review*, May 15, 2012. <http://www.iflr.com/Article/3028715/OPEN-ACCESS-Mongolias-new-foreign-investment-law-explained.html>; Charlie Zhu, “Mongolia-Focused Miner Expects China’s Chalco to Drop Takeover Bid,” *Reuters*, August 14, 2012. <http://in.reuters.com/article/2012/08/14/us-southgobi-chalco-idINBRE87D04920120814>; and Alex MacDonald, “Mongolia Willing To Rethink New Foreign Investment Law—Report,” *Dow Jones Newswires*, May 30, 2012. <http://www.4-traders.com/SOUTHGOBI-RESOURCES-6170926/news/Mongolia-Willing-To-Rethink-New-Foreign-Investment-Law-Report-14348666/>.

253. Michelle Yun and Fion Li, “Chalco ends bid to buy stake in Winsway for \$308 million,” *Bloomberg*, September 28, 2012. <http://www.businessweek.com/news/2012-09-28/chalco-ends-bid-to-buy-stake-in-winsway-for-308-million>.

254. Ryan Dezember and James T. Areddy, “China Foothold in U.S. Energy,” *Wall Street Journal*, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>.

255. Collin McClelland and Bradley Olson, “Sinopec Buys Canada’s Daylight for \$2.1 Billion To Gain Shale-Gas Assets,” *Bloomberg*, October 10, 2011. <http://www.bloomberg.com/news/2011-10-09/sinopec-agrees-to-buy-daylight-energy-for-2-1-billion-to-meet-fuel-demand.html>; Ryan Dezember and James T. Areddy, “China Foothold in U.S. Energy,” *Wall Street Journal*, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>.

256. Ryan Dezember and James T. Areddy, “China Foothold in U.S. Energy,” *Wall Street Journal*, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>.

257. Ryan Dezember and James T. Areddy, “China Foothold in U.S. Energy,” *Wall Street Journal*, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>.

258. Joseph Steinberg, “Quite the Deal for Cnooc, Eh?” *Wall Street Journal Real Time Report*, July 25, 2012. <http://online.wsj.com/article/SB10000872396390443477104577548372683746682.html>; Derek Scissors and Dean Cheng, “China Buys Canadian Energy: Lessons for the U.S.” (Washington, DC: The Heritage Foundation, Issue Brief #3680, July 26, 2012). <http://www.heritage.org/research/reports/2012/07/china-buys-canadian-energy-lessons-for-the-us>.

259. Derek Scissors and Dean Cheng, “China Buys Canadian Energy: Lessons for the U.S.” (Washington, DC: The Heritage Foundation, Issue Brief #3680, July 26, 2012). <http://www.heritage.org/research/reports/2012/07/china-buys-canadian-energy-lessons-for-the-us>.

260. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Mikkal E. Herberg, January 26, 2012; Derek Scissors and Dean Cheng, "China Buys Canadian Energy: Lessons for the U.S." (Washington, DC: The Heritage Foundation, *Issue Brief #3680*, July 26, 2012. <http://www.heritage.org/research/reports/2012/07/china-buys-canadian-energy-lessons-for-the-us>).
261. Simon Hall, et al., "China Push in Canada is Biggest Foreign Buy," *Wall Street Journal*, July 24, 2012. <http://online.wsj.com/article/SB10000872396390443437504577544470741886332.html>; David Ljunggren et al., "Insight: China's CNOOC scoped Nexen, partnered, then pounced," Reuters, July 25, 2012. <http://www.reuters.com/article/2012/07/25/us-nexen-cnooc-idUSBRE86005J20120725>.
262. Xinhua, "CNOOC Withdraws Unocal Bid," August 3, 2005. <http://www.china.org.cn/english/2005/Aug/137165.htm>.
263. Ryan Dezember and James T. Areddy, "China Foothold in U.S. Energy," *Wall Street Journal*, March 6, 2012. <http://online.wsj.com/article/SB10001424052970204883304577223083067806776.html>.
264. Ryan Dezember, "China's Footprint in U.S. Oil: A State-by-State List," *Wall Street Journal*, March 6, 2012. <http://blogs.wsj.com/deals/2012/03/06/chinas-footprint-in-us-oil-a-state-by-state-list/>.
265. Nexen Inc., "Operations—Conventional Oil & Gas—Gulf of Mexico." <http://www.nexeninc.com/en/Operations/Conventional/GulfofMexico.aspx>.
266. Simon Hall, et al., "China Push in Canada is Biggest Foreign Buy," *Wall Street Journal*, July 24, 2012. <http://online.wsj.com/article/SB10000872396390443437504577544470741886332.html>.
267. Erica Downs, "China's Oil Investment is not a Threat," *Foreign Policy*, October 10, 2012. http://www.foreignpolicy.com/articles/2012/10/10/China_Nexen_CNOOC_CFIUS.
268. The White House, "Fact Sheet: U.S.-China Shale Gas Resource Initiative" (Washington, DC: Office of the Press Secretary, November 17, 2009). http://www.chinafaqs.org/files/chinainfo/US-China_Fact_Sheet_Shale_Gas.pdf.
269. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Sarah M. Forbes, January 26, 2012.
270. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Sarah M. Forbes, January 26, 2012.
271. Guo Aibing, "Chevron Starts China Shale Gas Exploration, Builds Sichuan Plant," Bloomberg, February 23, 2012. <http://www.bloomberg.com/news/2012-02-24/chevron-starts-china-shale-gas-exploration-builds-sichuan-plant.html>; Chevron.com, "Where We Operate." <http://www.chevron.com/deliveringenergy/naturalgas/shalegas/whereweoperate/>.
272. Wayne Ma, "China Shale Gas is Lure for U.S. Firms," *Wall Street Journal Deal Journal*, July 16, 2012. <http://blogs.wsj.com/deals/2012/07/16/china-shale-gas-is-lure-for-u-s-firms/>.
273. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Sarah M. Forbes, January 26, 2012.
274. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 48.
275. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2011), p. 48; U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Sarah M. Forbes, January 26, 2012; and U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of Mikkal E. Herberg, January 26, 2012.
276. EarthRights, "The Burma-China Pipelines: Human Rights Violations, Applicable Law, and Revenue Secrecy" (Bangkok, Thailand: *EarthRights International Situation Briefer No. 1*, March 2011), pp. 2–3. <http://www.earthrights.org/sites/default/files/documents/the-burma-china-pipelines.pdf>.
277. EarthRights, "The Burma-China Pipelines: Human Rights Violations, Applicable Law, and Revenue Secrecy" (Bangkok, Thailand: *EarthRights International Situation Briefer No. 1*, March 2011), pp. 2–3. <http://www.earthrights.org/sites/default/files/documents/the-burma-china-pipelines.pdf>.
278. EarthRights, "The Burma-China Pipelines: Human Rights Violations, Applicable Law, and Revenue Secrecy" (Bangkok, Thailand: *EarthRights International*

Situation Briefer No. 1, March 2011), pp. 2–3. <http://www.earthrights.org/sites/default/files/documents/the-burma-china-pipelines.pdf>.

279. EarthRights, “The Burma-China Pipelines: Human Rights Violations, Applicable Law, and Revenue Secrecy” (Bangkok, Thailand: *EarthRights International Situation Briefer No. 1*, March 2011), pp. 2–3. <http://www.earthrights.org/sites/default/files/documents/the-burma-china-pipelines.pdf>.

280. Voice of America, “Burma-China pipelines bring benefits, complaints” (Washington, DC: May 3, 2012). <http://www.voanews.com/content/burma-china-pipelines-bring-benefits-complaints-150191115/370283.html>.

281. Voice of America, “Burma-China pipelines bring benefits, complaints” (Washington, DC: May 3, 2012). <http://www.voanews.com/content/burma-china-pipelines-bring-benefits-complaints-150191115/370283.html>; EarthRights, “The Burma-China Pipelines: Human Rights Violations, Applicable Law, and Revenue Secrecy” (Bangkok, Thailand: *EarthRights International Situation Briefer No. 1*, March 2011), pp. 7–18. <http://www.earthrights.org/sites/default/files/documents/the-burma-china-pipelines.pdf>.

282. Michael Sainsbury, “For China, Burma is thorny territory,” *Australian* (Sydney), September 8, 2009. <http://www.theaustralian.com.au/news/opinion/for-china-burma-is-thorny-territory/story-e6frg78o-1225770378304>.

283. Human Rights Watch, “China: Refugees Forcibly Returned to Burma” (Washington, DC: August 24, 2012). <http://www.hrw.org/node/109635>.

284. Ben Blanchard, “China says key pipeline safe despite Myanmar [Burma] fighting,” Reuters, March 10, 2012. <http://www.reuters.com/article/2012/03/10/china-npc-myanmar-idUSL4E8E913D20120310>.

285. Yu Juncui, “Change in the pipeline,” *Global Times*, July 16, 2012. <http://www.globaltimes.cn/content/721413.shtml>.

286. Daniel Hartnett, “China’s Evolving Interests and Activities in the East China Sea,” in Michael A. McDevitt and Catherine K. Lea, eds., *CNA Maritime Asia Project: Workshop One: The Yellow and East China Seas* (Alexandria, VA: CNA, May 2012), p. 71. <http://www.cna.org/sites/default/files/research/DCP2012U001959.pdf>.

287. Nick Owen, “Oil Disputes in the South China Sea in Context,” in Dini Djalal et al., *NBR Special Report #35: Maritime Energy Resources in Asia: Energy and Geopolitics* (Seattle, WA: National Bureau of Asian Research, December 2011), pp. 31–32.

288. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Mikkal E. Herberg, January 26, 2012.

289. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

290. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

291. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

292. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012.

293. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 3. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

294. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 6. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf;

U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

295. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 9. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

296. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 9. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

297. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), pp. 11–12, 25. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

298. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of W. David Menzie, January 26, 2012; Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 11. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

299. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 11. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

300. Gareth Hatch, *Critical Rare Earths: Global supply & demand projections and the leading contenders for new sources of supply* (Carpentersville, IL: Technology Metals Research, August 2011), p. 7.

301. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, testimony of W. David Menzie, January 26, 2012.

302. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 4. <http://www.Fas.org/sgp/crs/row/RH42510.pdf>

303. Gareth Hatch, *Critical Rare Earths: Global supply & demand projections and the leading contenders for new sources of supply* (Carpentersville, IL: Technology Metals Research, LLC, August 2011), p. 8.

304. U.S. Senate Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 2013 Report 112–173* (Washington, DC: U.S. Government Printing Office, June 2012), p. 92. <http://www.gpo.gov/fdsys/pkg/CRPT-112srpt173/pdf/CRPT-112srpt173.pdf>.

305. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

306. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

307. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

308. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

309. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

310. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

311. Lee Levkowitz and Nathan Beauchamp-Mustafaga, *China's Rare Earths Industry and its Role in the International Market* (Washington, DC: U.S.-China Economic and Security Review Commission, November 2010), pp. 2–3. <http://www.uscc.gov/researchpapers/2011/RareEarthsBackgrounderFINAL.pdf>.

312. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), pp. 2–3. <http://www.fas.org/sgp/crs/row/R42510.pdf>; Molycorp.com, “Molycorp Mountain Pass.” <http://www.molycorp.com/about-us/four-facilities/molycorp-mountain-pass/>; and Molycorp.com, “Project Phoenix.” <http://www.molycorp.com/about-us/project-phoenix>.

313. Xinhua, “Full Text: Situation and Policies of China's Rare Earth Industry,” June 20, 2012. http://news.xinhuanet.com/english/business/2012-06/20/c_131665123.htm.

314. Xinhua, “Full Text: Situation and Policies of China's Rare Earth Industry,” June 20, 2012. http://news.xinhuanet.com/english/business/2012-06/20/c_131665123.htm.

315. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

316. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), pp. 14–15. <http://www.fas.org/sgp/CRS/ROW/R42570.pdf>.

317. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p.15. <http://www.fas.org/sgp/CRS/ROW/R42570>.

318. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 16. <http://www.fas.org/sgp/CRS/ROW/R42570.pdf>.

319. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012; Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), pp. 11–20. <http://www.fas.org/sgp/crs/row/R42570>; and Gareth Hatch, “The Final Rare-Earth Export-Quota Allocations for 2012” (Carpentersville, IL: Technology Metals Research, August 23, 2012). <http://www.techmetalsresearch.com/2012/08/the-final-chinese-rare-earth-export-quota-allocations-for-2012/>.

320. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), pp. 15–16. <http://www.fas.org/sgp/crs/ROW/R42570.pdf>.

321. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 16. <http://www.fas.org/sgp/crs/row/R42570.pdf>.

322. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 17. <http://www.fas.org/sgp/crs/row/R42570.pdf>.

323. Wayne M. Morrison and Rachel Tang, *China's Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), p. 17. <http://www.fas.org/sgp/crs/row/R42570.pdf>.

324. Sebastian Moffett, “EU, U.S., Japan seek WTO steps on China rare earths,” Reuters, June 27, 2012. <http://www.reuters.com/article/2012/06/27/us-eu-china-rare-earth-idUSBRE85Q0KJ20120627>.

325. World Trade Organization, “China blocks panel requests by the US, EU and Japan on ‘rare earths’ dispute,” WTO 2012 News Items, July 10, 2012. http://www.wto.org/english/news_e/news12_e/dsb_10jul12_e.htm.

326. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012; Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), p. 11. http://americanresources.org/wp-content/uploads/2012/06/ARP_N_Quarterly_Report_WEB.pdf.

327. David Stanway, “China reshapes role in rare earths, could be importer by 2014,” Reuters, July 10, 2012. <http://mobile.reuters.com/article/idUSBRE8691E920120710?irpc=932>.

328. Reuters, “China, a Rare Earths Giant, Set to Start Importing the Elements,” July 11, 2012. http://www.nytimes.com/2012/07/12/business/global/china-a-rare-earth-giant-set-to-start-importing-the-elements.html?_r=0.

329. Nicholas Jepson, *A 21st Century Scramble: South Africa, China, and the Rare Earths Industry* (Johannesburg, South Africa: South African Institute for International Affairs and the Centre for Chinese Studies, March 2012), pp. 25–26. http://www.saiia.org.za/images/stories/pubs/occasional_papers_above_100/saia_sop_113_jepson_20120315.pdf.

330. Wang Zhuoqing, “Appeal to boost rare earth imports,” *China Daily* (Beijing), August 22, 2012. http://www.chinadaily.com.cn/china/2012-08/22/content_15694920.htm.

331. Radio Free Asia, “Laos Rejects China Rare Earth Bid,” April 20, 2012. <http://www.rfa.org/english/news/laos/rejection-04202012181020.html>.

332. Elisabeth Rosenthal, “Race Is On as Ice Melt Reveals Arctic Treasures,” *New York Times*, September 18, 2012. <http://www.nytimes.com/2012/09/19/science/earth/arctic-resources-exposed-by-warming-set-off-competition.html?pagewanted=all>; Chris-

tian Spillmann, “EU Fights to Catch Chinese in Greenland Rare-earths Gold Rush,” *Agence France-Presse*, August 6, 2012. <http://www.industryweek.com/global-economy/eu-fights-catch-chinese-greenland-rare-earths-gold-rush>.

333. Linda Jakobson, *China Prepares for an Ice-Free Arctic* (Stockholm, Sweden: Stockholm International Peace Research Institute, March 2010). <http://books.sipri.org/files/insight/SIPRIInsight1002.pdf>; David Curtis Wright, *The Dragon Eyes the Top of the World: Arctic Policy Debate and Discussion in China* (Newport, RI: U.S. Naval War College, August 2011). http://www.usnwc.edu/Research—Gaming/China-Maritime-Studies-Institute/Publications/documents/China-Maritime-Study-8_The-Dragon-Eyes-the-Top-of-.pdf; Anne-Marie Brady, *Polar Stakes: China’s Polar Activities as a Benchmark for Intentions* (Washington, DC: The Jamestown Foundation, July 19, 2012). [http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews\[tt_news\]=39647&cHash=ab95416de6afcd23ac990a0491beab8](http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews[tt_news]=39647&cHash=ab95416de6afcd23ac990a0491beab8); and Caitlin Campbell, *China and the Arctic: Objectives and Obstacles* (Washington, DC: U.S.-China Economic and Security Review Commission, April 13, 2012). http://www.uscc.gov/researchpapers/2012/China-and-the-Arctic_Apr2012.pdf.

334. U.S. Department of Energy, *Critical Materials Strategy* (Washington, DC: December 2011), p. 3. http://energy.gov/sites/prod/files/DOE_CMS2011_FINAL_Full.pdf.

335. Valerie Bailey Grasso, *Rare Earth Elements in National Defense: Background, Oversight Issues, and Options for Congress* (Washington, DC: Congressional Research Service, September 2012), pp. 3–5. <http://www.fas.org/sgp/crs/natsec/R41744.pdf>.

336. Valerie Bailey Grasso, *Rare Earth Elements in National Defense: Background, Oversight Issues, and Options for Congress* (Washington, DC: Congressional Research Service, September 2012), pp. 3–5. <http://www.fas.org/sgp/crs/natsec/R41744.pdf>.

337. Keith Bradsher, “Amid Tension, China Blocks Vital Exports to Japan,” *New York Times*, September 22, 2012. <http://www.nytimes.com/2010/09/23/business/global/23rare.html?pagewanted=all>.

338. Bloomberg, “China Denies Japan Rare-Earth Ban Amid Diplomatic Row,” *Bloomberg*, September 23, 2012. <http://www.bloomberg.com/news/2010-09-23/china-denies-japan-rare-earth-ban-amid-diplomatic-row-update1-.html>.

339. Wayne M. Morrison and Rachel Tang, *China’s Rare Earth Industry and Export Regime: Economic and Trade Implications for the United States* (Washington, DC: Congressional Research Service, April 2012), pp. 31–32. <http://www.fas.org/sgp/CRS/row/R42510.pdf>.

340. Brahma Chellaney, *Water: Asia’s New Battleground* (Washington, DC: Georgetown University Press, 2011), p. 55.

341. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

342. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

343. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 146. <http://www.china-greentech.com/report>.

344. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of the Environmental and Development Desk, Department of Information and International Relations, Central Tibetan Administration, January 26, 2012; Brahma Chellaney, *Water: Asia’s New Battleground* (Washington, DC: Georgetown University Press, 2011), p. 54.

345. Wai-Shin Chan, Nick Robins, and Zoe Knight, “No water, no power: Is there enough water to fuel China’s power expansion?” (London, UK: HSBC Climate Change, HSBC Global Research, September 2012), p. 2. <https://www.research.hsbc.com/midas/Res/RDV?ao=20&key=Cu58QjjSwz&n=342956.PDF>.

346. Elizabeth Economy, “China’s Growing Water Crisis,” *World Politics Review* (August 9, 2011): 1. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

347. Elizabeth Economy, “China’s Growing Water Crisis,” *World Politics Review* (August 9, 2011). <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>; Greenpeace, *China’s New Mega Coal Power Bases, Thirsty Coal: A Water Crisis Exacerbated* (Washington, DC: August 2012), p. 1. <http://www.greenpeace.org/eastasia/publications/reports/climate-energy/2012/thirsty-coal-water-crisis>.

348. Elizabeth Economy, "China's Growing Water Crisis," *World Politics Review* (August 9, 2011): 1. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

349. Elizabeth Economy, "China's Growing Water Crisis," *World Politics Review* (August 9, 2011): 1. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

350. *China Daily* (Beijing), "Beijing urban areas to halt underground water extraction," February 28, 2012. http://www.cpcchina.org/2012-02/28/content_14708275.htm.

351. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

352. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 147. <http://www.china-greentech.com/report>.

353. Lee Liu, "Cancer Villages," *Environment* (March/April 2010): 13; Elizabeth Economy, "China's Growing Water Crisis," *World Politics Review* (August 9, 2011): 3. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

354. Christina Larson, "The New Epicenter of China's Discontent," *Foreign Policy*, August 23, 2011. http://www.foreignpolicy.com/articles/2011/08/23/the_new_epicenter_of_china_s_discontent?page=full.

355. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of the Environmental and Development Desk, Department of Information and International Relations, Central Tibetan Administration, January 26, 2012.

356. David Lampton, "Water in China: Big Problems, Big Solutions," *SAISPHERE* (2008). <http://www.sais-jhu.edu/pressroom/publications/saisphere/2008/pdfs/lampton.pdf>.

357. Elizabeth Economy, "China's Growing Water Crisis," *World Politics Review* (August 9, 2011): 5. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

358. Elizabeth Economy, "China's Growing Water Crisis," *World Politics Review* (August 9, 2011): 5. <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>.

359. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of the Environmental and Development Desk, Department of Information and International Relations, Central Tibetan Administration, January 26, 2012.

360. Toh Han Shih, "Business caught in grip of mainland water crisis," *South China Morning Post* (Hong Kong), November 14, 2011. <http://topics.scmp.com/news/china-business-watch/article/Business-caught-in-grip-of-mainland-water-crisis>.

361. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 148. <http://www.china-greentech.com/report>.

362. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), pp. 147–148. <http://www.china-greentech.com/report>.

363. China Greentech Initiative, *The China Greentech Report 2012* (Hong Kong, China: Greentech Networks Limited, 2012), p. 148. <http://www.china-greentech.com/report>.

364. International Rivers, "China" (Berkeley, CA). <http://www.internationalrivers.org/programs/china>.

365. *Green World Investor*, "List of World's Largest Hydroelectricity Plants and Countries—China Leading in building Hydroelectric Stations," March 29, 2011. <http://www.greenworldinvestor.com/2011/03/29/list-of-worlds-largest-hydroelectricity-plants-and-countries-china-leading-in-building-hydroelectric-stations>.

366. Mark Fulton, ed., "Hydropower in China: Opportunities and Risks" (Frankfurt, Germany: DB Climate Change Advisors, Deutsche Bank Group, October 2011), p. 3. http://www.banking-on-green.com/flash/Hydropower_in_China-Opportunities_and-Risks.pdf.

367. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

368. Mark Fulton, ed., "Hydropower in China: Opportunities and Risks" (Frankfurt, Germany: DB Climate Change Advisors, Deutsche Bank Group, October 2011), pp. 1, 6. http://www.banking-on-green.com/flash/Hydropower_in_China-Opportunities_and-Risks.pdf.

369. International Rivers, “A Faultline Runs Through It: Exposing the Hidden Dangers of Dam-Induced Earthquakes” (Berkeley, CA: March 11, 2009). <http://www.internationalrivers.org/resources/a-faultline-runs-through-it-exposing-the-hidden-dangers-of-dam-induced-earthquakes-2645>.

370. David Lampton, “Water in China: Big Problems, Big Solutions,” *SAISPHERE* (2008). <http://www.sais-jhu.edu/pressroom/publications/saisphere/2008/pdfs/lampton.pdf>.

371. Mark Fulton, ed., “Hydropower in China: Opportunities and Risks,” (Frankfurt, Germany: DB Climate Change Advisors, Deutsche Bank Group, October 2011), pp. 16–18. http://www.banking-on-green.com/en/content/news_3692.html; David Stanway, “China power crunch to worsen as drought slashes hydro,” Reuters, May 25, 2012. <http://www.reuters.com/article/2011/05/25/us-china-drought-hydropower-idUSTRE74O1BK20110525>.

372. *China Water Risk*, “2011 Year in Review & 5 Trends for 2012” (Hong Kong, China: February 9, 2012). <http://chinawaterrisk.org/resources/analysis-reviews/2011-year-in-review-5-trends-for-2012/>.

373. Fabian Acker, “Taming the Yangtze,” *Engineering and Technology*, March 2, 2009. <http://eandt.theiet.org/magazine/2009/04/taming-the-yangtze.cfm>; Emma Clark, “Breathtaking force: World’s most powerful dam opens in China as gushing water generates the same power as FIFTEEN nuclear reactors,” *Daily Mail* (United Kingdom), July 25, 2012. <http://www.dailymail.co.uk/news/article-2178951/Three-Gorges-Worlds-powerful-dam-opens-China-gushing-water-generates-power-15-nuclear-reactors.html>.

374. Emma Clark, “Breathtaking force: World’s most powerful dam opens in China as gushing water generates the same power as FIFTEEN nuclear reactors,” *Daily Mail* (United Kingdom), July 25, 2012. <http://www.dailymail.co.uk/news/article-2178951/Three-Gorges-Worlds-powerful-dam-opens-China-gushing-water-generates-power-15-nuclear-reactors.html>.

375. InternationalRivers.org, *Three Gorges Dam* (Berkeley, CA). <http://www.internationalrivers.org/campaigns/three-gorges-dam>.

376. International Rivers, *Three Gorges Dam: The Cost of Power* (Berkeley, CA: International Rivers, 2008). http://www.internationalrivers.org/files/attached-files/3gorges_factsheet.lorez.pdf.

377. Reuters, “Thousands Being Moved From China’s Three Gorges—Again,” August 22, 2012. http://www.nytimes.com/reuters/2012/08/22/world/asia/22reuters-china-threegorges.html?_r=1&emc=eta1.

378. Nicole Brewer, “The New Great Walls: A Guide to China’s Overseas Dam Industry” (Berkeley, CA: International Rivers, July 2008), p. 5. http://www.internationalrivers.org/files/attached-files/new_great_walls_report.pdf.

379. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

380. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

381. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

382. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

383. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012; Nicole Brewer, “The New Great Walls: A Guide to China’s Overseas Dam Industry” (Berkeley, CA: International Rivers, July 2008), p. 11. http://www.internationalrivers.org/files/attached-files/new_great_walls_report.pdf.

384. U.S.-China Economic and Security Review Commission, *China’s Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

385. Burma Rivers Network, “Dapein Dam Construction.” <http://www.burmariversnetwork.org/dam-projects/tarpeindapein.html>; Burma Rivers Network, “Shweli Dams.” <http://www.burmariversnetwork.org/dam-projects/shweli-dams.html>; Burma Rivers Network, “Yeywa Dam.” <http://www.burmariversnetwork.org/dam-projects/yeywa.html>; and Burma Rivers Network, “Irrawaddy/N’Mai/Mali Dams.” <http://www.burmariversnetwork.org/dam-projects/irrawaddynmalmali.html>.

386. Peter Bosshard, “China’s Environmental Footprint in Africa,” *South African Institute of International Affairs, China in Africa Policy Briefing* 3 (April 2008): 1.

<http://www.sais-jhu.edu/academics/regional-studies/africa/pdf/BosshardWorkingPaper.pdf>.

387. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

388. This quote is an unofficial translation by International Rivers. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

389. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

390. Ben Blanchard and Aung Hla Tun, "Analysis: Myanmar dam suspension tests vital China ties," Reuters, October 4, 2011. <http://www.reuters.com/article/2011/10/04/us-china-myanmar-dam-idUSTRE7926HU20111004>.

391. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

392. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Grace Mang, January 26, 2012.

393. Ben Blanchard and Aung Hla Tun, "Analysis: Myanmar [Burma] dam suspension tests vital China ties," Reuters, October 4, 2011. <http://www.reuters.com/article/2011/10/04/us-china-myanmar-dam-idUSTRE7926HU20111004>.

394. Brahma Chellaney, *Water: Asia's New Battleground* (Washington, DC: Georgetown University Press, 2011), p. 98.

395. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of the Environmental and Development Desk, Department of Information and International Relations, Central Tibetan Administration, January 26, 2012.

396. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Brahma Chellaney, January 26, 2012.

397. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of the Environmental and Development Desk, Department of Information and International Relations, Central Tibetan Administration, January 26, 2012; U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Brahma Chellaney, January 26, 2012; and Lo Su Hsing, "China Holds the Key to Asia's 'Blue Gold'," *Jakarta Globe*, (Indonesia) December 15, 2011. <http://www.thejakartaglobe.com/opinion/china-holds-the-key-to-asias-blue-gold/484739>.

398. Ananth Krishnan, "On rivers and glaciers, India, China walk on thin ice," *Hindu* (India), May 10, 2010. <http://www.thehindu.com/news/international/article425683.ece>.

399. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Brahma Chellaney, January 26, 2012.

400. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Brahma Chellaney, January 26, 2012.

401. Jonathan Holslag, "Assessing the Sino-Indian Water Dispute," *Journal of International Affairs* 62: 2 (Spring/Summer 2011): 23.

402. Jonathan Holslag, "Assessing the Sino-Indian Water Dispute," *Journal of International Affairs* 62: 2 (Spring/Summer 2011): 23.

403. Jonathan Holslag, "Assessing the Sino-Indian Water Dispute," *Journal of International Affairs* 62: 2 (Spring/Summer 2011): 23.

404. Jonathan Holslag, "Assessing the Sino-Indian Water Dispute," *Journal of International Affairs* 62: 2 (Spring/Summer 2011): 24.

405. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.

406. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012; Zhang Jian, *China's Energy Security: Prospects, Challenges, and Opportunities* (Washington, DC: The Brookings Institution, July 2011), p. 17. http://www.brookings.edu/~media/research/files/papers/2011/7/china%20energy%20zhang/07_china_energy_zhang_paper.pdf.

407. Liang Chao, "Joint water diversion project launched in Xinjiang," *China Daily* (Beijing), April 4, 2011. http://www.chinadaily.com.cn/china/2011-04/15/content_12336268.htm.
408. Liang Chao, "Joint water diversion project launched in Xinjiang," *China Daily* (Beijing), April 4, 2011. http://www.chinadaily.com.cn/china/2011-04/15/content_12336268.htm.
409. Richard Cronin and Timothy Hamlin, "Mekong Turning Point: Shared River for a Shared Future" (Washington, DC: The Henry L. Stimson Center, January 2012), p. 2. http://www.stimson.org/images/uploads/research-pdfs/SRSF_Web_2.pdf.
410. Richard Cronin and Timothy Hamlin, "Mekong Turning Point: Shared River for a Shared Future" (Washington, DC: The Henry L. Stimson Center, January 2012), p. 32. http://www.stimson.org/images/uploads/research-pdfs/SRSF_Web_2.pdf.
411. Richard Cronin and Timothy Hamlin, "Mekong Turning Point: Shared River for a Shared Future" (Washington, DC: The Henry L. Stimson Center, January 2012), p. 32. http://www.stimson.org/images/uploads/research-pdfs/SRSF_Web_2.pdf.
412. Yoolim Lee, "China Hydropower Dams in Mekong River Give Shocks to 60 Million," *Bloomberg Markets*, October 26, 2010. <http://www.bloomberg.com/news/2010-10-26/china-hydropower-dams-in-mekong-river-give-shocks-to-60-million.html>.
413. Richard Cronin and Timothy Hamlin, "Mekong Turning Point: Shared River for a Shared Future" (Washington, DC: The Henry L. Stimson Center, January 2012), p. 4. http://www.stimson.org/images/uploads/research-pdfs/SRSF_Web_2.pdf.
414. Richard Cronin and Timothy Hamlin, "Mekong Turning Point: Shared River for a Shared Future" (Washington, DC: The Henry L. Stimson Center, January 2012), p. 4. http://www.stimson.org/images/uploads/research-pdfs/SRSF_Web_2.pdf.
415. Yoolim Lee, "China Hydropower Dams in Mekong River Give Shocks to 60 Million," *Bloomberg Markets*, October 26, 2010. <http://www.bloomberg.com/news/2010-10-26/china-hydropower-dams-in-mekong-river-give-shocks-to-60-million.html>.
416. Sophie le Clue, "Water Treaties—A Question of Rights," *China Water Risk*, April 12, 2012. <http://chinawaterrisk.org/resources/analysis-reviews/water-treaties-a-question-of-rights/>.
417. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.
418. Jonathan Holslag, "Assessing the Sino-Indian Water Dispute," *Journal of International Affairs* 62: 2 (Spring/Summer 2011): 22.
419. U.S.-China Economic and Security Review Commission, *China's Global Quest for Resources and Implications for the United States*, written testimony of Elizabeth Economy, January 26, 2012.
420. Ananth Krishnan, "China's Tourism plans quells Brahmaputra Dam fears," *Hindu* (India), June 24, 2012. <http://www.thehindu.com/news/international/article3566337.ece>.
421. Oceana, *Submission of Written Comments for the Record: U.S. House of Representatives, Committee on Ways and Means, Hearing on the U.S.-China Economic Relationship* (Washington, DC: Oceana, October 25, 2011). <http://oceana.org/en/our-work/promote-responsible-fishing/fishing-subsidies/learn-act/letter-on-chinese-fishing-subsidies>.
422. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.
423. Zhang Hongzhou, "China's Growing Fishing Industry and Regional Maritime Security" (Singapore: RSIS Commentaries, June 4, 2012). <http://www.rsis.edu.sg/publications/Perspective/RSIS0912012.pdf>.
424. Roland Blomeyer et al., *The Role of China in World Fisheries* (Brussels, Belgium: European Parliament, Policy Department B: Structural and Cohesion Policies, 2012), p. 46. <http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=74791>.
425. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.
426. Zhang Hongzhou, "China's Growing Fishing Industry and Regional Maritime Security" (Singapore: RSIS Commentaries, June 4, 2012). <http://www.rsis.edu.sg/publications/Perspective/RSIS0912012.pdf>.
427. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Patrick M. Cronin, January 26, 2012.
428. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

429. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

430. Tabitha Grace Mallory, "China in Global Fisheries: Policies and Implications" (Washington, DC: The Johns Hopkins School of Advanced International Studies, PowerPoint presentation, November 29, 2011); Shelley Clarke, "Tracking Fish: China in the Global Supply Chain" (London, UK: Imperial College, PowerPoint presentation, October 2009). <http://www.illegal-fishing.info/uploads/ShelleyCSCCChinaTrackingFishOctober2009.pdf>.

431. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012; Tabitha Grace Mallory, "China's distant water fishing industry: Evolving policies and implications," *Marine Policy* (2012): 5.

432. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

433. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

434. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

435. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

436. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

437. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

438. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012; Roland Blomeyer et al., *The Role of China in World Fisheries* (Brussels, Belgium: European Parliament Directorate General for Internal Policies, Policy Department B: Structural and Cohesion Policies, 2012), p. 11. <http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=74791>.

439. Tabitha Grace Mallory, "China's distant water fishing industry: Evolving policies and implications," *Marine Policy* (2012): 1.

440. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

441. Roland Blomeyer et al., *The Role of China in World Fisheries* (Brussels, Belgium: European Parliament Directorate General for Internal Policies, Policy Department B: Structural and Cohesion Policies, 2012), p. 26. <http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=74791>.

442. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012; Tabitha Grace Mallory, "China's distant water fishing industry: Evolving policies and implications," *Marine Policy* (2012): 6.

443. Tabitha Grace Mallory, "China's distant water fishing industry: Evolving policies and implications," *Marine Policy* (2012): 6.

444. U.S.-China Economic and Security Review Commission, *Hearing on China's Global Quest for Resources and Implications for the United States*, written testimony of Tabitha Grace Mallory, January 26, 2012.

445. Roland Blomeyer et al., *The Role of China in World Fisheries* (Brussels, Belgium: European Parliament Directorate General for Internal Policies, Policy Department B: Structural and Cohesion Policies, 2012), p. 14. <http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file=74791>.

446. Keith Richburg, "Kidnapped fishermen's case angers Chinese public," *Washington Post*, May 23, 2012. http://www.washingtonpost.com/world/kidnapped-fishermens-case-raise-chinese-publics-ire/2012/05/23/gJQAJrDWkU_story.html.

447. Stephen Chen, "65 Chinese fishermen set free by Russia," *South China Morning Post* (Hong Kong), August 9, 2012. <http://www.scmp.com/portal/site/SCMP/>

menuitem.2af62ecb329d3d7733492d9253a0a0a0/?vgnextoid=938c9a2682709310VgnV
CM100000360a0a0aRCRD&ss=China&s=News.

448. Xinhua, “37 Chinese fishermen remain on board in Sri Lanka,” August 7, 2012. http://news.xinhuanet.com/english/china/2012-08/07/c_131767045.htm.

449. *South China Morning Post* (Hong Kong), “Chinese Fisherman Shot Dead by S Korea Coastguard,” October 15, 2012. <http://www.scmp.com/news/china/article/10626171/chinese-fisherman-shot-dead-s-korean-coastguard>.

450. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Sarah M. Forbes, January 26, 2012.

451. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

452. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Mikal E. Herberg, January 26, 2012.

453. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

454. U.S.-China Economic and Security Review Commission, *Hearing on China’s Global Quest for Resources and Implications for the United States*, written testimony of Jeffery A. Green, January 26, 2012.

455. Daniel McGroarty and Sandra Wirtz, *Reviewing Risk: Critical Metals and National Security* (Washington, DC: American Resources Policy Network, June 2012), pp. 4, 11, 25–30. http://americanresources.org/wp-content/uploads/2012/06/ARPN_Quarterly_Report_WEB.pdf.

CHAPTER 5

ASSESSING CHINA'S EFFORTS TO BECOME AN INNOVATIVE SOCIETY

Introduction

Since January 2006, Chinese industrial policy has focused on moving manufacturing away from labor-intensive, low-wage, and resource-dependent factory work to a higher position on the value-added, high-technology scale. A critical part of that plan requires the development in China of a culture of innovation. The plan requires government programs to support basic research, to create an advanced scientific and technical education system, to maintain strong intellectual property protection, and to foster entrepreneurship, the building blocks of an innovative society.* These are areas in which the United States has excelled over the past century to become a recognized world leader in innovation.

So far, China's record of reaching these benchmarks is mixed. As this chapter will detail, China has made considerable progress in shifting its manufacturing away from simple consumer goods toward high technology by investing heavily in the infrastructure of innovation. In some areas, the effort has been enormous. For example, postgraduate degrees awarded to Chinese scientists and engineers rose from 30,328 in 2001 to 172,336 in 2009, a 468 percent increase. This progress resulted from a dramatic expansion of science and technology university programs in China, from 239 in 2000 to 834 in 2010. (In the United States, the figure climbed during that period only by 8 percent to 40,148).¹

There is evidence that such Chinese investments have paid off but that some efforts have failed. During the past decade, the U.S. trade deficit with China in advanced technology products climbed from \$11.8 billion in 2002 to \$109.4 billion in 2011, an 827 percent increase.[†]² But China's efforts to boost intellectual property protections for Chinese inventors have stagnated.³ China's goal of nurturing an entrepreneurial class by creating a private system of equity and bank financing is lagging far behind.⁴ And questions have been raised about the quality of Chinese scientific and engineering training and the strength of an education system that values rote memorization over creativity and the copying of technology rather than its invention.

*China's plan is embodied in the National Medium- to Long-term Plan for the Development of Science and Technology (2006–2020) of the State Council, described below.

[†]Most sums in this section have been converted from renminbi (RMB) at current exchange rates.

This chapter draws heavily from a hearing the Commission held on May 10 in Washington to examine China's progress in reaching its innovation goals. In addition to general discussions on innovation, expert witnesses testified about China's progress and prospects for innovating in the fields of supercomputing, cloud computing, and defense systems (these topics are discussed in the chapter's case studies). The Commission also travelled to Beijing, Changzhou, and Suzhou in May for discussions on innovation with central and local Chinese officials, the findings from which are reported herein.

China Seeks Shortcuts to Innovation

Few governments have so thoroughly detailed a model for creating an "innovation-oriented society" as did the Chinese leaders in Beijing. China's National Medium- to Long-term Plan for the Development of Science and Technology (hereafter, "the Medium- to Long-term Plan"), released in January 2006 after three years of collaboration by thousands of participants, seeks to make China a "world leader" in science and technology by 2050. The plan describes itself as the "grand blueprint of science and technology development" to bring about "innovation with Chinese characteristics."⁵ Rather than settle on a few areas in which to specialize, the Chinese leadership identified 402 specific technologies, from intelligent automobiles to integrated circuits to high-performance computers, and promoted 16 technology-dependent megaprojects. Chinese planners were not content with seeking comparative advantage in a few specialties but rather sought "absolute advantage," said Robert D. Atkinson,* president of the Washington-based Information Technology and Innovation Foundation, who testified before the Commission on May 12: "They want to be good at everything, and they have a conscious strategy to do that."⁶

But even as the ambitious plan was released, the government stated that the task ahead would be complex and would require new priorities, such as scientific research. "Despite the size of our economy, our country is not an economic power, primarily because of our weak innovative capacity," the government admitted.⁷ In a typical assessment of China's scientific and technological shortcomings in 2006, U.S. experts wrote that growth in China:

with its overinvestment, inefficient resources, and the devastating effect on the environment cannot be sustained. . . . Despite the country's remarkable economic accomplishments, its record of innovation in commercial technologies has been weak . . . its dependence on foreign technology has grown consistently over the past 20 years. . . . Chinese technological capabilities have been failing to meet the nation's needs in such areas as energy, water and resource utilization, environmental protection, and public health. . . . Despite the swelling ranks of research personnel and increas-

* Dr. Atkinson (with Stephen Ezell) is the author of *Innovation Economics: The Race for Global Innovation Advantage and Why the U.S. Is Falling Behind* (New Haven, CT: Yale University Press, 2012) and is a participant in a joint U.S-China Innovation Dialogue involving the governments of both countries. Dr. Atkinson is also the author of the recent report, "Enough Is Enough: Confronting Chinese Innovation Mercantilism" (Washington, DC: Information Technology and Innovation Foundation, February 28, 2012).

*ingly generous funding, the research system's performance has not lived up to expectations. Many of China's best and brightest have sought career opportunities abroad, and despite an array of incentives offered by various national and local entities, China has had difficulty attracting them back. ... China has yet to establish a research tradition that is both conducive to creative achievements and tolerant of creative failures. Scientists have often been preoccupied with quick outcomes and immediate returns and brain drain has slowed the development of higher-level scientific leadership. Research is too often derivative in nature, which wastes resources and discourages creativity and independent thinking. Scientific misconduct of various types is seemingly widespread and often covered up and protected.*⁸

While acknowledging shortcomings, China is working to leapfrog China's international competitors by harvesting and building upon foreign-developed technology, a process that Dr. Atkinson calls "innovation adaptation." Complementing China's developing innovation capabilities, according to Dr. Atkinson, is an elaborate strategy for obtaining America's advanced technology by subterfuge, either by requiring U.S. companies to turn over technology to Chinese business partners as a condition for investment and market access in China or by simply stealing it outright through industrial espionage and particularly cyber spying.* Such theft constitutes "the greatest transfer of wealth in history," General Keith B. Alexander, the U.S. Cyber Command director, told the Senate Armed Services Committee in March testimony.⁹ (For more information on cybersecurity, see chap. 2, sec. 2, "China's Cyber Activities.")

By contrast, the United States is good at "science-based innovation" or innovation that results from basic research and is often funded by government, while China is "focusing on engineering-based innovation" or applied research that seeks to bring products to market with financial gain as the top priority, said Dr. Atkinson. He also warned against assuming that China is capable of little besides assembling products designed elsewhere or that "only the Washington model—which is essentially based on free markets, open trade, rule of law, strong IP [intellectual property] protection, et cetera—only that model can produce innovation."¹⁰

Another expert witness before the Commission, Daniel Breznitz,[†] professor of International Affairs and Management at the Georgia Institute of Technology, agreed that China has found a shortcut to innovation. The shortcut does not require the dedication to originality and the large commitment of money required for producing unique, first-time products. "China's true innovation competitive edge is mastering ... the art of second-generation innovation, including the mixing of established technologies and products to come up with new solutions."¹¹ Said Dr. Breznitz: "We should focus less

*For a thorough description of China's economic espionage and forced technology transfers, see the U.S.-China Economic and Security Review Commission's *2011 Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), chapter 1, section 3. <http://www.uscc.gov/annual-report/2011/Chapter1.3.pdf>.

[†]Dr. Breznitz is also the co-author of *The Run of the Red Queen, Government, Innovation, Globalization, and Economic Growth in China* (New Haven, CT: Yale University Press, 2011).

on China's attempt to outdo Silicon Valley and more on China's capabilities in the commercialization, improvement, and application of technologies first developed here; this is our real long-term challenge if we wish to capture more of the value, including jobs, of our innovation."

Although Dr. Breznitz agrees that China's central government seeks to create an innovation society, his research suggests it has stumbled upon an interim alternative: a "global system of fragmented production" as western companies concentrate on high-level design, marketing, and sales while they increasingly leave the research, engineering, and manufacturing to China.¹²

*If we measure success in innovation as the creation of novel products or services based on the ownership of intellectual property, then to date, China has failed. We will be hard-pressed to name a single, significant wholly Chinese novel development. However, China has developed a formidable capacity to innovate in different segments of the R&D [research and development] and production chain. Examples are China's growing global market share of uninterrupted power supply, which you probably don't care about unless you go under the knife in surgery or want to have a space program. . . . Chinese firms have also become the masters of 'design for production.' By mastering this skill, they have ensured a continued advantage in manufacturing, unrelated to low-cost labor. Indeed, this technology transfer has allowed Chinese companies to quickly seize on new technologies and, as a matter of fact, American venture capitalists working in China are one of the most important of such mechanisms.*¹³

Dr. Atkinson is also critical of the use of exclusive, China-only standards to discriminate against imports. Other tactics China employs to give its companies and industries an unfair advantage include currency manipulation; tax incentives for exports; limits on foreign purchases designed to force technology transfers; land grants and rent subsidies to Chinese-owned firms; preferential loans from banks; tax incentives for Chinese-owned firms; cash subsidies; benefits to state-owned enterprises; generous export financing; government-sanctioned monopolies; a weak and discriminatory patent system; joint venture requirements; direct discrimination against foreign firms; limits on imports and sales by foreign firms; onerous regulatory certification requirements; and limiting exports of critical materials in order to deny foreign firms key inputs. Taken together, such activities constitute "innovation mercantilism."¹⁴

Innovation-related Programs

The Chinese government has developed a network of overlapping programs to promote innovation. Most notably, these include the Medium- to Long-term Plan, recent Five-Year Plans, and several specialized research and development (R&D) programs.

The National Medium- to Long-term Plan for Science and Technology Development (2006–2020)

In conjunction with the 11th Five-Year Plan (discussed below), Chinese officials produced a strategy called the Medium- to Long-term Plan for the Development of Science and Technology.* With this program, according to Richard P. Suttmeier, professor of political science (emeritus) of the University of Oregon, “China launched a multifaceted strategy of national mobilization in support of science and innovation involving major research initiatives and a number of supporting measures intended to more fully integrate national R&D projects and industrial policies.”¹⁵ A central tenet of the plan is its “emphasis on research and innovation in industrial enterprises in order to make the enterprise sector the core of the innovation system. This has led to a redirection of policies in favor of enterprises as seen, for instance, in a greater share of [national R&D program] money going to industry and the establishment of new national laboratories in companies.”¹⁶

The plan essentially concedes that China’s innovation capabilities lag far behind those of western nations¹⁷ but outlines areas of investment and other measures in order to close the gap. Chinese officials at the Ministry of Science and Technology told the Commission that the plan’s significance follows from three breakthroughs: First, it was the earliest document that elevated the concept of “indigenous innovation” to a national level; second, it called for China to build an innovative society by 2020;† and third, it formally issued innovation policies for 11 “priority fields” and several other areas of importance (see text box, below).¹⁸ U.S. trade officials in China told the Commission in May 2012 that the Medium- to Long-term Plan focuses entirely on incremental innovation. They noted, however, that Chinese officials are currently trying to figure out how to perform truly unique forms of innovation.¹⁹

Technologies and Projects Promoted in the Medium- to Long-Term Plan

The Medium- to Long-Term Plan outlines a detailed and ambitious agenda of technologies, sciences, and projects to promote. Presented by category, these areas include:

*As a Commission-sponsored study explains, “Under the [Medium- to Long-term Plan], China’s scientific planning horizon was extended to 15 years, but projects are still operationalized within the Five-Year Plans and annual plans and budgets. National programs are multiyear activities which are funded on an annual basis.” Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), pp. 22–3. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

†More specifically, the plan calls for China to “enter the ranks of innovative countries by 2020, and to become ‘a global scientific power by mid-century,’ capable of challenging even the most advanced nations for technological preeminence.” Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 11. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

**Technologies and Projects Promoted in the
Medium- to Long-Term Plan—Continued**

11 “Priority Fields”: agriculture, energy, environment, information technology and modern services, manufacturing, national defense, population health, public security, transportation, urbanization and urban development, and water and mineral resources.

Eight areas of “Frontier Technology”: advanced energy, advanced manufacturing, aerospace and aeronautics, biotechnology, information technology, lasers, new materials, and ocean technologies.

Eight areas of “Cutting-edge Science”: cognitive science; structure of matter; core mathematical themes; Earth system processes and resources, environmental and disaster effects, and chemical processes; life processes; condensed matter; new approaches to scientific experimentation and observation; and research technologies.²⁰

Four areas of “Basic Science”: developmental and reproductive biology, nanotechnology, protein science, and quantum research.

“16 National Megaprojects”:

- (1) Advanced, numerically controlled machine tools and basic manufacturing technology
- (2) Control and treatment of AIDS, hepatitis, and other major diseases
- (3) Core electronic components, including high-end chip design and software
- (4) Extra large-scale integrated circuit manufacturing
- (5) Drug innovation and development
- (6) Genetically modified organisms
- (7) High-definition earth observation systems
- (8) Advanced pressurized water nuclear reactors and high-temperature gas cooled reactors
- (9) Large aircraft
- (10) Large-scale oil and gas exploration
- (11) Manned space, including lunar exploration
- (12) Next-generation broadband wireless telecommunications
- (13) Water pollution control and treatment

Chinese authorities have not disclosed the final three projects, probably due to classification restrictions.²¹ Tai Ming Cheung, director of the Institute on Global Conflict and Cooperation at the University of California, San Diego, La Jolla, speculates that the other projects could be a laser project “for nuclear fusion-related research”; a second-generation Beidou satellite navigation system; and a hypersonic vehicle technology project.²²

Five-Year Plans

China's recent Five-Year Plans reveal the Chinese government's strategy for funding science and technology and R&D and provide insight into their thinking on how to promote innovation. China's 11th Five-Year Plan (2006–2010) institutionalized some emerging trends in China's science and technology policy. Specifically, the plan moved away from the previously prevailing concept of "self-reliance," which held that China ought to produce key technologies independently.²³ Instead, in concert with the Medium- to Long-term Plan, it underscored the need to develop "indigenous innovation," which, while favoring substantially Chinese products, conceded the need to acquire and assimilate foreign technology.²⁴

China's 12th Five-Year Plan (2011–2015) demonstrates a further evolution in the Chinese government's views toward fostering innovation. As the Commission explained in its *2011 Annual Report*, the 12th Five-Year Plan "shifts its emphasis from enumerating hard production targets to describing broader principles, consistent with China's goal of economic rebalancing, and technological and scientific upgrading, especially in industrial production."* According to Denis Fred Simon, vice provost of international strategic initiatives at the University of Arizona, the plan "projects a more imperative tone and greater sense of urgency in advancing the country's capabilities for achieving indigenous innovation."²⁵

Chinese Ministry of Science and Technology officials explained that one of the hallmarks of the 12th Five-Year Plan is the designation of the seven "Strategic Emerging Industries," which include clean energy technology; next-generation information technology (IT); biotechnology; high-end equipment manufacturing; alternative energy; new materials; and clean energy vehicles. Officials explained that, in order to promote innovation in these and related areas, the Chinese government has taken a range of specific steps for "knowledge creation," such as preferential tax policies[†] and policies to create numerous science and technology-related parks and incubators. The plan also provides for the promotion of national standards.²⁶ Chinese universities also follow guidance outlined in the 12th Five-Year Plan, according to officials from Changzhou University, a school that focuses on petrochemical disciplines and includes 20,000 undergraduate, graduate, and doctoral candidates.²⁷

* For background information on China's 12th Five-Year Plan, see U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), chapter 1, section 4. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf; Joseph Casey and Katherine Koleski, "Backgrounder: China's 12th Five-Year Plan" (Washington, DC: U.S.-China Economic and Security Review Commission, June 24, 2011). http://www.uscc.gov/researchpapers/2011/12th-FiveYearPlan_062811.pdf.

[†] Liu Yanhua, former Chinese vice minister of Science and Technology, recently explained to the Kissinger Institute on China and the United States that the 12th Five-Year Plan provides for tax deductions of 150 percent of R&D expenditures. At that same event, Kathleen Kingscott, director of innovation policy at IBM, identified China's tax regime as one of the most influential features of China's efforts to promote greater R&D in China. Lin Yanhua and Kathleen Kingscott, Remarks to the symposium on "United States-China Comparative Government Organization and Operation in Science & Technology Innovation" (Washington, DC: Woodrow Wilson Center for Scholars, June 18, 2012).

Research and Development Programs

China has several national-level R&D programs that serve as the main instruments of national science and technology policy. This subsection surveys the most substantial:*

National High-tech R&D Program (“863”): The 863 program, named after the year (1986) and month (March) of the project’s conception, funds applied research specifically for the acquisition and development of strategic technologies with dual-use applications.† Modeled on the efforts that allowed China to produce satellite and nuclear weapons technology soon after the West²⁸ and amidst major domestic social and political disruptions throughout China, the 863 program applied a highly centralized planning and funding regime to seven (later expanded to nine) key areas: automation, biotechnology, energy, information technology, lasers, new materials, space technology, ocean technology, and resources/environmental technology. By 2009, the Chinese government funded 110 separate programs in these and related fields to a sum of \$804 million, excluding military-specific expenditures. China’s fastest supercomputer, the Tianhe-1A, serves as a prominent example of a successful technology funded by the 863 program.²⁹ (China’s supercomputing efforts are described in the first case study, below.)

National Basic Research Program (“973”): By 1997, Chinese planners identified a need to support more basic research, which led to the creation of the 973 program. The program’s “strategic objectives” are to “strengthen the original innovations and to address the important scientific issues concerning the national economic and social development . . . to improve China’s capabilities of independent innovations and to provide scientific support for the future development of the country.”³⁰ Specifically, the program seeks to “(1) Support multidisciplinary and fundamental research of relevance to national development; (2) Promote frontline basic research; (3) Support the cultivation of scientific talent capable of original research; and (4) Build high-quality interdisciplinary research centers.” Projects under the 973 program received \$410 mil-

* China’s Ministry of Science and Technology identifies five major science and technology programs: the National Natural Science Fund; the Key Technologies R&D fund; the Torch Program; the 863 program; and the 973 program. This subsection focuses on the two numbered programs because of their relevance to basic research and national defense. For references to and descriptions of other general Chinese programs (e.g., the Spark Program; the State Key and New Products Program; the Innovation Fund for Small- and Medium-sized Enterprises; the Special Development Project for Research Institutes; the Action Plan for Promoting Trade by Science and Technology; and the National New Products Program); Chinese Academy of Sciences programs (e.g., the “Knowledge Innovation Program” and “Innovation 2020”); and R&D-related institutions (e.g., the State Key Laboratory Program; the National Key Laboratory Program; National Laboratories; and Engineering Research Centers), see Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), pp. 24–36. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf. For defense-related funding vehicles (e.g., through the People’s Liberation Army and the State Administration for Science, Technology, and Industry) see pp. 116–7 of the same document.

† As the U.S. Office of the National Counterintelligence Executive wrote, “China will continue to be driven by its longstanding policy of ‘catching up fast and surpassing’ Western powers. An emblematic program in this drive is Project 863, which provides funding and guidance for efforts to clandestinely acquire US technology and sensitive economic information.” Office of the National Counterintelligence Executive, *Foreign Spies Stealing U.S. Economic Information in Cyberspace: Report to Congress of Foreign Economic Collection and Industrial Espionage, 2009–2011* (Washington, DC: October 2011), p. 7. http://www.ncix.gov/publications/reports/fecie_all/Foreign_Economic_Collection_2011.pdf.

lion in funding in 2009, 90 percent of which came from government sources.³¹ The 973 program website lists a number of accomplishments, including basic research into the formation of microstructures in steel, the findings from which have already been industrialized.³²

Research Performers

China's key research performers include various types of institutions and an increasingly well-educated and heterogeneous workforce.

Institutions*

In China, research institutions include the following:

- *The Chinese Academy of Sciences*: Over 50,000 researchers and 100 research institutes comprise the Chinese Academy of Sciences, China's premier scientific collective. The institutes focus on different areas, many of which relate to information and communications technology and defense.†
- *Other Government Research Institutes*: In addition to the Chinese Academy of Sciences, China has 3,707 government research institutes subordinate to central government ministries or various local governments. Most focus on providing public goods in areas such as agriculture, health, environment, and defense. In 2009, these organizations received a combined \$15.6 billion in funding.
- *Institutions of Higher Education*: Of approximately 2,300 institutions of higher education, approximately 1,350 reported having R&D activities in 2009, employing some 275,000 full-time equivalent personnel (of which over 80 percent actually conduct research). R&D spending in the sector reached \$7.3 billion in 2009, \$5.3 billion of which went to specific projects.

* Except where noted elsewhere, this material draws from Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), pp. 18–22. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf. Most figures are from 2009, as published in 2010.

† For example, two Chinese companies active in China's supercomputing efforts spun out of the Chinese Academy of Sciences' Institute of Software. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.

Research Performers—Continued

- *Industrial Enterprises:* Over 36,000 industrial enterprises in China engage in R&D, including over 1,700 state-owned enterprises and companies and over 4,700 foreign-invested enterprises. Collectively, these enterprises employ more than 1,440,000 full-time equivalent R&D personnel. Multinational corporations have increased their presence in China, with some 1,300 operating R&D centers countrywide.³³ According to Ministry of Science and Technology officials, multinational corporations (including joint ventures) comprise about one-fourth of research and development expenditures in China.³⁴

People

China's R&D workforce is expanding in size and increasing in quality. China had approximately 2,290,000 research personnel in the R&D workforce in 2009.³⁵ By most accounts, based on parameters like education and training, this talent pool is improving rapidly. The Chinese government has launched 12 programs specifically to recruit and develop talented scientists and researchers.³⁶ Each of these efforts is captured in China's Medium-to Long-Term Talent Development Plan (2010–2020), led by Minister Li Yuanchao, the head of the Chinese Communist Party's Organization Department and a leading candidate to ascend to the Politburo Standing Committee, the seat of power in Beijing, during China's upcoming leadership transition.³⁷ The Ministry of Education, the Chinese Academy of Sciences, the National Natural Science Foundation, and the Ministry of Personnel operate related efforts for improving universities and recruiting from abroad.³⁸ Even China's municipalities seek talent from abroad to promote their specific needs. Ministry of Science and Technology officials told the Commission that, on a recent trip to Stanford University, they observed fliers recruiting overseas Chinese students to return to China to start businesses in particular cities or localities.³⁹

Such initiatives have sought to reverse the trend of losing science and engineering talent to foreign countries, colloquially referred to as a "brain drain."⁴⁰ As Lee Hsien Loong, prime minister of Singapore, recently observed during a speech to China's Central Party School, "all eight Nobel Prize winners in science who are of Chinese descent either were or subsequently became American citizens."⁴¹

Research Performers—Continued

Though originally focused on ethnic Chinese, China's recruitment programs now also target those of other nationalities.⁴² The "best of the best," though aggressively pursued by Chinese entities, are not all actually relocating to China, according to Dr. Denis Simon. However, many are "striking deals" that allow them to shuttle back and forth between China and their home country and thus gain access to Chinese laboratories, funding, salaries, and other perks.⁴³ These opportunities, combined with robust international outreach initiatives, have made China an emerging hub in global science. An important feature of this outreach, as Kathleen A. Walsh, associate professor of national security affairs at the U.S. Naval War College testified, is that China is particularly successful in "courting international scientific resources, foreign universities, fellows, and scholars to serve its dual-use innovation ambitions."⁴⁴

Innovation

A central issue in China is the extent to which these institutions and people interact to achieve innovative outcomes, which happen in organic clusters such as the U.S.'s Silicon Valley. According to Ms. Walsh, "China's research communities tend still to be isolated from one another, geographically, institutionally, and socially, as do domestic researchers from the growing number of foreign-invested enterprise R&D workers."⁴⁵ China seeks to promote such collaboration through funding research, science, and innovation parks. The Commission has visited such parks on several occasions, most recently in May 2012. They often include educational and training facilities and, increasingly, enterprises with foreign ownership. Whether these efforts can yield cohesive environments that consistently drive innovation remains to be seen (see textbox on "'Ecosystem' for Success," below).

Assessing Chinese Innovation

In assessing China's prospects for innovation, five themes bear special consideration. Each manifests as a tension between divergent and sometimes competing directions in China's overall national innovation system. First, should China attempt to innovate autonomously or rely upon other nations? Second, should overall direction come from policymakers ("top-down") or researchers and entrepreneurs ("bottom-up")? Third, should investments in research and development serve the central government's priorities or local government imperatives? Fourth, how should government planners allocate money among basic research, applied research, and experimental development? And fifth, is the role of commercialization in China's innovation story tangential or central? This subsection addresses each theme in turn.

Inputs: Autonomous vs. Inclusive

A key concept with which Chinese planners have wrestled in recent decades is the extent to which China's science and technology efforts ought to be independent of the West. Historically, China's overall approach was to take a more autonomous course, seeking to achieve self-reliance in key areas.⁴⁶ This strategy has evolved over the past decade as Chinese officials ascribed higher value and achieved greater access to international intellectual capital. Yet the requirement for a high degree of self-sufficiency remains. China's solution, at least for the time being, is embodied in the concept of "indigenous innovation," as outlined in the 10th Five-Year Plan and the Medium- to Long-term Plan. As Centra Technology explained in a report produced for the Commission:

Chinese fears about dependency on foreign technology have provided the impetus for China's pursuit of 'indigenous innovation,' an attempt to secure sovereign control over core technological capabilities. 'Indigenous innovation' does not call for technological autarky, but for China's foreign interactions to have a laser focus on extracting technology for China's benefit.⁴⁷

To achieve this outcome, China has erected a variety of market barriers and created market distortions.⁴⁸ Chinese regulators, for example, sometimes create indigenous standards to which foreign companies must adhere—such as those for smart phones sold in China. While countries are free to set internal standards, they must not single out foreign companies for discriminatory treatment. Foreign competitors must spend time and money modifying their globally compatible wireless phones for use in China. Chinese corporations are also encouraged by the government to file utility patents for technology similar to that of foreign companies not yet operating within China.⁴⁹ (For more information on the prevalence of utility patents in China, see the textbox on "Innovation Taxonomy," below.) This step has the potential to deter competitors who might be required to pay royalties to the Chinese patent holder for technology that the foreign company invented.⁵⁰

Approach: Top-down vs. Bottom-up

Innovation in China is characterized by the dichotomy between top-down, highly centralized government planning and bottom-up, entrepreneurial efforts. As discussed in the previous section on the 863 program, the concept of centralized planning is integral to Chinese thinking on how to achieve successful outcomes in science and technology, largely because of historical successes in China's strategic weapons programs. Dr. Suttmeier testified that this "emphasis upon centrally directed programs can work against curiosity-driven research and bottom-up entrepreneurial innovation." For example, "There have been a number of allegations that Chinese entrepreneurial startups have been disadvantaged by China's policy profile which, until recently, tended to be insensitive to innovation initiatives that were not part of the plan and the policy benefits therein."⁵¹ This is changing as the Chinese government increasingly attempts to tap the private sector to achieve desired science

and technology outcomes. As Dr. Denis Simon noted, the Medium- to Long-term Plan “seems to have awakened a new sensitivity to the dynamic role to be played by small and medium firms in the innovation system.”⁵²

Ministry of Science and Technology officials told the Commission that, based upon their research, state-owned enterprises are not necessarily efficient.⁵³ Previously, these were the only entities eligible to receive innovation-related funding. Now, private companies and multinational corporations are also eligible.* The pervasiveness of state-owned enterprises in China also creates a principal-agent problem insofar as its central goal is to spur innovation. Xu Jun, a Ministry of Science and Technology official, opined that:

[Gross domestic product]-oriented enterprise evaluation influences innovation. Leaders of [state-owned enterprises] are entrepreneurs and officials at the same time. The State-owned Assets Supervision and Administration Commission’s evaluation of these enterprises pays too much attention to [gross domestic product] and the speed of development. It emphasizes productivity and market share. As a result, the proportion of R&D for technology is too low, and company executives tend to have an impetuous attitude toward seeking short-term successes and quick profits. All these explain why there’s no breakthrough innovation in China.[†]⁵⁴

Strong central government efforts are not universally harmful and may actually help China’s prospects for innovation in some respects.[‡] According to Ms. Walsh, “Recent studies comparing progress across different national innovation systems find that states possessing both strong top-down strategic guidance on innovation as well as a robust, organic, bottom-up innovative dynamic fare better than those reliant on either one or the other foundation.”⁵⁵

Objectives: Central vs. Local

Even among government actors, tension sometimes surfaces between central and local (in this context, including provincial and municipal) governments. Ministry of Science and Technology officials told the Commission that central and local government enti-

* However, the officials did not specify which, if any, multinational corporations received benefits under the program. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

† Provincial and municipal officials have made similar observations. For example, Zhou Ya, director of Shanghai’s Municipal Development and Reform Commission, said (as paraphrased by the *Global Times* (China), a publication sponsored by the party-controlled *People’s Daily* (China)), “Shanghai’s innovation power remains weak because state-owned enterprises lack motivation and private firms lack funding.” Wang Yizhou, “Shanghai spurs R&D investment,” *Global Times* (China), August 16, 2012. <http://www.globaltimes.cn/content/727422.shtml>.

‡ High-level emphasis is reflected in not only China’s web of policies and programs designed to achieve those ends but also in the high-level leadership support to innovation-related initiatives. For example, President Hu Jintao in June 2012 delivered remarks on innovation at the biennial conference of the Chinese Academy of Sciences and the Chinese Academy of Engineering, an event also attended by seven of the other eight members of the Politburo Standing Committee. Xinhua, “President Hu Pins Hope on Innovations,” June 11, 2012. http://news.xinhua.net.com/english/china/2012-06/11/c_131645365.htm. The remaining member, He Guoqiang, was on an official visit to Laos at the time. Anne Tang, ed., “China, Laos eye further economic, trade co-op,” Xinhua, June 11, 2012. http://english.gov.cn/2012-06/11/content_2158333.htm.

ties hold different views about how science- and technology-related monies ought to be allocated.⁵⁶ To some extent, both levels of government can support their own interests. As Centra Technology observed in its report for the Commission, “Over the past decade, the role of provincial and sub-provincial governments has become far more important in R&D in China.⁵⁷ China’s central government provides about 50 percent of research and development funding, while the other 50 percent comes from provincial, municipal, and local governments, according to Ministry of Science and Technology officials.* Research and development funded by central authorities, they said, focuses on basic research. Provincial, municipal, and local governments, on the other hand, fund projects related to experimental development.⁵⁸

In meetings with the Commission, Suzhou municipal officials explained the dynamic between central and local R&D investments and projects, which they characterized as representative across similar localities. National-level science and technology and innovation policies “guide” Suzhou municipal investments, they said, but are not mandatory. Suzhou officials establish their own development priorities, only some of which correspond to the central government’s priorities. One official further remarked that “Suzhou leaves the job of basic [research] to national-level; we [at the municipal level] industrialize the results.”⁵⁹ This comports with other reports that the most advanced research in China is still funded by the central government.⁶⁰ (For an illustration of how this trend manifests in one high-technology sector, see the case study on supercomputing, below.)

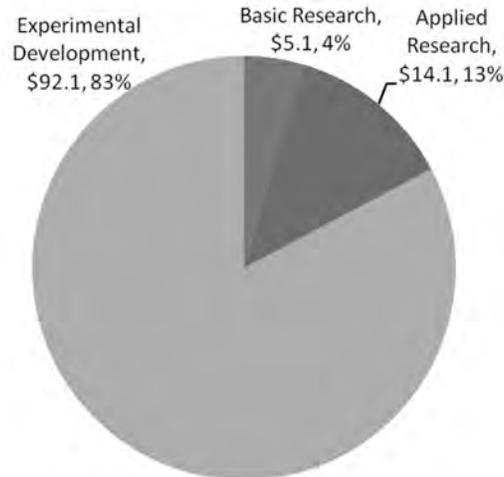
Focus: Basic Research vs. Applied Research vs. Experimental Development

China invests in projects across the R&D spectrum, with concerted efforts in basic research (e.g., high-energy physics), applied research (e.g., new technical standards), and experimental development (e.g., deep ocean exploration vehicles).† Chinese government investments overwhelmingly favor experimental development over applied research and basic research (see figure 1, below).⁶¹ This is a legacy of China’s “state-centric approach to science,” which historically relied heavily upon directed plans with targeted outcomes. Consequently, “Tasks with direct economic and military benefit are favored in China and that applied research is preferred over curiosity-driven discoveries and basic research,” according to Centra Technology.⁶²

*Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012. More precisely, 49.7 percent comes from the central government, and 50.3 percent comes from local governments. National Bureau of Statistics of China, *Communiqué on National Expenditures on Science and Technology in 2010* (Beijing, China: September 28, 2011). http://www.stats.gov.cn/english/newsandcomingevents/t20111010_402758248.htm.

†“Experimental development” is sometimes referred to as “technological development.” Examples furnished by Richard P. Suttmeier (professor of political science (emeritus) of the University of Oregon), interview with Commission staff member, September 6, 2012.

Figure 1: Chinese Research and Development Expenditures by Category, 2010*



Note: Monetary sums in billions of U.S. dollars, based on current exchange rates.

Source: National Bureau of Statistics of China, *Communiqué on National Expenditures on Science and Technology in 2010* (Beijing, China: September 28, 2011). http://www.stats.gov.cn/english/newsandcomingevents/t20111010_402758248.htm.

China's leadership has long recognized the need to improve expenditures on basic research to seek scientific breakthroughs, which led to the 973 program. However, even portions of that program have evolved since its inception to fund applied research, which "reflects the fact that, in China, support for investigator-driven basic science is largely secondary to applied technologies that can be commercialized or used in national defense," according to Centra Technology. As a consequence, "China devotes relatively little funding overall to basic research."⁶³ (See figure 2, below, for a representation of total basic research expenditures in comparison to basic research expenditures as a proportion of total research and development spending.) Even some of the ostensible beneficiaries of China's orientation toward applied science have recognized this im-

*The most recent year for which data were available is 2010. On interpreting these data, China's National Bureau of statistics offers the following explanatory note: "*Expenditures on R&D*: refers to the actual expenditures spent in basic researches, applied researches and experimental development by executive units within statistical year. Including personnel fees, material costs, purchasing and construction fees of fixed assets, management fees and other expenses that actually spent in R&D activities.

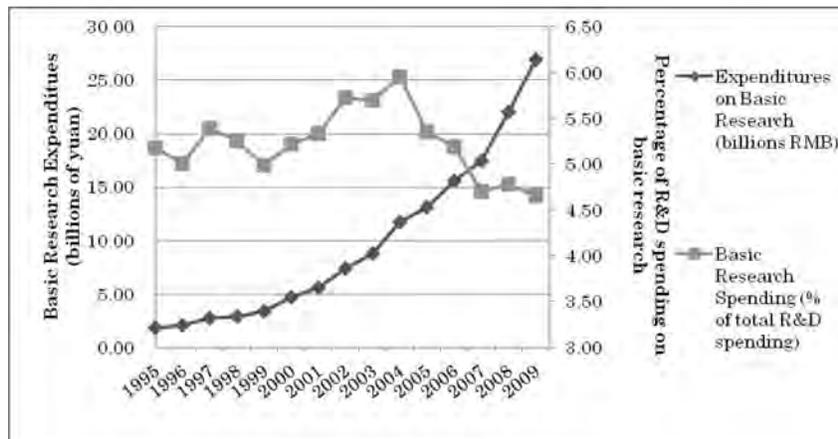
"*Basic Research*: refers to empirical or theoretical research aiming at obtaining new knowledge on the fundamental principles regarding phenomena or observable facts to reveal the intrinsic nature and underlying laws and to acquire new discoveries or new theories. Basic research takes no specific or designated application as the aim of the research.

"*Applied Research*: refers to creative research aiming at obtaining new knowledge on a specific objective or target. Purpose of the applied research is to identify the possible uses of results from basic research, or to explore new (fundamental) methods or new approaches.

"*[Experimental] Development*: refers to systematic activities aiming at using the knowledge from basic and applied researches or from practical experience to develop new products, materials and equipment, to establish new production process, systems and services, or to make substantial improvement on the existing products, process or services." National Bureau of Statistics of China, *Communiqué on National Expenditures on Science and Technology in 2010* (Beijing, China: September 28, 2011). http://www.stats.gov.cn/english/newsandcomingevents/t20111010_402758248.htm.

balance. General Chang Wanquan, director of the People's Liberation Army General Arms Department and a member of the Chinese military's highest body, the Central Military Commission, at an August 2012 conference on "technological innovation of weaponry and equipment" called for a greater emphasis on basic research.⁶⁴

Figure 2: China's National R&D Expenditures on Basic Research, 1995–2009



Source: Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 30. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

Though China's expenditures on basic research have increased rapidly in real terms, they have actually declined as a share of overall R&D funding. This raises questions about whether China's spending priorities comport with its planning. According to Dr. Denis Simon, considering China's aspirations, which, according to the 12th Five-Year Plan, call for "leapfrogging into new science-based industries," it becomes clear that "basic research is going to be very important" toward achieving the stated goals.*⁶⁵

Commercial Impact: Tangential or Central?

Perhaps the most confounding dynamic in the assessment of China's innovation capabilities is the extent of the commercialization of China's science and technology research. As Dr. Denis Simon testified, "While traditional metrics such as growth in numbers of patents and increases in the number of [Science Citation Index] citations all seem to suggest China is on the road to becoming a more significant player in the global innovation system, the fact is that there is something missing in terms of the anticipated commercial impact associated with these growing numbers."⁶⁶ Namely, China

* With respect to the allocation of R&D personnel, about 7 percent are engaged in basic research, 13 percent are engaged in applied research, and the remainder are focused on experimental development. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 36. http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

is home to few of the world's most innovative companies. Notwithstanding recent performance by a few standouts, like Tencent and Semiconductor Manufacturing International Corporation, Chinese firms do not demonstrate innovation gains that comport with other indicators of China's science and technology complex.⁶⁷

Conversely, some of China's greatest innovation-related successes relate to strictly commercialized endeavors. Dr. Suttmeier cited business model innovation, wherein certain Chinese firms have identified unique or original ways to, for example, generate revenue online.⁶⁸ Kevin Wale, chief executive officer of GM China, asserts that China's greatest strength is innovation through commercialization:

*[Chinese firms are] happy to do three to four rounds of commercialization to get an idea right, whereas in the West companies spend the same amount of time on research, testing, and validation before trying to take products to market. The electric vehicle is a good example. The Chinese view is that it's not going to be perfect, and they're not trying to make it perfect from day one. They've got a few more series of improvements to go, and they'll work on them in parallel with finding out what the customer really likes and adapting to that. That's an innovative way of doing innovation, something that the rest of the world is struggling to understand.*⁶⁹

Similarly, businesses the Commission visited in China in May 2012 highlighted the importance of localization (or adapting products to the Chinese market) in the innovation process. Executives from Mettler Toledo (Changzhou) Measurement Technology explained that the firm's central advantage is its ability to quickly create local solutions to local problems.⁷⁰ The firm customizes 40 percent of its products for specific applications, many of which are unique to China. A vice president of Black and Decker (Suzhou) Manufacturing described reducing the size and adapting the ergonomics of one of the firm's power drill models to make it more comfortable for Chinese workers to utilize.⁷¹ Representatives of the Changzhou Institute of Advanced Manufacturing Technology explained that a robot in development was designed, in light of China's aging population, to converse with and entertain the elderly.*

*These examples are broadly consistent with those shared with the Commission during its 2011 trip to China, wherein automobile designers at a joint venture in Shanghai described customizing cars to appeal to Chinese drivers. While many changes were cosmetic or generally straightforward, such as the addition of legroom in cars' backseats, the firm reported engaging in targeted research and making important adaptations in their cars' acoustic output to appeal to Chinese consumers. Representatives of Pan Asia Technical Automotive Center, meetings with Commissioners, Shanghai, China, August 11, 2012.

Innovation Taxonomy

Scientific paper publications and patent filings alone, both of which China has increased dramatically in recent years, do not adequately capture the “magnitude of innovation” in China, according to Thomas G. Mahnken, Jerome E. Levy chair of International Economic Geography and National Security at the U.S. Naval War College.⁷² Many of the patents filed in China, for example, are design patents (32 percent) or utility model patents (36 percent) as opposed to strict invention patents (32 percent), which are more likely to capture actual innovation, according to a 2012 study by the European Chamber of Commerce.* Chinese academic publications, which have grown substantially in recent years, in many cases fail to meet quality thresholds expected from academic publications in the West.⁷³ Plagiarism is another persistent problem. According to an official state media report, President Hu Jintao recently warned China’s premier science and engineering academies “to keep academic integrity and professional ethics, and avoid any academic fraud.”⁷⁴

Innovation must ultimately be measured in outputs. However, as Dr. Suttmeier observed, in order to understand recent developments in China, “we really need to be far more discriminating about what we mean by ‘innovation.’”[†]⁷⁵ To this end, Tai Ming Cheung has developed a helpful taxonomy to parse and describe different levels of innovation:

- *“Duplicative Imitation:* Products, usually obtained from foreign sources, are closely copied with little or no technological improvements. This is the starting point of industrial and technological development for latecomers such as China.
- *“Creative Imitation:* A more sophisticated form of imitation that generates imitative products with new performance features.
- *“Creative Adaptation:* Products are inspired by existing foreign-derived technologies but differ from them significantly.

*These figures come from 2011 and include both Chinese and foreign filers. Dan Prud’homme, “Dulling the Cutting-Edge: How Patent-Related Policies and Practices Hamper Innovation in China” (Shanghai, China: European Chamber of Commerce, August 2012), pp. 5, 21. <http://www.euccc.com.cn/upload/media/media/27/patentstudy2012%5B766%5D.pdf>.

[†]For example, Dr. Atkinson uses the terms “innovative adaptation” and “engineering-based innovation.” Dr. Breznitz testified about “second-generation innovation.” U.S. officials in Beijing, in discussions with the Commission, used the term “incremental innovation.” Each attempts to capture something important that fails to reach the threshold of another popular term, “disruptive innovation.” Reconciling these terms, however, presents a number of challenges.

Innovation Taxonomy—Continued

- *“Incremental Innovation:* This is the limited updating of existing indigenously developed systems and processes. This innovation is often the result of organizational and management inputs aimed at producing different versions of products tailored to different markets and users, rather than significant technological improvements through original research and development.
- *“Architectural Innovation:* Innovations that change the way in which the components of a product are linked together, while leaving the core design concepts untouched.
- *“Component or Modular Innovation:* The development of new component technology that can be installed into existing system architecture. Modular innovation emphasizes hard innovation capabilities such as advanced R&D facilities, a cadre of experienced scientists and engineers, and large-scale investment outlays.
- *“Radical Innovation:* Major breakthroughs in both new component technology and architecture; only countries with broad-based, world-class R&D capabilities and personnel along with deep financial resources and a willingness to take risks can engage in this activity.”⁷⁶

Chinese observers tend to take an expansive view of what constitutes innovation, according to conversations the Commission engaged in throughout its May 2012 trip to China. An official from Changzhou University provided a representative view: “We define innovation as new things derived from our ideas that could be patented. [It] could be an original idea or [a] new way to do something.”⁷⁷

Case Study: Supercomputing

China’s government seeks to attain leadership in most or all areas of high-performance computing. According to testimony from Earl C. Joseph II, program vice president at IDC, China is aggressively funding supercomputing initiatives “to gain a strong standing in science, innovation and for economic growth.”⁷⁸ As China seeks to develop its capabilities, occasionally making headlines for notable achievements, a key question is the extent to which China can leverage heightened investment to actually innovate in the field.

What is Supercomputing?*

“Supercomputing” is a term used to describe calculation-intensive processing conducted by advanced information systems. Supercomputers have applications in four broad categories:

- Basic research in numerous scientific disciplines;
- Environmental purposes, such as weather forecasting, which can help improve agriculture or identify natural disasters;
- National defense purposes, such as code-breaking, weapons-effects modeling, and combat simulations; and
- Numerous commercial purposes, including oil exploration, animated graphics processing, financial market analysis, and manufacturing-related ends.⁷⁹

Investment

China spends \$600 million per year on high-performance computing and \$375 million on supercomputing.[†] The country’s aggregate supercomputer purchases have increased 22 percent per year since 2002. China is rapidly building out infrastructure to support these systems.⁸⁰ There are at least six National Supercomputer Centers, located in Changsha, Guangzhou, Jinan, Shanghai, Shenzhen, and Tianjin. The Chinese Academy of Sciences has a head supercomputing center and eight regional centers, located in Kunming, Qingdao, Lanzhou, Dalian, Shenzhen, Hefei, Shenyang, and Wuhan; with another, to be located in Chongqing, in development. The academy’s infrastructure also includes 17 institute centers and 11 centers focused on high-speed, graphical processing units.⁸¹

National-level funding comes through a variety of vehicles, including the 863 program,⁸² but substantial supercomputing funds come from local governments. “To some extent,” according to Horst D. Simon, deputy laboratory director at Lawrence Berkeley National Laboratories, local investments are driven by a “‘build it and they will come’ philosophy as well as competition among communities for [high-performance computing] bragging rights.” Nevertheless, these efforts “definitely [enhance] local capabilities, especially if they include research and outreach components,” he said.⁸³

Assessment

China has already demonstrated success in the field, as illustrated by the Tianhe-1A’s stint as the world’s fastest supercom-

*With respect to nomenclature, as Dr. Horst Simon testified, “The term High Performance Computing (HPC) generally refers to all computing infrastructure and activities that contribute to the computational solution of difficult scientific and engineering problems. HPC encompasses a very wide range of technologies and activities ranging from desktops to supercomputers. . . . [The term] [s]upercomputing refers to the various activities related to the design, manufacturing, and use of supercomputers, and is thus a subset of HPC.” U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.

†This includes equipment purchases only, not total supercomputer funding (which could also incorporate laboratory operational costs, salaries, and so on). U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.

puter.* But that machine's (and others throughout China) use of critical, western-origin components calls into question China's innovative capacity in the field. Supercomputers can be innovative in their own right or assist in innovation elsewhere. For China, the outlook for each is mixed. Chinese supercomputers themselves demonstrate innovation in several areas. For example, according to Dr. Joseph, Tianhe-1A creatively uses standard processors for system control. It also uses a high-speed, custom interconnect, which links numerous processors to work in concert. Though similar to existing interconnects, the system's implementation is unique. However, the interconnect remains expensive and is not used widely.⁸⁴

Supercomputer usage in China differs substantially from the United States and provides insight into whether supercomputers in China will drive innovation in other areas. The Commission received testimony suggesting serious obstacles to the use of Chinese supercomputers for basic research that might yield radical innovations. First, costs levied upon supercomputer users limit accessibility. Dr. Horst Simon explained:

The state funding mechanism of Chinese supercomputers provides for the overall cost of building and hosting the system, while the facilities have to bear the operational costs. In order to raise annual operating costs, the facilities charge money for compute cycles. . . . This leads to an interesting bias towards industrial applications because the academic counterparts cannot afford the costs. Several [Chinese] researchers mentioned in conversations to me that they [would] rather stay on their smaller local systems. This could be potentially a big barrier to the further development of supercomputing expertise.⁸⁵

A second obstacle relates to dynamics between central and local funders. As noted above, localities make many of China's supercomputer-related investments. Often, local governments seek to gain some direct utility from these expenditures. Dr. Joseph provided several examples:

[I]n Beijing, the weather can be very smoggy and dangerous. So to have [their] high school soccer game Thursday night versus Friday night, they will do a weather forecast to determine which is the safer night to have the high school soccer game. They [Chinese city planners] also use it [supercomputers] for extensive . . . real-time traffic monitoring and . . . control of stoplights and . . . routing of ambulances.⁸⁶

This mirrors the dynamic between China's overall R&D investments, where localities attempt to leave basic research to the central government so as to tailor their own investments to applied research or experimental development that will reap more immediate and tangible economic or social improvements.

*The Tianhe-1A, unveiled in Changsha in October 2009, was ranked as the world's fastest computer in November 2010 but slid to second place in June 2011 and, as of June 2012, stands as the world's fifth fastest. Top500.org, "Top 10 Sites for June 2012," June 2012. <http://www.top500.org/lists/2012/06>.

A third obstacle comes in the form of China's deficit in supercomputer systems software and application development. With respect to systems software, China's supercomputers overwhelmingly rely upon western-origin Linux system operating software or its Chinese variants. Although less innovative, these adaptations have been reasonably successful. China's capacity to develop applications generally lags behind its capabilities to produce hardware.⁸⁷ However, many state-of-the-art applications from abroad are inaccessible, primarily due to cost, so Chinese programs increasingly rely upon local content. China's government, moreover, recognizes the problem and, "[r]ecently, government research investments have shifted toward software, encouraging the development of packages capable of running effectively on very large systems," according to Dr. Horst Simon, "potentially a significant development."⁸⁸

"Ecosystem" for Success

Success in the field of supercomputing, as in other high-technology areas, requires a fertile "ecosystem." As Dr. Horst Simon explained:

Ecosystem refers to the fact that technologies, computer systems, software, applications, and human capital have to be developed simultaneously in order to make progress in supercomputing. They form an interlinked and mutual reinforcing system. I believe that the notion of ecosystem is essential to understand progress in the field, in particular as it relates to a nation such as China that is developing supercomputing capabilities. (Emphasis added.)⁸⁹

Some of China's targeted efforts to create high-technology capabilities have failed to create true ecosystems. One example that applies (though not exclusively) to supercomputing was a central government push in 2000 that created numerous schools for software engineering. This has resulted in pockets of talent in places like Dalian. However, according to Dr. Denis Simon, these pockets include the "beginnings of a very solid foundation for software engineering, but ... don't have that second tier and third tier experienced project manager or team leader to take on ... larger software projects." To date, this has prevented China from competing successfully against India for business from international clients like U.S., European, and Japanese businesses.⁹⁰ Beyond software, a robust supercomputing ecosystem requires the right hardware inputs, users, and educators.

Case Study: Cloud Computing

The Chinese government seeks to make China a world leader in the field of cloud computing. As one of the seven "Strategic Emerging Industries"* in the 12th Five-Year Plan (2011–2015), China identified "Next-Generation Information Technology." This category

*The other six industries include clean energy technology, biotechnology, high-end equipment manufacturing, alternative energy, new materials, and clean energy vehicles.

is composed of 11 subfields, including cloud computing.* Next-Generation Information Technology as an industry, and the cloud computing component in particular, appears to hold special significance to the Chinese government. Leaders frequently invoke the subject to illustrate China's progress toward achieving the goals articulated in the 12th Five-Year Plan or more generally to describe China's successes in economic development.†

What is Cloud Computing?

Cloud computing (often referred to as simply “the cloud”) is the delivery of “on-demand computing resources,” which could encompass everything from processing capabilities, to software applications and storage space in remote data centers, over the Internet. This allows consumers the flexibility to purchase only the computing resources they need at any given time.‡

Investment

The goal of China's 12th Five-Year Plan, as it relates to strategic emerging industries, is to triple the contribution these seven fields make to the nation's gross domestic product, from 5 percent in 2010 to 15 percent by the year 2020, employing a number of preferential tax, fiscal, and procurement policies.⁹¹ The plan includes \$314 billion in government funding for telecommunications infrastructure over the five-year period, with cloud computing being a key recipient.⁹² Aside from the Chinese government's efforts to promote “indigenous innovation” in the field and other strategic imperatives (see textbox on “Cloud Control,” below) investment in the sector could help Chinese entities capture cloud market share at home and abroad, tapping what research firm IDC estimates could become a \$73 billion industry per year worldwide by 2015.⁹³ (Other estimates cited by Xinhua, China's official news service, place the value of China's cloud computing industry over the duration of the 12th Five-Year Plan at \$117.8 billion-\$157 billion, constituting 15 percent of the value of the strategic emerging industries.)⁹⁴

China's central and local governments have initiated numerous cloud computing centers nationwide. In October 2010, China's National Development and Reform Commission and the Ministry of

*The other ten fields include next-generation mobile communications, next-generation core Internet equipment, smart devices, Internet of Things, convergence of telecom/cable television/Internet networks, new displays, integrated circuits, high-end software, high-end servers, and digitization of culture and creative industries. U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, 2011), p. 106. http://www.uscc.gov/annual_report/2011/annual_report_full_11.pdf.

†For example, at a recent National People's Congress session, Premier Wen Jiabao said, “We accelerated the optimization and upgrading of the industrial structure. We energetically fostered strategic emerging industries and accelerated development of new energy, new materials, biomedicines, high-end equipment manufacturing and new-energy vehicles, and we sped up pilot projects and demonstrations for integrating the telecommunications network, the radio and television broadcasting network, and the Internet, along with the development of cloud computing and the Internet of Things.” Wen Jiabao, “Report on the Work of the Government,” Remarks delivered at the Fifth Session of the Eleventh National People's Congress (March 5, 2012). OSC ID: CPP20120315968204. <http://www.opensource.gov>.

‡See IBM, “What is Cloud Computing?” (undated). <http://www.ibm.com/cloud-computing/us/en/what-is-cloud-computing.html>. For a more technical definition, see Peter Mell and Timothy Grance, *The NIST [National Institute of Standards and Technology] Definition of Cloud Computing* (Gaithersburg, MD: National Institute of Standards and Technology, September 2011). <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>.

Industry and Information Technology announced that the central government would launch cloud computing pilot programs in five cities: Beijing, Shanghai, Shenzhen, Hangzhou, and Wuxi.⁹⁵ In May 2011, the National Development and Reform Commission, the Ministry of Finance, and the Ministry of Industry and Information Technology approved \$235.5 million in funding for 12 projects in the five pilot cities.⁹⁶ Provincial and local governments have also begun supporting their own cloud computing initiatives. Cloud computing centers reportedly exist in more than 30 cities and municipalities, ranging from metropolises such as Guangzhou and Chongqing to smaller cities such as Lanzhou in Gansu Province and Zhuozhou in Hebei Province.⁹⁷

Assessment

This high level of investment will help the Chinese government achieve its goals in the field. According to testimony from Timothy K. Harder, director, EMC Cloud Infrastructure Division, “China is a late entrant to the field of Cloud Computing but any detrimental position caused by their delay in execution is quickly being offset by their current pacing and sheer volume of investment.”⁹⁸ The time frame for the technology’s maturation in China is problematic to predict. However, a Ministry of Industry and Information Technology official asserted that China’s cloud technology is on track for wide-scale application by the 13th Five-Year Plan (2016–2020).⁹⁹

Measuring innovation in cloud computing is particularly challenging. In the field of supercomputing (discussed in the first case study, above), measuring the calculations a machine can conduct per second provides an objective, reliable, and repeatable (if not ultimately definitive) way to assess performance. This allows scientists to rank individual systems.¹⁰⁰ Conversely, in cloud computing, much of the technology itself is relatively pedestrian but nevertheless defies easy classification. Cloud services, particularly because they are geared toward enterprises and consumers, more closely resemble a commodity. Innovation in the field will likely rely upon providing the most flexible range of applications and services, with the highest level reliability, *at the best price*. For example, it might well require innovation somewhere—either in supply chain management, business model, or hardware configuration—for a cloud firm to offer the precise storage option a client needs, with a satisfactory level of “up time” (e.g., a time frame with no service disruptions), at a price materially lower than the competition. In China’s case, in addition to low labor costs, generous government subsidies, and funding to local firms (and barriers to foreign firms)¹⁰¹ introduce market distortions that obfuscate the efficiency at which cloud services are provided.

Notwithstanding these difficulties, China does appear to be innovating in select, cloud-related areas. Mr. Harder identified cooling mechanisms (cloud infrastructure generates considerable heat) and power distribution in particular.¹⁰² Interestingly, Chongqing’s decision to create a cloud center (described in the “Cloud Control” text box below), given the municipality’s heat and humidity, may well require advancements in environmental control in order to remain operable.¹⁰³

Cloud Control

Although cloud markets are large and growing, there may be other imperatives for China's emphasis on the technology. For example, cloud computing is particularly useful for purposes of surveillance and censorship.* According to Dale Sartor, an engineer at the U.S. Department of Energy's Lawrence Berkeley National Laboratory who recently toured numerous Chinese data-centers:

I got a sense that the cloud is going to be huge in China for both efficiency reasons as well as the ability to control. If everything was cloud computing and the government owns it, it's much easier to keep your finger on the Internet and other issues than [by using] a very distributed model.¹⁰⁴

This is consistent with comments in 2010 from a leading Chinese propagandist, intended for internal consumption but briefly released on the Internet, stating that “[w]hoever seizes [the] cloud will control the future.”¹⁰⁵ As Mr. Harder testified, many cloud assets in China “are effectively state controlled and can be shut off at any time,” and the storage of data or provision of service in “these centralized points of management ... offer an easier footprint to censor.”¹⁰⁶ Notably, he identified China Unicom, Huawei, and ZTE as leading players in China's cloud computing industry.¹⁰⁷

Surveillance and censorship, however, affect cloud business prospects. The best example of this is a controversial cloud computing center in Chongqing. The municipal government and the Chongqing Economic and Information Technology Commission first proposed in October 2010 to create an “International Off-shore Cloud Computing Special Management Zone,”¹⁰⁸ the largest such center in the country.¹⁰⁹ The zone reportedly uses its own dedicated fiber optic cable that is not connected to China's domestic Internet, escaping the “Great Firewall” that restricts and censors sensitive information from China's Internet users.¹¹⁰ According to a *Southern Weekend* report,[†] Chongqing officials only received approval for the facility after several rounds of lobbying in Beijing, overcoming central government concerns that such open access to the Internet might compromise China's “in-

*Notably, Fan Binxing, the “father” of the “Great Firewall of China,” reportedly advised the city of Chongqing on cloud-related police applications. Jonathan Ansfield and Ian Johnson, “Ousted Chinese Leader Is Said to Have Spied on Other Top Officials,” *New York Times*, April 26, 2012. <http://www.nytimes.com/2012/04/26/world/asia/bo-xilai-said-to-have-spied-on-top-china-officials.html>.

†This report has been removed from the *Southern Weekend* website. According to a BBC Monitoring report, this was done in response to an “official order.” See BBC Monitoring, “China's ‘Special Internet Zone’ Fuels Anger Over Censorship,” June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.

Cloud Control—Continued

formation security.”*¹¹¹ To satisfy the Ministry of Industry and Information Technology and the Ministry of State Security, the Internet in the special zone apparently employs infrastructure physically isolated from the rest of the country’s networks.¹¹² Only authorized personnel, after undergoing strict security procedures, are allowed into the facility.¹¹³

Moreover, the zone will deal only with offshore businesses and will not be permitted to have any economic relations with domestic firms or individuals.¹¹⁴ After obtaining a license for telecommunications and data management, transnational corporations within the zone will be allowed to conduct offshore data processing without inspection by authorities, though their China-related business will still be subject to scrutiny.¹¹⁵ According to the *Southern Weekend* report, government regulations stipulate that under normal circumstances, all large-scale foreign enterprises providing telecommunications and data transfer services must undergo an information inspection by the National Gateway Bureau of the Ministry of Industry and Information Technology.¹¹⁶ However, these laws were waived for the Chongqing cloud computing center in the interest of western China’s economic development.

Case Study: Defense Systems

China’s defense industries have an inconsistent performance record generally and a weak record on innovation specifically. The largely indigenous development of nuclear, ballistic missile (and space launch vehicle), and satellite capabilities stand out as “pockets of excellence” among a group of otherwise modest historical achievements for China’s defense industrial base. Although China’s shipbuilding industry has improved dramatically over the past decade, and its aviation industry has made some important strides in recent years, many Chinese weapons systems remain less capable than those produced in the United States, Russia, Japan, and Europe.¹¹⁷ Perhaps the greatest obstacle to China’s success in the defense sector is inefficiencies in its defense industrial base, composed primarily of ten large, state-owned conglomerates, although there are signs of improved performance.† China’s leadership places a high priority upon defense sector reform, as evidenced by frequent visits, strong funding, and periodic state-led reorganizations.¹¹⁸

* According to Adam Segal, a cybersecurity expert at the Council on Foreign Relations, “The US government, in its International Strategy for Cyberspace, says it will promote a digital infrastructure that is ‘open, interoperable, secure, and reliable’ while supporting international commerce, strengthening security, and fostering free expression.” For China, however, the term “information security” not only implies the protection of communications and other critical networks but also includes regulating content. The central government fears that communications technologies could foment instability, and thus controlling Internet content is a matter of legitimacy and political control. For more information, see Adam Segal, “China’s cyber stealth on new frontline,” *Financial Review*, March 30, 2012. http://afr.com/p/lifestyle/review/china_cyber_stealth_on_new_frontline_z6YvFR0mo3uCS7zJvCEq6H#.

† As indicated, for example, by an increase of defense-related patents. See *Jiefangjun Bao* online (Beijing), “Annual Increase of National-Defense Patents Reaches 34.9 Percent,” September 4, 2012. OSCID: CPP20120905702010. <http://www.opensource.gov>.

Investment

China's defense budget has increased every year for over two decades. While the budget purports to include research and development expenditures, which are central to evaluating China's prospects for innovating, substantial spending within the defense industrial base is not accounted for.¹¹⁹ (For fuller treatment of China's defense budget in 2012, see chap. 2, sec. 1: "Military and Security Year in Review," in this Report). According to outside estimates, military R&D may comprise from 15 percent to 28 percent of China's total national R&D expenditures.¹²⁰ Measuring these funds provides persistent challenges, but scientific and technical publication records over the past two decades reveal at least nine funding vehicles administered by the State Administration for Science, Technology, and Industry for National Defense, which oversees aspects of the defense industrial base, and the People's Liberation Army's General Armaments Department, which handles military procurement.¹²¹

Assessment¹²²

It is difficult or impossible to make definitive assessments about the level of innovation in China's various military weapons systems, particularly on the sole basis of open source information. However, available development information and performance assessments can offer some insight into where certain systems fit within the categories enumerated in the "Innovation Taxonomy" textbox, above.* (These categories include duplicative imitation, creative imitation, creative adaptation, incremental innovation, architectural innovation, component or modular innovation, and radical innovation.)¹²³

The aviation sector offers several examples. The Chinese J-11 fighter, a licensed production of Russia's Sukhoi-27 based on kits, might be considered *creative imitation*. The Chinese J-11B, an unauthorized production based on the same Russian design, might be considered *creative adaptation* on the basis of reported modifications for Chinese-designed weaponry and avionics.¹²⁴ With respect to China's developmental fighter programs, the J-15 and J-20, less information is available. However, the J-15, probably designed for use on China's aircraft carrier, appears to be influenced heavily by the Russian Sukhoi-33¹²⁵ and may also share features with China's J-11B. The J-20 appears to be *sui generis*, though espionage may have played a substantive role in its development, which, if true, would mitigate the aircraft's level of innovativeness.† Speculatively, the J-15 could also demonstrate *creative adaptation* and the J-20 *architectural innovation*.

For one of China's most potentially notable advancements in the defense sphere, the antiship ballistic missile, which targets moving ships at sea, classification is less straightforward. On the one hand, guided ballistic missiles and maneuverable warheads; sophisticated intelligence, surveillance, and reconnaissance assets; and antiship missiles (although of the cruise missile variety) with seeking capa-

* Refer to the "Assessing Chinese Innovation" subsection, included in the chapter's main text.

† For further details, see chapter 2, section 1: "Military and Security Year in Review," in this Report.

bilities already existed at the outset of the antiship ballistic missile program.* Integrating these technologies, a severe engineering challenge, is suggestive of *architectural innovation*. On the other hand, there is no functional precedent for the antiship ballistic missile, and just the successful integration of existing components may have required impressive technological breakthroughs or innovation. In that sense, the program approaches the threshold of a Chinese example of *radical innovation*.

Implications for the United States

If China continues its strategy of “innovation mercantilism,” it will jeopardize “the future of the entire global trading system, especially as developing nations become convinced that the ‘Beijing consensus’ of state-directed capitalism and import substitution trade policies are the quickest path to economic growth,” according to Dr. Atkinson.¹²⁶ Such a strategy would turn trade into a zero-sum game in which nations that follow the free-market principles of the World Trade Organization (WTO) would be at a disadvantage.

Unless China abandons its practice of illegally obtaining U.S. technology and enhances its enforcement of intellectual property laws in China, the United States will continue to suffer revenue and job losses in some of its critical export industries: business software, motion pictures, communications, information processing hardware, music and entertainment software, aerospace, and many capital goods industries, such as machine tools and transportation equipment.

So far, China’s successes have come largely in the form of “engineering-based innovation,” “second-generation innovation,” “technological development,” or “creative imitation,” all terms used to characterize modest or moderate achievements in innovation. China’s leadership aspires to push its industries, by 2040, to the point where they can consistently produce “leapfrogging” (or what might be called “radical”) innovations, with all the attendant commercial and military benefits such developments would provide. The extent to which China is successful in this endeavor will affect the U.S.’s global science and technology standing, economic performance, and security posture in that time frame and beyond.

Conclusions

- The central government of China has assigned a high priority within its industrial policy planning on developing a culture of innovation. The intent is to replace low-wage, resource-intensive manufacturing with high value-added production.
- Funding for research and development is increasing, and China has invested heavily in enhancing its science and engineering education. This is apparent from the large increase in university graduates with science and engineering degrees. But China still lacks a financing system to support entrepreneurs and the will-

* Chinese writings suggest that the U.S. Pershing II ballistic missile guidance system influenced the Chinese antiship ballistic missile program. See Mark Stokes, “China’s Evolving Conventional Strategic Strike Capability” (Arlington, VA: Project 2049 Institute, September 14, 2009), p. 16.

ingness to enforce intellectual property protections, two requirements for an innovative society.

- China depends on industrial espionage, forced technology transfers, and piracy and counterfeiting of foreign technology as part of a system of “innovation mercantilism.” China can avoid the expense and difficulty of basic research and unique product development by obtaining what it needs illegally. China’s success is evident, in part, by the large increase in the U.S. trade deficit with China on advanced technology products.
- China has also successfully developed a capacity for “second-generation innovation.” As a result, U.S.-based multinational companies increasingly use China as a center for product research, engineering, and manufacturing while retaining design, marketing, and sales within the United States. This has allowed some U.S. companies to remain price competitive but has led to the loss of manufacturing jobs in the United States.
- China’s leadership has implemented extensive infrastructure, including formal plans and funding vehicles, to invest in and promote research and development and innovation. The plans have ambitious goals and clearly articulated time lines. Investments and efforts are diffused among numerous categories of special projects and technologies.
- Historically, China’s heavy emphasis on central planning has at times disadvantaged “bottom-up” entrepreneurial efforts or curiosity-driven research, but over the past ten years China’s innovation planning has become diffuse.
- China’s investments in science and technology focus overwhelmingly upon experimental development over applied and basic research. This emphasis helps in China’s rapid commercialization of products but raises questions about Chinese scientists’ ability to produce “leapfrogging” innovations, as directed by China’s planning documents.
- Local governments in China fund about half of the country’s research and development activities. This funding comes along with expectations that research will focus on technologies with more immediate, practical benefits.

Supercomputing Conclusions¹²⁷

- The Chinese government views progress in the field of supercomputing, as one Ministry of Science and Technology statement put it, as an “important symbol to measure and reflect the technological competitiveness of a country’s comprehensive national strength, the strategic high ground of the world’s high-tech fields.”
- China is innovating in select areas of supercomputing. The nation’s recent impressive achievements in the sector do not suggest it is about to decisively overtake the U.S.’s leadership position. However, China has the people and resources to continue producing notable advancements.

Cloud Computing Conclusions¹²⁸

- China faces complex prospects in the cloud computing sector. Its status as a chosen technology under the 12th Five-Year Plan, and the attendant high-level leadership support and financial benefits, helps provide a favorable environment for success.
- Several issues pose obstacles to broader internal adoption as well as Chinese ambitions to ultimately export cloud services. Censorship requirements have adverse applications for domestic and foreign entities alike. Broader security questions pose another issue; as a recent *People's Daily* article put it, in the cloud, “[f]ew Chinese companies have the awareness to protect themselves at the moment.” Intellectual property protection as well as a host of legal and jurisdictional ambiguities further complicate matters.
- With respect to innovation specifically, cloud computing offers a difficult test case. Chinese entities are making circumscribed innovations in the field but that cloud technologies are heavily concentrated, by design, outside of users’ views makes complete assessment challenging.

Defense Systems Conclusions¹²⁹

- China’s technological capabilities in the defense sector have grown remarkably over the past two decades. Consequently, China’s military has access to increasingly impressive military platforms, munitions, and support systems. China’s efforts in the field are well funded and receive a high level of leadership support.
- Assessing the level of innovation in China’s new military hardware remains difficult. China’s military capabilities have been uneven for decades, with pockets of excellence in some areas (e.g., nuclear weapons and delivery systems in the 1960s) and persistent flaws in other areas (e.g., turbofan jet engines through today). However, the Chinese defense industrial base is on a continually improving trajectory. Innovation will probably not occur uniformly, but pockets of innovation are arising.

RECOMMENDATIONS

The Commission recommends that:

- Congress ensure that the Office of the U.S. Trade Representative and the Interagency Trade Enforcement Center have sufficient resources so that the agencies can bring the necessary challenges against Chinese “innovation mercantilism” before the WTO.
- Congress request that the administration assess and report to Congress on possible vulnerabilities for U.S. government and private sector parties in data storage and the provision of web services, such as cloud computing, in terms of national and economic security interests. Such assessment should focus on the provision of such services by Chinese companies and whether specific mitigation, abatement, or notice provisions are necessary.
- Congress request that the National Academy of Sciences prepare a comprehensive study assessing China’s strategies, policies and programs to become an innovative society and enhance its indigenous innovation. In conducting this study, the academy shall identify specific actions taken by the Chinese government to achieve the innovation goals outlined in the 12th Five-Year Plan. The academy shall include an evaluation of those leading-edge technologies where Chinese capabilities are comparable to or exceed those of the United States and provide appropriate measurement metrics. In addition, the academy shall identify the extent to which industrial espionage has been used as a tool to advance China’s interest with specific examples, where possible. The academy shall also report on the extent to which U.S. companies have assisted in China’s technological development.

ENDNOTES FOR CHAPTER 5

1. U.S. National Science Foundation, *Science and Engineering Degrees: 1966–2006* (Arlington, VA: NSF–08–321, 2008); U.S. Census Bureau, *The 2012 Statistical Abstract* (Washington, DC: U.S. Department of Commerce). http://www.census.gov/compendia/statab/cats/science_technology/students_and_degrees_conferred.html.
2. U.S. Census Bureau, “U.S. Trade Balance with China in Advanced Technology Products, 2002–2011” (Washington, DC: U.S. Department of Commerce, 2012). <http://www.census.gov/foreign-trade/statistics/product/atp/select-ctryatp.html#2012>.
3. Office of the United States Trade Representative, *2011 Report to Congress on China’s WTO [World Trade Organization] Compliance* (Washington, DC: U.S. Trade Representative, December 2011), p. 86. “China has continued to demonstrate little success in actually enforcing its laws and regulations in the face of the challenges created by widespread counterfeiting, piracy and other forms of infringement.”
4. Gov.cn, “China Issues S&T [science and technology] Development Guidelines” (Beijing, China: February 9, 2006). http://www.gov.cn/english/2006-02/09/content_183426.htm. Also see chapter 1, section 2, of this Report, “Chinese State-owned and State-controlled Enterprises.”
5. James McGregor, *China’s Drive for Indigenous Innovation: A Web of Industrial Policies* (Washington, DC: APCO Worldwide, July 28, 2010). http://www.uschamber.com/sites/default/files/reports/100728chinareport_0.pdf.
6. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—A Progress Report*, testimony of Robert Atkinson, May 12, 2012.
7. James McGregor, *China’s Drive for Indigenous Innovation: A Web of Industrial Policies* (Washington, DC: APCO Worldwide, July 28, 2010). http://www.uschamber.com/sites/default/files/reports/100728chinareport_0.pdf.
8. Cong Cao, Richard P. Suttmeier, and Denis Fred Simon, “China’s 15-year science and technology plan,” *Physics Today* (December 2006): 38–43.
9. Lisa Daniel, “DOD [Department of Defense] Needs Industry’s Help to Catch Cyber Attacks, Commander Says,” *Armed Forces Press Service*, March 27, 2012, <http://www.defense.gov/news/newsarticle.aspx?id=67713>.
10. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—A Progress Report*, testimony of Robert Atkinson, May 12, 2012.
11. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—A Progress Report*, testimony of Daniel Breznitz, May 12, 2012.
12. Daniel Breznitz and Michael Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China* (New Haven, CT: Yale University Press, 2011), pp. 196, 209.
13. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—A Progress Report*, testimony of Daniel Breznitz, May 12, 2012; Daniel Breznitz and Michael Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China* (New Haven, CT: Yale University Press, 2011), pp. 196, 210.
14. Robert D. Atkinson, “Enough Is Enough: Confronting Chinese Innovation Mercantilism” (Washington, DC: Information Technology and Innovation Foundation, February 2012). <http://www.itif.org/publications/enough-enough-confronting-chinese-innovation-mercantilism>.
15. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.
16. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.
17. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 11. http://www.uscc.gov/research_papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.
18. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 42. http://www.uscc.gov/research_papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf; Representatives of the Ministry of Science and Technology, and

the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

19. Representatives of the American embassy in Beijing, meeting with Commissioners, Beijing, China, May 21, 2012.

20. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 42. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

21. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 43. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

22. Andrew Erickson and Gabe Collins, "Spaceplane Development Becomes a New Dimension of Emerging U.S.-China Space Competition," *China SignPost* 62 (August 16, 2012). <http://www.chinasignpost.com/2012/08/spaceplane-development-becomes-a-new-dimension-of-emerging-u-s-china-space-competition/>.

23. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), pp. 7, 84. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

24. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 8. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

25. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Denis Fred Simon, May 10, 2012.

26. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

27. Representatives of Changzhou University, meetings with Commissioners, Changzhou, China, May, 22, 2012.

28. Evan A. Feigenbaum, *China's Techno-Warriors* (Stanford, CA: University of California Press, 2003), pp. 141–3.

29. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), pp. 27–8. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

30. National Basic Research Program of China, "Profile of 973 Program" (Beijing, China: undated). <http://www.973.gov.cn/English/Index.aspx>.

31. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), pp. 28–9. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

32. National Basic Research Program of China, "Profile of 973 Program" (Beijing, China: undated). <http://www.973.gov.cn/English/Index.aspx>.

33. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.

34. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

35. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 36. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

36. Xinhua, "China launches 12 programs to attract talents," November 11, 2011. http://www.chinadaily.com.cn/china/2011-11/11/content_14081037.htm.

37. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012; Cheng Li, "Li Yuanchao" (Washington, DC:

The Brookings Institution, undated). http://www.brookings.edu/about/centers/china/top-future-leaders/li_yuanchao.

38. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), pp. 37–8. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

39. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

40. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.

41. Lee Hsien Loong, "China and the World—Prospering and Progressing Together," Remarks to the Chinese Communist Party's Central Party School (Beijing, China, September 10, 2012).

42. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.

43. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.

44. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Kathleen A. Walsh, May 10, 2012.

45. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Kathleen A. Walsh, May 10, 2012.

46. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.

47. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 8. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

48. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—A Progress Report*, testimony of Robert Atkinson, May 12, 2012.

49. Steve Lohr, "When Innovation, Too, Is Made in China," *New York Times*, January 1, 2011, http://www.nytimes.com/2011/01/02/business/02unboxed.html?_r=0.

50. Mark Liang, "Chinese Patent Quality: Running the Numbers and Possible Remedies," *The John Marshall Review of Intellectual Property Law* (Chicago, IL: The John Marshall Law School, 2012). <http://www.jmls.edu/honors/ripl/symposium/chinese-quality-control-liang.pdf>; IPFinance, "Patent Data and Innovation: Once Again, So Much and So Little," October 10, 2010. <http://ipfinance.blogspot.com/2010/10/patent-data-and-innovation-once-again.html>.

51. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.

52. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.

53. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

54. Xu Jun, "Innovating companies severely hindered by systematic drag factors," *Global Times* (China), August 26, 2012. <http://www.globaltimes.cn/content/729159.shtml>.

55. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Kathleen A. Walsh, May 10, 2012.

56. Representatives of the Ministry of Science and Technology, and the Chinese Academy of Science and Technology for Development, meetings with Commissioners, Beijing, China, May 21, 2012.

57. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 128. <http://www.uscc.gov/research>

- papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf*.
58. Representatives of Changzhou Institute of Advanced Manufacturing Technology, meetings with Commissioners, Changzhou, China, May 22, 2012.
59. Representatives of Suzhou Municipal Government, meetings with Commissioners, Suzhou, China, May 23, 2012.
60. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 16. http://www.uscc.gov/research_papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.
61. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.
62. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 13. http://www.uscc.gov/research_papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.
63. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 29. http://www.uscc.gov/research_papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.
64. Cui Xinwen, ed., “Chang Wanquan stresses innovative development of weaponry and equipment,” *PLA [People’s Liberation Army] Daily*, August 6, 2012. http://eng.chinamil.com.cn/news-channels/china-military-news/2012-08/06/content_4983689.htm.
65. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.
66. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.
67. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.
68. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Richard P. Suttmeier, May 10, 2012.
69. Kevin Wale, “Automotive Innovation in China: The View from General Motors,” in *Three Snapshots of Chinese Innovation*, *McKinsey Quarterly* (February 2012). http://www.mckinseyquarterly.com/Three_snapshots_of_Chinese_innovation_2918.
70. Representatives of Mettler Toledo (Changzhou) Measurement Technology, Ltd., meetings with Commissioners, Changzhou, China, May 23, 2012.
71. Representatives of Black & Decker (Suzhou) Precision Manufacturing, meetings with Commissioners, Suzhou, China, May 23, 2012.
72. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Thomas G. Mahnken, May 10, 2012.
73. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Thomas G. Mahnken, May 10, 2012.
74. Xinhua, “President Hu Pins Hope on Innovations,” June 11, 2012. http://news.xinhuanet.com/english/china/2012-06/11/c_131645365.htm.
75. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, testimony of Richard P. Suttmeier, May 10, 2012.
76. Tai Ming Cheung, Thomas G. Mahnken, and Andrew L. Ross, “Frameworks for Analyzing Chinese Defense and Military Innovation” (San Diego, CA: University of California Institute of Global Conflict and Cooperation, project on the Study of Innovation and Technology in China, *Policy Brief 27*, September 2011), p. 79. <http://igcc.ucsd.edu/assets/001/502618.pdf>.
77. Representatives of Changzhou University, meetings with Commissioners, Changzhou, China, May, 22, 2012.

78. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.
79. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.
80. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.
81. Chinese Academy of Sciences, *2011 Annual Report* (Beijing, China, Computer Network Information Center, June 25, 2012), p. 21. <http://english.cnica.ac.cn/rp/201206/U020120625512393979271.pdf>.
82. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Richard P. Suttmeier, May 10, 2012.
83. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.
84. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.
85. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.
86. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Earl C. Joseph II, May 10, 2012.
87. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.
88. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.
89. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.
90. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, testimony of Denis Fred Simon, May 10, 2012.
91. APCO Worldwide, *China's 12th Five-Year Plan: How it actually works and what's in store for the next five years* (Washington, DC: December 10, 2010), p. 3. http://apcoworldwide.com/content/PDFs/Chinas_12th_Five-Year_Plan.pdf.
92. Xinhua, "China Investing Big in Cloud Computing Technology," June 29, 2011. OSC ID: CPP20110629968062. <http://www.opensource.gov>.
93. IDC, "Public IT [information technology] Cloud Services Spending to Reach \$72.9 Billion in 2015, Capturing Nearly Half of Net New Spending Growth in Five Key Product Segments, According to IDC" (Framingham, MA: Press Release, June 20, 2011). <http://www.idc.com/getdoc.jsp?containerId=prUS22897311>.
94. Xinhua, "660 mln yuan injected into cloud computing research in China," November 25, 2011. http://news.xinhuanet.com/english2010/sci/2011-11/25/c_131269702.htm.
95. National Development and Reform Commission, "Notice On Cloud Computing Service Innovation Development Demonstration Pilot Work" (Beijing, China: 2010). http://www.ndrc.gov.cn/zcfb/zcfbtz/2010tz/t20101025_376673.htm.
96. Economic Information News, "China's Cloud Computing Industry Chain Output Value to Reach 200 Billion In 3 Years," Xinhua, May 4, 2011. http://news.xinhuanet.com/fortune/2012-05/04/c_123075360.htm; *Want China Times* (Taiwan), "Chinese Government To Announce Cloud Computing Plan," May 6, 2012. <http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20120506000057&cid=1201>.
97. *China High Tech News*, "All Parts Scrambling For the Trillion RMB 'Cloud Base' Cake," December 5, 2011. <http://tech.sina.com.cn/it/2011-12-05/15446427542.shtml>.
98. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012.
99. Xinhua, "660 mln yuan injected into cloud computing research in China," November 25, 2011. http://news.xinhuanet.com/english2010/sci/2011-11/25/c_131269702.htm.

100. Top500.org, "Top 500 Supercomputer Sites" (undated). <http://www.top500.org/lists>.
101. Business Software Alliance, *Lockout: How a New Wave of Trade Protectionism Is Spreading through the World's Fastest-Growing IT [information technology] Markets—and What to Do about It* (Washington, DC: June 2012), p. 11. http://www.bsa.org/~media/Files/Policy/Trade/BSA_Market%20Access_Report_FINAL_WEB_062012.ashx.
102. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012.
103. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012.
104. Quoted in Patrick Thibodeau, "China building a city for cloud computing," *Computerworld*, February 7, 2011. http://www.computerworld.com/s/article/9208398/China_building_a_city_for_cloud_computing.
105. U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington DC: U.S. Government Printing Office, November 2010), p. 221.
106. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012.
107. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China's Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012.
108. BBC Monitoring, "China's 'Special Internet Zone' Fuels Anger Over Censorship," June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.
109. Chongqing Evening News, "Chongqing Liangjiang (Two Rivers) Area begins construction of country's largest supercomputing center," April 7, 2011. <http://www.cq.gov.cn/today/news/302930.htm>.
110. "Nanfang Zhoumo" (*Southern Weekend*) online, "Chongqing 'Cloud Special Zone' To Allow Censorship-Free Access to Internet," June 16, 2011. OSC ID: CPP20110620787013. <http://www.opensource.gov>. The Chinese language version is available at http://farm4.static.flickr.com/3115/5859983209_f1e84f9b5d_o.jpg.
111. "Nanfang Zhoumo" (*Southern Weekend*) online, "Chongqing 'Cloud Special Zone' To Allow Censorship-Free Access to Internet," June 16, 2011. OSC ID: CPP20110620787013. <http://www.opensource.gov>. The Chinese language version is available at http://farm4.static.flickr.com/3115/5859983209_f1e84f9b5d_o.jpg.
112. BBC Monitoring, "China's 'Special Internet Zone' Fuels Anger Over Censorship," June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.
113. BBC Monitoring, "China's 'Special Internet Zone' Fuels Anger Over Censorship," June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.
114. BBC Monitoring, "China's 'Special Internet Zone' Fuels Anger Over Censorship," June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.
115. BBC Monitoring, "China's 'Special Internet Zone' Fuels Anger Over Censorship," June 22, 2011. OSC ID: CPP20110622950002. <http://www.opensource.gov>.
116. "Nanfang Zhoumo" (*Southern Weekend*) online, "Chongqing 'Cloud Special Zone' To Allow Censorship-Free Access to Internet," June 16, 2011. OSC ID: CPP20110620787013. <http://www.opensource.gov>.
117. James Mulvenon and Rebecca Samm Tyroler-Cooper, "China's Defense Industry on the Path to Reform" (Washington, DC: Defense Group Inc, Report Prepared for the U.S.-China Economic and Security Review Commission, October 2009). http://www.uscc.gov/researchpapers/2009/DGI%20Report%20on%20PRC%20Defense%20Industry%20-%20Final%20Version%20_with%20USCC%20seal_%2002Nov2009%20_2.pdf.
118. Tai Ming Cheung, "Rejuvenating the Chinese Defense Economy: Present Developments and Future Trends," (San Diego, CA: University of California Institute on Global Conflict and Cooperation, project on the Study of Innovation and Technology in China *Policy Brief 19*, September 2011). <http://igcc.ucsd.edu/assets/001/502619.pdf>.
119. Information Office of the State Council, *China's National Defense in 2008* (Beijing, China: January 2009), pp. 66–7; Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington, DC: U.S. Department of Defense, 2012), p. 6.
120. Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness" (Arlington VA: Centra Technology Inc., 2011), p. 116. <http://www.uscc.gov/research>

papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

121. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 116. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

122. The Commission thanks Dr. Tai Ming Cheung for helpful feedback on this subsection.

123. Tai Ming Cheung, Thomas G. Mahnken, and Andrew L. Ross, “Frameworks for Analyzing Chinese Defense and Military Innovation” (San Diego, CA: University of California Institute of Global Conflict and Cooperation, project on the Study of Innovation and Technology in China, *Policy Brief 27*, September 2011), p. 79. <http://igcc.ucsd.edu/assets/001/502618.pdf>.

124. *Sinodefence*, “Jian-11 Multirole Fighter Aircraft,” February 20, 2009 (updated). <http://www.sinodefence.com/airforce/fighter/j11.asp>; Carlo Kopp, “Shenyang J-11B/BH/BS/BSH Flanker B/C+,” *Air Power Australia*, April 2011 (updated). <http://www.ausairpower.net/APA-SinoFlanker.html>.

125. Gabe Collins and Andrew Erickson, “China’s J-15 No Game Changer,” *Diplomat* (Tokyo), June 23, 2011. <http://thediplomat.com/flashpoints-blog/2011/06/23/china%E2%80%99s-j-15-no-game-changer/>.

126. Robert D. Atkinson, “Enough Is Enough: Confronting Chinese Innovation Mercantilism” (Washington, DC: Information Technology & Innovation Foundation, February 2012), p. 6. <http://www.itif.org/publications/enough-enough-confronting-chinese-innovation-mercantilism>.

127. “*Guo Jia Chao Ji Ji Suan Shen Zhen Zhong Xin Zheng Shi Qi Dong Jian She*” (Shen Zhen National Supercomputing Center Officially Begins Construction) (Beijing, China: Ministry of Science and Technology, November 23, 2009). http://www.most.gov.cn/kjbgz/200911/t20091120_74300.htm; U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Horst D. Simon, May 10, 2012.

128. U.S.-China Economic and Security Review Commission, *Hearing on Assessing China’s Efforts to Become an Innovation Society—a Progress Report*, written testimony of Timothy K. Harder, May 10, 2012; Renee Berry and Matthew Reisman, *Policy Challenges of Cross-Border Cloud Computing* (Washington, DC: U.S. International Trade Commission, May 2012), pp. 25–7. http://www.usitc.gov/journals/Policy_Challenges_of_Cross-border_Cloud_Computing_rev.pdf; *China Daily* (Beijing), “Firms should watch out for Internet threats,” August 13, 2012. <http://english.people.com.cn/90778/7908299.html>; and Michael Mudd, “Securing the Cloud,” *China Brief*, April 2012, p. 19. <http://web.resource.amchamchina.org/cmsfile/2012/04/05/10146cf6d8e342f0c8214a4b995891b0.pdf>.

129. Micah Springut, Stephen Schlaikjer, and David Chen, “China’s Program for Science and Technology Modernization: Implications for American Competitiveness” (Arlington VA: Centra Technology Inc., 2011), p. 109. http://www.uscc.gov/research/papers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

CHAPTER 6

CHINA'S POLITICAL TRANSITIONS IN 2012

Introduction

The year 2012 has been a turbulent one for politics in the People's Republic of China (PRC). The country saw its greatest open political crisis in a generation, with the very public downfall of Chinese Communist Party (CCP) Politburo member Bo Xilai and the accompanying suspended death sentence handed down to his wife, Gu Kailai. This shocking story—involving an alleged murder plot, accusations of corruption, and an alleged defection attempt by a senior police official—shattered the carefully constructed façade of unity fostered by the state's propaganda organs and revealed rifts within the elite circles of the Communist Party.

This drama took place against the backdrop of preparations for a major leadership succession. The 18th National Congress of the Chinese Communist Party, scheduled to convene on November 8, 2012, is expected to produce only the second transition of power since the death of paramount leader Deng Xiaoping in 1997. This transition to a “Fifth Generation” of party leadership will test both the procedures for orderly succession established by the CCP over the past two decades as well as the ability of the party's senior ranks to overcome factional divides and coalesce under a new collective leadership.

Chinese Politics in the Lead-up to the 18th Party Congress *The Bo Xilai Affair and its Aftermath*

Until March 2012, Bo Xilai was concurrently Chongqing CCP secretary and a member of the Politburo. Mr. Bo had previously served as minister of Commerce (2004–2007) and as governor of Liaoning Province (2001–2004), where he received praise for his successes in promoting economic growth. As Chongqing party secretary, Mr. Bo rose in popularity on the strength of his “Chongqing Model” of economic development, which focused on reducing disparities of wealth and providing more extensive social services. Mr. Bo's administration was also known for its “*Chang Hong, Da Hei*” (“Sing Red, Strike Black”) campaign, which promoted a revival of revolutionary-era Communist culture while simultaneously conducting a very public crackdown on crime and corruption.¹ As a princeling (see discussion on pages 438–439) popularly known for his economic successes, charisma, and promotion of Maoist “red” propaganda, Mr. Bo was frequently mentioned as a top contender to become a member of the Politburo Standing Committee in the 18th Party Congress.²

However, a series of events unfolded in Sichuan Province beginning in early February 2012, which led ultimately to Mr. Bo's downfall and to China's most serious political crisis since the Tiananmen Massacre of June 1989. These events centered on Wang Lijun, the former deputy mayor and director of the Public Security Bureau for Chongqing Municipality³ and a central figure in Mr. Bo's highly publicized campaign against crime.⁴ On February 6, 2012, Mr. Wang entered the U.S. consulate in Chongqing and remained there for one day.⁵ Mr. Wang subsequently left the consulate; by various press accounts, at the time of Mr. Wang's departure there was a standoff outside the consulate between a large number of police from Chongqing (a long drive from Chengdu, and across lines of political jurisdiction), who had surrounded the building, and unidentified security personnel answering to central government authorities.⁶ It was later revealed that Mr. Wang had flown from Chengdu to Beijing on February 8 and that Qiu Jin, a deputy head of the Ministry of State Security, had flown on the same flight.⁷

These events were followed by the announcement on March 15 that the CCP Central Committee had relieved Bo Xilai of his position as Chongqing CCP secretary.⁸ Following a month during which Bo Xilai drifted in legal and political limbo, in mid-April state media outlets made the announcement that the Central Discipline Inspection Commission—the party's watchdog agency for corruption—had opened an investigation on Mr. Bo, and that his wife, Gu Kailai, and a family servant were suspects in a murder investigation.⁹ The allegations leveled against Mr. Bo were initially vague, but he was accused of having “seriously violated Party discipline, causing damage to the cause and the image of the Party and state.”¹⁰

State Propaganda Messages Surrounding the Downfall of Bo Xilai

PRC state media outlets have made a concerted effort to promote the message that the arrests of Mr. Bo and his wife were proof of the party's intent to crack down forcefully on corruption and other abuses of public office. The official Xinhua News Service described these actions as “another resolute move by the ruling CPC [Communist Party of China] to strengthen the enforcement of Party disciplines and continue to unswervingly push forward the rule of law.”¹¹ *People's Daily* claimed that the arrest of Mr. Bo and his wife “fully displays the respect for fact and the rule of law, and is entirely consistent with the Party's basic requirement of strict discipline on its members and the Party's governing philosophy of running state affairs according to law.”¹²

Messages coming down from the CCP Central Propaganda Department have also sought to forcefully deny that Bo Xilai's downfall was in any way the result of factional infighting in the elite circles of the party leadership. As stated in an editorial in the *Global Times*—a colorful nationalist newspaper owned by the

**State Propaganda Messages Surrounding the Downfall of
Bo Xilai—Continued**

CCP's official mouthpiece *People's Daily*¹³—western commentators are unable to understand the essential “harmony” of China's political system:

*Many Western analysts interpret the case [of Bo Xilai] as being related to a ‘political fight’ within the Party. There is a deeply rooted misunderstanding among Western public opinion that within the [Chinese Communist Party] two factions ... are locked in conflict. They don't believe that both the CCP and mainstream Chinese society support reforms and advocate balance between reforms, development and stability. The Western political system encourages diversity. It creates conflicting political forces through such diversity and then seeks to balance them. ... However, China's political system sets harmony as the basis of national governance. As soon as a gap arises, a set of mechanisms aimed at narrowing it and building a social consensus will start to work. ... China is not standing at a so-called political crossroad. Party members and society have reached consensus over the general direction of establishing socialism with Chinese characteristics.*¹⁴

It is clear why China's state propaganda system would attempt to deny any political element in the Bo Xilai affair and to portray it as a straightforward case of an effective CCP disciplinary system taking down rogue individuals. However, the text quoted above also hints at another emerging theme in CCP political propaganda: the effort to denigrate electoral democracy as conducive to social conflict and unsuitable for Chinese society and to promote instead the ideal of governance by virtuous and enlightened elites. This idea has sometimes been explicitly couched in terms of China's Confucian traditions,¹⁵ as with a July 2012 *New York Times* op-ed by two professors at Chinese universities who advocated political rule by “humane authority.”¹⁶ Such concepts have been actively promoted by a CCP propaganda apparatus seeking to forestall calls for democratic reform and to justify continued one-party rule in China.

The Trial of Gu Kailai

At a trial held on August 9, 2012, in the city of Hefei, Bo Xilai's wife Gu Kailai and Zhang Xiaojun, a family servant, were convicted of murder in the death of a British citizen, Neil Heywood. Mrs. Gu did not dispute the charges.¹⁷ On November 13, 2011, Mrs. Gu allegedly met Mr. Heywood in a hotel to talk over drinks, and in the course of the evening Mrs. Gu poured a poison mixture into his mouth. Mrs. Gu was given a suspended death sentence by the court. However, the hasty and scripted nature of Mrs. Gu's trial has led many observers to question the fairness of the proceedings as well as the official version of events surrounding Mr. Heywood's death.¹⁸

Four Chongqing police officers have also been charged in the case with “bending the law to show favoritism” by covering up evidence of foul play in Mr. Heywood’s death.¹⁹ On September 4, 2012, Wang Lijun, the former police chief in Chongqing, was himself charged by authorities in the city of Chengdu with “bending the law for selfish ends, defection, abuse of power and bribe-taking.”²⁰ On September 24, 2012, following a quick and uncontested trial similar to that held for Gu Kailai, Mr. Wang was sentenced to “[S]even years in prison for the charge of bending the law for selfish ends, two years in prison and deprivation of his political rights for one year for the charge of defection, two years in prison for the power abuse charge and nine years in prison for the charge of bribe-taking.”²¹

Four days after the trial of Wang Lijun, the general outline of the government’s case against Mr. Bo himself was made public. On September 28, 2012, sources in the PRC state media issued stern but vague accusations that Mr. Bo had “seriously violated Party disciplines” both in Chongqing and in earlier postings and that he had “abused his power, made severe mistakes and bore major responsibility” in the criminal cases of both Gu Kailai and Wang Lijun. Mr. Bo was also accused of unspecified acts of corruption, with the Xinhua News Service stating that he “took advantage of his office to seek profits for others and received huge bribes personally and through his family . . . His position was also abused by his wife [Gu] Kailai to seek profits for others, and the Bo family accepted a huge amount of money and property from others.”²²

The Disposition of the Bo Xilai Affair and the Scheduling of the 18th Party Congress

On the same day that state media unveiled the accusations against Bo Xilai, official sources issued the long-overdue announcement that November 8 had been set as the date for the convening of the 18th Party Congress.²³ The seventh plenary meeting of the outgoing 17th CCP Central Committee has been scheduled for November 1, with the body expected to make official the Politburo decision to convene the 18th CCP Congress on November 8. Although there are no statutory dates in the CCP constitution for the convening of this event, the congresses have traditionally been held in early to mid-autumn, most frequently in October.²⁴ This year’s delay may reflect in part serious disputes at the top echelons of the CCP regarding the leadership line-up to emerge from the Congress. The public forum for China’s last major leadership succession—the 16th CCP National Congress, held from November 8 to 14, 2002—is widely believed to have been delayed due to infighting over contentious issues such as the official retirement of Jiang Zemin, the succession of Hu Jintao as CCP general secretary, and the expansion of the Politburo Standing Committee from seven to nine members.²⁵

The concurrent announcement of the dates for the Party Congress, and of the government’s intention to charge Bo Xilai, was likely no coincidence: Resolution of the contentious Bo Xilai affair was a political prerequisite for moving forward with the

**The Disposition of the Bo Xilai Affair and the Scheduling
of the 18th Party Congress—Continued**

CCP's planned leadership succession.²⁶ The controversy surrounding Bo Xilai almost certainly deepened existing factional divides in the top party leadership, requiring extensive backroom bargaining in order to reach a consensus decision on how to adjudicate Mr. Bo's case: i.e., with a quiet demotion or retirement; with criminal charges matching those made against his wife and former police chief; etc.²⁷

As of the writing of this Report, Mr. Bo's case has not been formally adjudicated, and the timing and nature of any future legal proceedings against him are unknown.

Political Dimensions of the Bo Xilai Affair

Official PRC sources have not elaborated on the charges made against Wang Lijun related to illegal “technical reconnaissance measures,” but media sources have reported that Wang Lijun acted on orders from Bo Xilai to tap telephone conversations involving China's most senior leaders, to include CCP General Secretary Hu Jintao and other members of the Politburo.²⁸ The charges of wire-tapping, if true, may connect to the events that led to a breach between Wang Lijun and Bo Xilai. By some accounts, Wang Lijun tapped phones used by investigators “from the party's Central Commission for Discipline Inspection, which by the beginning of 2012 had stationed up to four separate teams in Chongqing, two [of them working] undercover.” These investigators were reportedly looking into “Mr. Wang's possible role in a police bribery case that unfolded ... in a Liaoning city where he once was police chief.”²⁹

Wang Lijun appears to have been the target of a corruption probe reaching back to the city of Tieling, Liaoning Province, where Mr. Wang served as the deputy head of the Public Security Bureau from 1995 to 2000.³⁰ According to veteran China-watcher Willy Lam, CCP General Secretary Hu Jintao ordered this probe in 2011 in an effort to damage the political prospects of Bo Xilai and his allies in the Shanghai/princeling faction of the party leadership.³¹ It is very plausible that Mr. Wang was a proxy target for Mr. Bo, as “launching investigations against important allies of the actual target is a typical approach in the party's history of power struggles.”³²

There are a number of reasons that Bo Xilai may have drawn the wrath of Hu Jintao or other powerful figures in Beijing. Mr. Bo's self-promotion, controversial approach to law-and-order in Chongqing, and advocacy of a neo-Maoist “Chongqing Model” of development³³—deviating from the macroeconomic policies promoted by the Hu-Wen team—may also have earned him opponents in the capital.³⁴ Furthermore, Mr. Bo's crime-busting campaign in Chongqing has been viewed by some as a thinly disguised purging of influential figures left in place by Mr. Bo's immediate predecessor, Wang Yang (currently the CCP secretary of Guangdong Province), a China Communist Youth League loyalist of Hu Jintao and a competitor of Mr. Bo's for a seat on the Politburo Standing Committee; as well as figures affiliated with Wang Yang's own

predecessor He Guoqiang, who ironically now heads up the Central Discipline Inspection Commission.³⁵ Critics of Mr. Bo's "*Da Hei*" campaign have also described it as a shakedown of wealthy businessmen to help finance the expanded social services offered by Mr. Bo's city administration as a component of the "Chongqing Model."³⁶ Disapproval from at least some senior figures in Beijing was signaled in oblique commentaries in official state media and in rare public comments from Wen Jiabao that criticized the abuses of the Cultural Revolution.³⁷

Another possibility is that Mr. Bo's effort to promote a revival of Maoist ideology—complete with Cultural Revolution-era songs and mottos, the dispatching of students and professional workers to work in the countryside, the striking out against "black elements," and a growing cult of personality around Mr. Bo himself—did not go down well among other figures in the party. The current oligarchy of the PRC is grounded heavily in the survivors and descendants of the "revolutionary families" persecuted by Mao, and Mr. Bo's campaign may have unnerved senior officials fearful of a return to the chaos and violence of the Cultural Revolution years.³⁸ Furthermore, Mr. Bo's ambition and unscrupulous tactics likely rattled a leadership circle conditioned to be distrustful of charismatic and overtly ambitious political figures: As stated by Sinologist Alice Miller of Stanford University, "[Bo's] grandstanding ... suggested a political personality unlikely to accommodate the leadership style of collective consensus-building in an oligarchy that has flourished in the Jiang Zemin and Hu Jintao eras."³⁹

The "Shanghai Clique" vs. the "League Faction"

Current CCP General Secretary Hu Jintao and former CCP General Secretary Jiang Zemin lead rival patronage networks—*cum*-political factions that compete for the direction of policy at a national level. Mr. Jiang's influence over senior personnel appointments in the 1990s led to the ascendance of the "Shanghai Clique," cadres closely connected with Mr. Jiang's administration in the Shanghai party bureaucracy and municipal government during the 1980s.⁴⁰ A partial list of prominent Jiang loyalists elevated from work backgrounds in Shanghai would include former Premier Zhu Rongji, former PRC Vice President Zeng Qinghong, former Vice Premier Huang Ju, and outgoing National People's Congress Chairman Wu Bangguo.⁴¹ In broad terms, the members of the Shanghai Clique have tended to favor policies that promote rapid economic growth—particularly in China's coastal regions—and to see growing disparities of wealth and social dislocation as inevitable outcomes of economic growth and social change.

At the 16th Party Congress in 2002, Mr. Jiang was successful in packing the new Politburo and Politburo Standing Committee (PSC) with his supporters, with five of the nine members of the PSC possessing clearly identifiable patronage ties to Mr. Jiang and his "Shanghai Clique." This five-man majority continued through the 17th Party Congress in 2007.⁴² Although Hu Jintao has been the clear first-among-equals in the elite leadership cir-

**The “Shanghai Clique” vs. the “League Faction”—
Continued**

cle of the CCP, he has shared power in a collective decision-making structure in which the majority owe their positions to Jiang Zemin and in which Mr. Jiang himself remains a very powerful figure.⁴³

The other major rival faction at the national level of the CCP is the “*Tuanpai*” or “League Faction,” which represents a key pillar of General Secretary Hu’s bureaucratic support. The group derives its name from the fact that many of General Secretary Hu’s key loyalists are veterans of service with the Chinese Communist Youth League, the official youth organization of the CCP.⁴⁴ Hu Yaobang* served as party secretary of the Youth League for over two decades; the elder Hu helped to maneuver his protégé Hu Jintao into senior positions with the Youth League, leading ultimately to Hu Jintao heading up the organization at the national level in 1984–1985.⁴⁵

General Secretary Hu’s most senior ally from the “League Faction” is Li Keqiang, who at the 2007 Party Congress was appointed to the Politburo Standing Committee and placed in position to succeed Wen Jiabao as PRC premier in 2012. Mr. Li worked in the headquarters of the Chinese Communist Youth League for 13 years, to include spending the last five of those years (1993–1998) in charge of the organization.⁴⁶ Other prominent figures in this group include Liu Yandong, a Politburo member who led the Youth League for most of the 1980s (1982–1991) before moving on to senior positions in “united front” work;⁴⁷ and Li Yuanchao, Politburo member and head of the CCP Organization Department, who served in senior positions in the Chinese Communist Youth League bureaucracy in Shanghai during the 1980s.⁴⁸

In comparison to the Shanghai Clique officials raised up by Jiang Zemin—who have tended to hail from China’s more economically dynamic southeastern coastal regions—the members of the Youth League Faction tend to share records of work experience in China’s poorer, inland provinces. With some exceptions they also tend to have less experience with finance and international trade issues,[†] their career experiences centered instead

* Although Deng Xiaoping wielded more de facto power, Hu Yaobang served as the titular senior leader of the CCP for most of the 1980s (CCP chairman, 1981–1982; and CCP general secretary, 1982–1987). Although he was elevated to high office as a close political ally of Deng Xiaoping, Mr. Hu later lost favor with Mr. Deng and other CCP Party Elders and was replaced as party general secretary in 1987. Following Hu Yaobang’s death in April 1989, student demonstrations honoring his legacy served as the catalyst for what ultimately grew into the 1989 Tiananmen Square protest movement.

† Two of the most senior officials of the League Faction—Li Keqiang and Li Yuanchao, both expected to hold seats in the Politburo Standing Committee after the 18th Party Congress—provide notable exceptions to the lack of economic study and/or experience in this factional grouping. Li Keqiang holds a PhD in Economics from Beijing University, and in 1994 was awarded China’s “prestigious Sun Yafeng Award [for] the best economic essay of the year.” Li Yuanchao holds a master’s in economic management from Beijing University. See Cheng Li, “China’s Two Li’s: Frontrunners in the Race to Succeed Hu Jintao,” *China Leadership Monitor* 22 (Autumn 2007). Additionally, both men have gained exposure to macroeconomic policy issues as provincial CCP secretaries and through positions in the Politburo and central party apparatus.

**The “Shanghai Clique” vs. the “League Faction”—
*Continued***

on CCP bureaucratic functions such as propaganda, personnel, and legal affairs.⁴⁹ The backgrounds of these cadres in China’s poorer, inland regions makes them natural ideological allies for the Hu-Wen team’s stated policies to pursue more balanced and equally distributed economic development intended to reduce social tensions, ensure “social stability,” and promote the building of a “Socialist Harmonious Society” by the year 2020.⁵⁰

Despite efforts by China’s leaders to carefully script CCP elite politics, the two factions have at times engaged in political infighting that leaked out into public view.⁵¹ There is strongly suggestive evidence that the downfall of Politburo member Bo Xilai was a result, at least in part, of intrigue connected to this year’s political transition. However, despite serious policy differences and personality clashes, the two elite groups share a common goal of preserving the CCP’s absolute hold on political power in China.

**The Backgrounds and Experiences of China’s Emerging
Next-generation Leaders**

“Princelings” in CCP Leadership Politics

One of the most striking factors in PRC politics today is the rising number of “princeling” cadres in the highest ranks of the party. “Princelings” are the children of senior Communist Party officials, who often enjoy a privileged position in Chinese society due to their family backgrounds, personal connections, and political influence.⁵² In the full Politburo in office from 2007 to 2012, seven out of 25 members were identifiable as princelings.⁵³ In the list of prominent, short-list contenders for a seat on the 18th Politburo Standing Committee, at least six candidates—Xi Jinping, Liu Yandong,⁵⁴ Li Yuanchao,⁵⁵ Wang Qishan,⁵⁶ Yu Zhengsheng,⁵⁷ and Zhang Dejiang⁵⁸—have parents or other close relatives in the elite circles of CCP officialdom.

The two most prominent Chinese political figures of 2012, Bo Xilai and Xi Jinping, share distinguished Communist Party pedigrees. Between 1949 and the Cultural Revolution, Bo Xilai’s father Bo Yibo served in a number of senior posts related to state finances and economic planning. The elder Bo was purged during the Cultural Revolution but was rehabilitated and reemerged as a powerful figure in the late 1970s and 1980s. Even after formal retirement, Bo Yibo remained a very influential figure behind the scenes, backing Deng Xiaoping’s economic reforms, supporting the June 1989 crackdown, and acting as a patron for Jiang Zemin as the new party leader consolidated power in the 1990s.⁵⁹ Bo Xilai successfully leveraged his family name and connections into an impressive political career of his own; however, the scandal surrounding his fall from grace has almost certainly put an end to the Bo family political dynasty.

As Bo Xilai’s political star flamed out in dramatic fashion in 2012, the political star of another prominent princeling continued its steady ascent. Xi Jinping, the current PRC vice president and

holder of the portfolio for party affairs in the Politburo Standing Committee, is widely expected to assume the post of CCP general secretary at the 18th Party Congress. Xi Jinping is also heir to a legacy of politics at the highest levels of the party: Mr. Xi's father was Xi Zhongxun, a veteran revolutionary who held the office of PRC vice premier from 1959 to 1962. The elder Mr. Xi was purged by Mao in 1962 and spent much of the next 16 years in prison. Politically rehabilitated after Mao's death, the elder Xi served as governor of Guangdong from 1979 to 1981, where he played a major role in supporting economic reforms.⁶⁰ Xi Zhongxun formed a friendship and political alliance with Hu Yaobang (an early patron to Hu Jintao) in the 1970s and 1980s, which "in the long run gave political credits to his son [Xi Jinping] in the eyes of liberal Party officials and the so-called 'Youth League faction,'" thereby adding to the younger Mr. Xi's value as a compromise candidate acceptable to both of the CCP's most powerful factions.⁶¹

Other Characteristics of China's Emerging Leaders

The officials expected to play prominent roles in PRC politics throughout the coming decade have been collectively designated as the "Fifth Generation" of Communist Party leadership.* Born in the 1950s, many of these rising leaders suffered personally during the upheavals of the Cultural Revolution (1966–1976). Universities closed during this period, and many young people—to include both Xi Jinping and Li Keqiang—spent years as "sent down youth," dispatched to rural areas to "learn from the peasants" through lives of hard manual labor.⁶²

Many also had to cope with personal tragedies that had befallen their families, and this was particularly true for the children of prominent political figures purged by Mao: Xi Jinping, for example, joined the CCP in 1974 while his father was still a political prisoner.⁶³ Bo Xilai's father was imprisoned during the Cultural Revolution, and his mother was either beaten to death or committed suicide.⁶⁴ Bo Xilai was himself imprisoned from 1968 to 1972 and subsequently worked for six years in a Beijing-area factory.⁶⁵ As stated by one prominent scholar of Chinese politics, such experiences "forced these future leaders to cultivate valuable traits such as endurance, adaptability, and humility."⁶⁶

Although these officials do come from different backgrounds, they tend to share a number of factors in common. Contrasted with "Fourth-Generation" leaders—most of whom were trained as engineers—more of the "Fifth-Generation" cadres obtained degrees in economics, law, and the other social sciences. They also tend to have in common service in China's provinces, work in one or more of the major channels of the CCP bureaucracy, and advanced degrees from elite Chinese universities.⁶⁷

*This is an official designation used in the PRC state media. The "first generation" consisted of Mao Zedong and other leading figures of the Chinese Revolution; after Mao's death, Deng Xiaoping and other senior officials prominent in the 1970s and 1980s were termed the "second generation." The "third generation" consisted of Jiang Zemin and his contemporaries, and the "fourth generation" of political leadership has been centered on Hu Jintao and other Politburo members in office during the past decade. See John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (Washington, DC: U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), p. 19. http://www.uscc.gov/RFP/2012/USCC_Staff_Report_Rising_Leadersinthe_CCP_%28March%202012%29.pdf.

There are, however, important distinctions: As stated by Cheng Li of The Brookings Institution:

While the [League Faction] are masters of [internal party functions such as] organization and propaganda, and can generally boast experience in rural administration, they often lack experience and credentials in some of the most important administrative areas and are short on skills related to handling foreign trade, foreign investment, banking, and other crucial aspects of economic policymaking, which have been dominated by princelings.⁶⁸

It is due in part to these complementary skill sets that the CCP's two most powerful factions have held together, despite sharp disputes over policy, competition for personnel appointments, and bitter conflicts of personality among senior leaders. The leaders of the CCP understand that a range of policy skills is required to maintain a governing coalition—and even more importantly, they fear that open rifts amid the senior leadership could invite dissension at lower levels, thereby imperiling the party's unitary hold on power.

The Problem of Political Succession in the PRC

Leadership Succession in China's Recent History

The People's Republic of China has long faced a problem with leadership succession. Mao Zedong repeatedly identified successors and then turned on them.⁶⁹ After Deng Xiaoping consolidated his position as China's new paramount leader in the late 1970s and early 1980s, he cultivated protégés who could accept the mantle of party leadership from the aging senior leaders of China's revolutionary generation. However, in many cases nominally retired or semi-retired CCP officials remained active behind the scenes as influential "Party Elders," and under their watchful eyes waiting in the wings for party leadership continued to be a hazardous enterprise. Deng's first two successors as CCP general secretary, Hu Yaobang and Zhao Ziyang, were both removed after falling into disfavor with Deng and the other Elders.⁷⁰ The fates of Mao's and Deng's protégés demonstrated the paradox of being the designated successor in a one-party state: Becoming a viable leader in one's own right required building up a political base and exercising real decision-making authority but doing so threatened the position and authority of the paramount leader (i.e., establishing "two centers within one party") or other political power-brokers watching from behind the curtain.⁷¹

Mr. Deng's third choice as heir apparent was Jiang Zemin, the CCP secretary of Shanghai, who was appointed as CCP general secretary immediately prior to the bloody Tiananmen Square crackdown of June 1989. Mr. Deng's third protégé proved to be a better political survivor than his two predecessors, likely because Mr. Jiang more closely toed the line laid down by the Elders. However, Jiang Zemin was able to gradually consolidate his position throughout the 1990s, as the Elders of the revolutionary generation either

passed away or were sidelined by health problems.⁷² Mr. Jiang also used his formal management of the party machinery to pack the bureaucracy with his supporters. This included many associates from the patronage network he built up in Shanghai during the 1980s—a group that became prominent in PRC politics as the “Shanghai Gang” or “Shanghai Faction.”⁷³ By the time of Deng Xiaoping’s death in 1997 Mr. Jiang was fully in charge, and he and his colleagues came to be officially identified as “the third generation of collective leadership with Jiang at the core.”⁷⁴

However, despite Mr. Jiang’s consolidation of power, Deng Xiaoping’s influence endured. Mr. Deng was not satisfied merely to designate Jiang Zemin as the next leading figure within the party; he also reached several years into the future to deep-select Hu Jintao as the successor to Jiang Zemin. At the 14th Party Congress convened in 1992, Mr. Deng arranged for Hu Jintao, at the time the CCP provincial secretary for Tibet, to be appointed to the Politburo Standing Committee. Hu Jintao was only 49 years old and did not hold a seat in the full Politburo when he was dramatically “helicoptered” into the Politburo Standing Committee over the heads of many more senior candidates.⁷⁵ Hu Jintao later emerged as CCP general secretary in the 16th Party Congress in 2002. Despite the fact that Mr. Hu had been anointed by the late Deng Xiaoping, it was a tense period in the elite circles of the CCP, with Jiang Zemin reportedly very resistant to handing over the reins of power.⁷⁶ In the end, Mr. Jiang reluctantly stepped down from the offices of CCP general secretary (in November 2002) and president of the PRC (in March 2003) but clung to the title of chairman of the CCP Central Military Commission until the autumn of 2004.⁷⁷ Despite handing over his formal offices, Mr. Jiang has remained a powerful figure behind the scenes. Throughout the past decade, Hu Jintao has continued to work within the shadow cast by Jiang Zemin as a powerful Party Elder who still inserts himself into major decisions regarding policy and personnel.⁷⁸

The Continuing Role of CCP Party Elders in Leadership Transitions

At the 17th Party Congress in 2007, the designation of Xi Jinping to be the senior leader of the Fifth Generation caught many knowledgeable observers of Chinese politics by surprise: Prior to the Congress, most expert commentary predicted that either Li Keqiang or Li Yuanchao would emerge as General Secretary Hu’s designated successor.⁷⁹ Some unconfirmed sources have indicated that Hu Jintao did indeed make an attempt to have Li Keqiang designated as his successor but that he encountered resistance from some Party Elders. As a result, Secretary Hu agreed to nominate Xi Jinping as a compromise choice who would be acceptable to all of the party’s major power brokers.⁸⁰

The Continuing Role of CCP Party Elders in Leadership Transitions—*Continued*

Xi Jinping is believed to be personally popular with many elder figures within the CCP, as someone who is both personable and responsive to their concerns. In particular, Mr. Xi has made efforts to flatter and cultivate Jiang Zemin as a patron.⁸¹ Zeng Qinghong, a right-hand man to Jiang Zemin throughout Mr. Jiang's tenure (and himself a princeling), was reportedly a key figure in brokering Mr. Xi's selection as heir apparent.⁸² Another academic source has indicated that, prior to the 17th Party Congress, the Politburo "solicited opinions from retired leaders such as Wan Li, Jiang Zemin, Song Ping, Qiao Shi and Liu Huaqing, most of whom suggested Xi [as a] more suitable" choice than Li Keqiang to be the designated general secretary-in-waiting.⁸³

The rules for mandatory retirement established by the CCP over the past 25 years have not fixed the "successor problem" seen under Mao Zedong and Deng Xiaoping. In some ways, this problem may have grown more complicated: Official retirements are producing an ever-larger number of retired veterans of the Politburo and Politburo Standing Committee, and they continue to look over the shoulders of younger, actively serving officeholders. It remains to be seen whether retiring CCP General Secretary Hu Jintao will truly step down from the political stage; or if Secretary Hu, like his three predecessors as the senior leader of the PRC, will continue to pull strings from retirement.

Other Political Developments in the Lead-up to the 18th Party Congress

Throughout the late summer and autumn of 2012, preparations for the 18th Party Congress were held out of public view; despite the large number of delegates attending and the significant logistical planning required, the timing of party congresses has traditionally been handled with great secrecy. Chinese state media made no announcement until late September on the convening date for the event (November 8), and tight media controls were placed on content relating to senior leadership candidates.⁸⁴ However, during this time frame, a number of new developments occurred that provided hints on the likely outcomes of the leadership transition.

Rumors of Political Infighting among the Top Leadership

Throughout 2012, there has been a persistent rumor that the Politburo Standing Committee will be reduced in size from nine to seven seats.* This move is reportedly under consideration to reduce the power of the Politburo-level "Politics and Law" leading small

*The size of the CCP Politburo Standing Committee has changed over time, from between five to 11 members. Throughout most of the 1980s, its membership held steady at five. This was increased to seven seats in 1992, at the time of Hu Jintao's entry into the Standing Committee, and then increased again to nine seats in 2002, at the time of Hu Jintao's accession to CCP general secretary and Jiang Zemin's nominal retirement. In the latter case, the increase in the number of seats helped Jiang Zemin to pack the Standing Committee with supporters from his patronage network.

group, which exercises control over China's police, judiciary, and security and intelligence agencies.⁸⁵ From various media reports, some party officials have grown concerned over the power vested in the chairman of this committee and wish to see this position downgraded from the Standing Committee to the full Politburo.⁸⁶

Furthermore, there are widely reported rumors of tensions between incumbent Politics and Law Chairman Zhou Yongkang (a protégé of Jiang Zemin and Zeng Qinghong) and the Hu-Wen leadership team over the handling of the Bo Xilai affair and other issues.⁸⁷ These rumors of infighting were given credence by an announcement in March—immediately on the heels of the sacking of Bo Xilai—that 3,300 police and security officials from around the country would be brought to Beijing for mandatory ideological “re-training.”⁸⁸ In May, the backroom struggle appeared to be further highlighted by the unusual publication of an open letter by retired CCP officials to Hu Jintao: The letter requested that General Secretary Hu sack Zhou Yongkang, on the grounds that Mr. Zhou was an ally of Bo Xilai and supported Mr. Bo's goals of a Maoist ideological revival.⁸⁹

The Summer CCP Leadership Retreat at Beidaihe

In early August, many of China's senior leaders gathered at a leadership retreat in the seaside resort town of Beidaihe, on the Bohai Gulf in northeast China. Throughout the Communist era, Beidaihe has been the site of an annual summer meeting for China's elite leaders, to include both actively serving officials and retired Party Elders.⁹⁰ The summer 2002 Beidaihe retreat is believed to have played a major role in deciding the personnel line-up that emerged from the 16th Party Congress, to include highly contentious issues such as the retirement of then CCP General Secretary Jiang Zemin.⁹¹ Similarly, the summer 2012 retreat was likely the forum where much of the backroom deal-making occurred regarding senior personnel appointments to emerge out of the 18th Party Congress.

The fact that many critical personnel and long-term policy decisions are made at these retreats—outside of formal channels, allowing for the participation of retired officials—further demonstrates the clout that Party Elders continue to hold in the political process, particularly in regard to important personnel selections. As predicted beforehand by Cheng Li of The Brookings Institution:

[I]t is expected that the outgoing [Politburo Standing Committee] will have a closed-door meeting sometime in the summer of 2012 at Beidaihe, a resort near Beijing, to decide the preliminary slate of leaders to be elected to the next Politburo, PSC [Politburo Standing Committee], and position of General Secretary. Prior to and after their meeting, the outgoing PSC is likely to consult retired top leaders such as Jiang Zemin, Li Peng, Zhu Rongji and other former PSC members. The outgoing PSC will then have another meeting in the fall, a couple of weeks prior to the convening of the 18th Party Congress, to finalize the list of candidates.⁹²

The CCP's Beidaihe retreats have always been held amidst great secrecy and very tight security. The closest that state media came to acknowledging the 2012 leadership retreat was an August 5 report that Xi Jinping and other Politburo members had appeared at a photo-op in Beidaihe with 62 workers from a variety of professional fields, all "renowned experts and grassroots talents" invited to meet with Mr. Xi "as a form of recognition and reward for their works."⁹³ During the conference, the visiting political figures largely stayed inside their restricted compounds and were little seen in public: As stated by a local resident quoted in the *Los Angeles Times*, "We never see [the leaders] nowadays—[we] only see their motorcades."⁹⁴ Another account of Beidaihe's crowded summer beach season noted that "a heightened security presence was the only sign that China's most senior leaders had gathered for their annual talks."⁹⁵ The political conference appears to have concluded by mid-August.⁹⁶ At no point did state media make any announcements regarding the conference itself.

Personnel Changes between Beidaihe and the 18th Party Congress

In the two-month period between the Beidaihe conclave and the 18th Party Congress, at least one other development occurred that suggested power realignments within the secretive upper reaches of the CCP. On September 1, PRC state media announced that Ling Jihua, the director of the CCP Central Committee General Office, was being transferred to head up the CCP United Front Work Department. A long-time protégé of CCP General Secretary Hu Jintao, Mr. Ling shares a background of service in the Chinese Communist Youth League with General Secretary Hu dating back to the 1980s⁹⁷ and in recent years has served as a personal secretary and prominent aide to General Secretary Hu.⁹⁸ Additionally, since 2007 Mr. Ling has served as the director of the CCP General Office and a member of the CCP Central Secretariat, making him a very influential "go-to" figure in attending to the needs of the CCP's top-tier leadership.⁹⁹

As the General Office plays a key role in serving the needs of the CCP's Politburo-level leadership,* some media commentaries have interpreted the move as a demotion for Mr. Ling,¹⁰⁰ possibly related to his son's death in an auto accident earlier in March.¹⁰¹ However, it cannot be definitively concluded that Mr. Ling's transfer to the United Front Work Department was a demotion: The United Front Work Department is a major institution within the CCP, and Mr. Ling's tenure there could potentially place him in the succession track for the Politburo Standing Committee-level United Front policy portfolio at the 19th Party Congress in 2017.¹⁰² Mr. Ling's close relationship with Hu Jintao and his relative youth (age: 56) could still leave open the possibility of a future in the upper-most ranks of the CCP elite.

* For a more detailed discussion of the role of the CCP Central Committee General Office and the CCP United Front Work Department, see John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (Washington, DC: U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), p. 11. http://www.uscc.gov/RFP/2012/USCC_Staff_Report_Rising_Leadersinthe_CCP_%28March%202012%29.pdf.

Succession to Chairmanship of the CCP Central Military Commission

The chairmanship of the CCP Central Military Commission—the party organ that exercises supreme control over the Chinese armed forces—has been a key office throughout the history of the People's Republic. Mao Zedong clung to his chairmanship of the CCP Central Military Commission until the end of his life in 1976. Deng Xiaoping relinquished his seat in the Politburo in 1987¹⁰³ but held on to the chairmanship of the Central Military Commission until November 1989,¹⁰⁴ when he finally stepped aside in favor of newly designated CCP General Secretary Jiang Zemin. In turn, when Mr. Jiang was forced to retire (reluctantly, as some experts believe)¹⁰⁵ from his other posts in 2002, he held on to his chairmanship of the Central Military Commission. He finally handed over that office to Hu Jintao in September 2004, following what may have been a backroom power play by Hu Jintao to pressure him into full retirement.¹⁰⁶

The desire of Chinese leaders to maintain their position at the apex of military command demonstrates the continuing importance of the PLA in PRC politics, as well as the PLA's continuing role as the ultimate guarantor of the CCP's hold on power. Furthermore, the prestige and power that follows from commanding the PLA gives a semi-retired senior leader a continuing voice in policy—as well as a potential vantage point from which to keep a watchful eye on a more youthful CCP leaders, as Deng Xiaoping did when he sacked Hu Yaobang in 1987 and Zhao Ziyang in 1989. In the lead-up to the 18th Party Congress, many observers of Chinese politics debated whether CCP General Secretary Hu Jintao would fully retire or whether he would follow the precedent of earlier leaders and keep his chairman's seat on the Central Military Commission.¹⁰⁷

If Hu Jintao cedes his Central Military Commission chairmanship to Xi Jinping at the 18th Party Congress in autumn 2012, it could signal a strengthening of party procedures for orderly and institutionalized succession. However, if he clings to his seat, it will keep Secretary Hu engaged ex officio in national security affairs, on top of whatever informal influence he might continue to maintain behind the scenes. It would also mean that, at least in military and national security affairs, Mr. Xi would be forced to continue playing the role of understudy.

Outcomes of the 18th Party Congress

As of the completion of this Report in early November 2012, the 18th Party Congress had yet to convene, and its ultimate outcomes—in particular, the membership of the party's Politburo and its executive committee, the Politburo Standing Committee—remain unknown. Other highly significant changes, such as the emergence of a new group of senior flag officers on the Central Military Commission, are also expected to occur. For the coming year's reporting cycle, the Commission plans to undertake further examination of the outcomes of China's 2012 leadership transition—to include staff research reports on the 18th Party Congress and on ris-

ing officers in the People's Liberation Army—as well as the implications of that transition for the United States in the realms of economic and national security policy.

Implications for the United States

China faces challenging decisions regarding the use of its growing military power, economic clout, and diplomatic influence. In the critical years ahead, the views and policy preferences of the country's leadership will set the trajectory for China's emergence as a major world power. However, it is difficult to determine the character and worldviews of China's new political leaders. Furthermore, these officials will need time to consolidate their positions in the new hierarchy, and factional divides and the need for consensus decision-making will likely preclude any bold new policy initiatives. This will likely produce a strong tendency to defer decisions on contentious issues in the U.S.-China relationship, such as the restructuring of China's export-driven economic model, the dominant role of state-owned enterprises in major sectors of the economy, the orientation of Chinese foreign policy, and China's maritime territorial disputes with its neighbors. The United States must carefully monitor events in Beijing as China's new leaders consolidate their positions inside the Communist Party. Absent unforeseen events, dramatic changes in the direction of PRC foreign and economic policy are unlikely in the near term, and the ability of China's leaders to respond to new policy initiatives will be constrained.

Conclusions

- A new group of younger, rising officials is expected to assume the most senior postings in the Chinese Communist Party at the 18th Party Congress in November 2012. These “Fifth-Generation” cadres tend to have a number of factors in common: Many suffered during the Cultural Revolution; most have experience in provincial-level government administration; and nearly all have more formal education than their predecessors, with studies focused in economics and the social sciences. A disproportionate number of these rising leaders are also “princelings,” the children of prominent revolutionary-era Communist officials.
- Factionalism remains a serious issue at the elite level of Chinese politics, centered on two major patronage networks: the “Shanghai” and “Princeling Party” group that owes fealty to former CCP General Secretary Jiang Zemin; and the “Communist Youth League Faction” loyal to CCP General Secretary Hu Jintao. The membership of the Politburo and Politburo Standing Committee from the years 2002—2012 has reflected representation for both of these two groups, with Hu Jintao holding the top leadership slot and loyalists of Jiang Zemin occupying the largest number of seats.
- Presumptive CCP General Secretary Xi Jinping and presumptive PRC Premier Li Keqiang are expected to be the two most senior figures in the new leadership line-up, but they will not dominate the policy process: The newly appointed leadership of the CCP will likely continue to operate in a collective, consensus-driven

fashion. This decision-making dynamic—combined with the continuing influence of retired party leaders—means that there will be considerable internal debate regarding major policy issues and that there will likely be little substantive change to PRC policy in the near-term.

ENDNOTES FOR CHAPTER 6

1. Hu Yanan, "Chongqing Turns into 'Red Capital,'" *China Daily*, March 1, 2011.
2. Kathrin Hille and Jamil Anderlini, "China: Mao and the Next Generation," *Financial Times*, June 2, 2011.
3. Unless otherwise noted, information about Wang Lijun's career is drawn from ChinaVitae.com, "Wang Lijun—Career Data." http://www.chinavitae.com/biography/Wang_Lijun/career. As a municipality, Chongqing is one of a handful of large cities in China—to include Beijing, Shanghai, and Tianjin—that are administered by the central government and have status equivalent to a province. Chongqing City Government homepage, "Chongqing Municipal Government." <http://en.cq.gov.cn/>.
4. Joseph Fewsmith, "Bo Xilai Takes On Organized Crime," *China Leadership Monitor* 32 (Spring 2010); ChinaVitae.com, "Wang Lijun—Career Data." http://www.chinavitae.com/biography/Wang_Lijun/career.
5. Keith Richburg, "Speculation Grows Over Chinese Official's Mysterious Visit to U.S. Consulate," *Washington Post*, February 10, 2012.
6. As commented by Victor Shih, professor of political science at Northwestern University, "It's as if the governor of Ohio has just sent armed forces across the border into Indiana. What would that say about the stability of the U.S. and what does this say about the future of China?" Victor Shih, as quoted in Dexter Roberts, "News of Provincial Showdown Travels Far on Chinese Web," *Bloomberg Businessweek* (Online Edition), February 14, 2012. See also John Garnaut, "China Power Play: Anti-Corruption Officials Vanish," *Sydney Morning Herald* (Australia), February 9, 2012.
7. Allison Jackson, "Police Chief Flies to Beijing Amid Defection Rumors," *Agence France-Presse*, February 11, 2012.
8. Xinhua, "Zhang Dejiang Replaces Bo as Chongqing Party Chief," March 15, 2012.
9. Xinhua, "Rule of Law, Purity of Party Highlighted in Handling Bo's Case," April 16, 2012.
10. *People's Daily*, "Firmly Support Correct Decision of CPC [Communist Party of China] Central Committee," April 11, 2012.
11. Xinhua, "Commentary: Law and Party Disciplines Brook No Violation," April 14, 2012.
12. *People's Daily*, "Firmly Support Correct Decision of CPC [Communist Party of China] Central Committee," April 11, 2012.
13. Carlos Tejada, "A New English-Language Paper Extends China's Media Reach," *China Realtime Report* (affiliated blog of the *Wall Street Journal*), April 20, 2009. <http://blogs.wsj.com/chinarealtime/2009/04/20/a-new-english-language-paper-extends-chinas-media-reach>.
14. Shan Renping, "Bo Xilai's Case Nothing to Do With 'Political Fight,'" *Global Times*, April 14, 2012.
15. For explorations of this topic, see John Dotson, "The Confucian Revival in the Propaganda Narratives of the Chinese Government" (Washington, DC: U.S.-China Economic and Security Review Commission staff research paper, July 2011). http://www.uscc.gov/researchpapers/2011/Confucian_Revival_Paper.pdf; Christopher Ford, "'Occupy Wall Street' and Communist China's Emerging 'Neo-Kong' Discourse of Antidemocratic Legitimacy" (Washington, DC: Hudson Institute, May 2012). <http://www.hudson.org/files/publications/CFord—OccupyWallStreet—053112.pdf>.
16. Jiang Qing and Daniel Bell, "A Confucian Constitution for China," *New York Times*, July 10, 2012.
17. Tania Branigan, "Gu Kailai Trial: Four Police in Court Accused of Helping Cover Up Murder," *Guardian* (United Kingdom), August 10, 2012. <http://www.guardian.co.uk/world/2012/aug/10/gu-kailai-police-cover-up-murder>.
18. For one such example, see Ho Pin, "A Chinese Murder Mystery, Far from Solved," *New York Times*, August 15, 2012. <http://www.nytimes.com/2012/08/16/opinion/was-gu-kailai-guilty-of-neil-heywoods-murder.html?pagewanted=all>.
19. NBC News Wire Services, "China Puts Cops on Trial for 'Bending the Law' to Help Wife of Ousted Politician," August 10, 2012. <http://worldnews.nbcnews.com/news/2012/08/10/13212455-china-puts-cops-on-trial-for-bending-the-law-to-help-wife-of-ousted-politician?lite>.
20. Xinhua, "Wang Lijun Charged with Defection, Power Abuse," September 5, 2012. http://www.chinadaily.com.cn/china/2012-09/05/content_15736890.htm.
21. Xinhua News Service, "Wang Lijun Sentenced to 15 Years in Prison," September 24, 2012. At the time of sentencing, the court indicated that Mr. Wang's sentence had been reduced (to a total of 15 years in prison) for his cooperation with

authorities investigating the case. See Malcolm Moore, “Bo Xilai Scandal: Police Chief Wang Lijun Sentenced to 15 Years,” *Telegraph* (UK), September 24, 2012; John Sudworth, “Bo Xilai Scandal: Police Chief Wang Lijun Jailed for 15 Years,” BBC News online, September 24, 2012, <http://www.bbc.co.uk/news/world-asia-china-19690769>; and Austin Ramzy, “Wang Lijun, Police Boss Who Triggered Bo Xilai Scandal, Sentenced to 15 Years,” *Time Magazine* online, September 24, 2012, <http://world.time.com/2012/09/24/wang-lijun-police-boss-who-triggered-bo-xilai-scandal-sentenced-to-15-years/#ixzz27VBqE2Y9>.

22. Xinhua, “Bo Xilai Expelled from CPC [Communist Party of China], Public Office,” September 28, 2012.

23. Xinhua, “CPC [Communist Party of China] to Convene 18th National Congress on Nov. 8,” September 28, 2012. For one example of widespread media speculation regarding the convening date of the 18th Party Congress, see Tania Branigan, “China Keeps Observers Guessing When Communist Party Congress Will Begin,” *Guardian* (UK), September 25, 2012. <http://www.guardian.co.uk/world/blog/2012/sep/25/china-communist-party-congress-begin>.

24. For example, the previous 17th CCP National Congress was held in Beijing from October 15 to 21, 2007; the 15th Party Congress was held from September 12 to 18, 1997; and the 14th Party Congress was held from October 12 to 18, 1992.

25. For one example of academic speculation on this issue, see Susan Shirk, “The Succession Game,” in Gang Lin and Susan Shirk, eds., *The 16th CCP Party Congress and Leadership Transition in China* (Washington, DC: Woodrow Wilson Center, September 2002).

26. Edward Wong, “Ousted from Party in China, Bo Xilai Faces Prosecution,” *New York Times*, September 28, 2012.

27. For two examples of competing speculation regarding the leadership decision-making process on Bo Xilai, see Shi Jiangtao, “Deal-Making on Bo Xilai’s Penalty Shows Extent of Factional Struggles,” *South China Morning Post* (Hong Kong), September 29, 2012, <http://www.scmp.com/news/china/article/1049818/deal-making-bo-xilais-penalty-shows-extent-factional-struggles>; Jonathan Walton, “The Bo Xilai Crisis—Confidence Gained or Risk Increased?: An Interview with Cheng Li” (Washington, DC: National Bureau of Asian Research, October 4, 2012). <http://www.nbr.org/research/activity.aspx?id=279>.

28. For one such example, see Jonathan Ansfield and Ian Johnson, “Ousted Chinese Leader Is Said to Have Spied on Other Top Officials,” *New York Times*, April 25, 2012. <http://www.nytimes.com/2012/04/26/world/asia/bo-xilai-said-to-have-spied-on-top-china-officials.html?pagewanted=all>.

29. Jonathan Ansfield and Ian Johnson, “Ousted Chinese Leader is Said to Have Spied on Other Top Officials,” *New York Times*, April 25, 2012. <http://www.nytimes.com/2012/04/26/world/asia/bo-xilai-said-to-have-spied-on-top-china-officials.html?pagewanted=all>. See also *Want China Times* (Taiwan), “Wang Lijun Tapped Hu Jintao Calls: Ming Pao,” April 20, 2012. <http://www.wantchinatimes.com/news-subclass-ent.aspx?id=20120420000125&cid=1101>.

30. See David Bandurski, “Wang Lijun and the Tieling Corruption Case” (Hong Kong, China: University of Hong Kong, *China Media Project*, February 14, 2012). <http://cmp.hku.hk/2012/02/14/19184/>; Scott Greene, “Wang Lijun—Tip of the Iceberg?” *China Digital Times*, February 13, 2012. <http://china.digitaltimes.net/2012/02/wang-lijun-tip-of-the-iceberg/>.

31. Willy Lam, “Hu Jintao Draws Blood with the Wang Lijun Scandal,” *China Brief* 12: 5 (March 2, 2012).

32. Wang Xiangwei, “Chongqing’s Political Mystery Deepens,” *South China Morning Post* (Hong Kong), February 13, 2012. <http://topics.scmp.com/news/china-news-watch/article/Chongqing%27s-political-mystery-deepens>. As stated by Sinologist Tony Saich, “Personal power and relations with powerful individuals are decisive throughout the political system and society . . . most Chinese recognize very early on that the best way to survive and flourish is to develop personal relationships (*guanxi*) with a powerful political patron. Thus, the Chinese political leadership is riddled with networks of personal relationships and is dominated by patron-client ties. This system of patron-client ties lends itself easily to the formation of factions within the leadership . . . on occasion an individual is attacked as a surrogate for a top leader who is the head of one of the patronage systems.” See Tony Saich, *Governance and Politics of China* (New York, NY: Palgrave Publishing, 2001), p. 83.

33. François Godemont, “One or Two Chinese Models?” (Berlin, Germany: European Council on Foreign Relations, November 2011). http://www.ecfr.eu/page/-/China_Analysis_One_or_two_Chinese_models_November2011.pdf.

34. Strategic Forecasting, Inc. (STRATFOR), “Political Sacking in China’s Chongqing Province” (Austin, TX: February 9, 2012).

35. Kent Ewing, “Bo Xilai: China’s Brash Populist,” *Asia Times* (Thailand), March 19, 2010; Joseph Fewsmith, “Bo Xilai Takes on Organized Crime,” *China Leadership Monitor* 32 (Spring 2010).

36. *Financial Times*, “Chinese Infighting: Secrets of a Succession War,” March 4, 2012.

37. Kathrin Hille and Jamil Anderlini, “China: Mao and the New Generation,” *Financial Times*, June 2, 2011. <http://www.ft.com/intl/cms/s/0/eb239472-8d48-11e0-bf23-00144feab49a.html#axzz1oM8Z9vFG>; Melinda Liu, “China’s Leader Breaks a Taboo,” *Daily Beast*, November 6, 2011. <http://www.thedailybeast.com/articles/2011/11/05/chinese-premier-wen-jiabao-criticizes-cultural-revolution.html>.

38. Keith Richburg and Andrew Higgins, “In Chinese Official’s Ouster, Hints of a Win for Reformers,” *Washington Post*, March 16, 2012.

39. Alice Miller, “The Bo Xilai Affair in Central Leadership Politics,” *China Leadership Monitor* 38 (Summer 2012).

40. Michael F. Martin, “Understanding China’s Political System” (Washington, DC: Congressional Research Service, April 14, 2010).

41. Career profiles for Zhu Rongji, Zeng Qinghong, Wu Bangguo, and Huang Ju, as drawn from ChinaVitae.com.

42. John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), p. 22; Kerry Dumbaugh, “China’s New Leadership Line-Up: Implications for U.S. Policy” (Washington, DC: Congressional Research Service, October 23, 2003), pp. 13–14.

43. Cary Huang, “Long After Retirement, Jiang Zemin Continues to Exert His Influence,” *South China Morning Post* (Hong Kong), September 9, 2012.

44. Membership in the Chinese Communist Youth League is intended primarily for teenagers and young adults in their twenties. As described in Youth League publicity materials, the organization is “an assistant and reserve force” for the CCP, whose tasks include “diligently bringing new blood into the Party, and cultivating youthful talent for the nation.” It is a huge organization: As of 2007 it had over 75 million members in branches set up throughout the country and employed over 191,000 full-time CCP cadres. See “*Zhongguo Gongqingtuan Jieshao*” (Introduction to the Chinese Communist Youth League), official website of the Chinese Communist Youth League (in Chinese). Translation by Commission staff. http://www.gqt.org.cn/695/gqt_tuanshi/gqt_ghlc/gqt_introduce/introduce.

45. Richard Daniel Ewing, “Hu Jintao: The Making of a Chinese General Secretary,” *China Quarterly* 173 (March 2003). Specifically, Hu Jintao served as secretary of the Chinese Communist Youth League Secretariat from 1982 to 1984 and then as general secretary of that organization from 1984 to 1985. See ChinaVitae.com, “Hu Jintao—Career Data.” http://www.chinavitae.com/biography/Hu_Jintao/career.

46. ChinaVitae.com, “Li Keqiang—Career Data.” http://www.chinavitae.com/biography/Li_Keqiang/career.

47. Andrew Nathan and Bruce Gilley, *China’s New Rulers: The Secret Files* (New York, NY: *New York Review of Books*, 2003), p. 153; ChinaVitae.com, “Liu Yandong—Career Data.” http://www.chinavitae.com/biography/Liu_Yandong/career.

48. ChinaVitae.com, “Li Yuanchao—Career Data.” http://www.chinavitae.com/biography/Li_Yuanchao/career.

49. Cheng Li, “Hu’s Policy Shift and the Tuanpai’s Coming of Age,” *China Leadership Monitor* 15 (Summer 2005).

50. For a discussion of the “Socialist Harmonious Society” concept as advocated by official CCP propaganda, see John Dotson, “The Confucian Revival in the Propaganda Narratives of the Chinese Government” (Washington, DC: U.S.-China Economic and Security Review Commission staff report, July 20, 2011). http://www.ussec.gov/researchpapers/2011/Confucian_Revival_Paper.pdf.

51. This is particularly true in cases of politicized corruption investigations, such as that of former Shanghai CCP Secretary Chen Liangyu. For a profile of this case, see Cheng Li, “Was the Shanghai Gang ‘Shanghaied’,” *China Leadership Monitor* 20 (Winter 2007).

52. Among many references on China’s princelings that could be cited, see Jeremy Page, “Children of the Revolution,” *Wall Street Journal*, November 26, 2011; *Want China Times* (Taiwan), “China’s Red Nobility” (profiles of prominent princelings). <http://www.wantchinatimes.com/Features/RedNobility/Red.html>.

53. Cheng Li, “China: Riding Two Horses at Once” (Washington, DC: The Brookings Institution, October 2007). <http://www.brookings.edu/articles/2007/1023china.aspx>. Note that this number was reduced to six following Bo Xilai’s expulsion from the Politburo.

54. Liu Yandong is the daughter of Liu Ruilong, former PRC vice minister of Agriculture. See Andrew Nathan and Bruce Gilley, *China's New Rulers: The Secret Files* (New York, NY: *New York Review of Books*, 2003), p. 153.

55. Li Yuanchao is the son of Li Gancheng, former vice mayor of Shanghai. See Cheng Li, "China's Two Li's: Frontrunners in the Race to Succeed Hu Jintao," *China Leadership Monitor* 22 (Autumn 2007).

56. Wang Qishan is the son-in-law of Yao Yilin, former PRC first vice premier. See Jamil Anderlini, "The Leadership: Focus on the Next Generation as Transition Gets Under Way," *Financial Times*, October 25, 2011.

57. Yu Zhengsheng is the son of Yu Qiwei, a CCP underground activist and a former husband of Jiang Qing. Benjamin Kang Lim, "China Princeling Emerges from Defection Scandal," Reuters, June 19, 2007. <http://www.reuters.com/article/2007/06/19/us-china-party-yu-idUSPEK15174020070619>. Note that Jiang Qing was the fourth and final wife of Mao Zedong.

58. Zhang Dejiang is the son of former People's Liberation Army Major General Zhang Zhiyi. See Malcolm Moore, "China's Five Princelings," *Telegraph* (United Kingdom), January 3, 2011. <http://www.telegraph.co.uk/news/worldnews/asia/china/8237357/Chinas-five-princelings.html>.

59. For example, former Beijing CCP Secretary Chen Xitong—a political rival of Jiang Zemin in the mid-1990s—has accused the late Bo Yibo of intriguing against him on behalf of Mr. Jiang. Chow Chung-Yan, "Jiang Behind My Downfall, Chen Suggests," *South China Morning Post* (Hong Kong), May 29, 2012. Bo Yibo also reportedly intervened in deliberations surrounding the 15th Party Congress in 1997, helping to secure the retirement of Qiao Shi and other rivals of Jiang Zemin while keeping Mr. Jiang himself in his post as CCP general secretary for another term. See Hung-Mao Tien, *China Under Jiang Zemin* (Boulder, CO: Lynne Rienner Publishers, 2000), pp. 23–24.

60. Robert Lawrence Kuhn, *How China's Leaders Think: The Inside Story of China's Reform and What This Means For the Future* (Singapore: John Wiley & Sons Asia, 2010), chapter 6 ("Reform's Epic Struggle").

61. Zheng Yongnian and Chen Gang, "Xi Jinping's Rise and Political Implications," *China: An International Journal* 7: 1 (March 2009).

62. John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (Washington, DC: U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), pp. 29 and 32. http://www.uscc.gov/RFP/2012/USCC_Staff_Report_Rising_Leaders_in_the_CCP_%28March%202012%29.pdf.

63. Paul Eckert, "Sizing Up China's Next Leader," Reuters *Special Report*, February 2011. <http://graphics.thomsonreuters.com/11/01/XiJinping.pdf>.

64. Minxin Pei, "What China's Leaders Fear Most," *Diplomat* (Tokyo), July 30, 2012.

65. ChinaVitae.com, "Bo Xilai." http://www.chinavitae.com/biography/Bo_Xilai/career.

66. Cheng Li, "China's Fifth Generation: Is Diversity a Source of Strength or Weakness?" *Asia Policy* (July 2008): 53–93.

67. Cheng Li, "Educational and Professional Backgrounds of Current Provincial Leaders," *China Leadership Monitor* 8 (Fall 2003).

68. Cheng Li, "The Battle for China's Top Nine Leadership Posts," *Washington Quarterly* (Winter 2012).

69. Liu Shaoqi, the number two man in the CCP hierarchy for much of the 1960s, was purged and died in prison during the Cultural Revolution. The next designated successor, People's Liberation Army (PLA) Marshall Lin Biao, died in mysterious circumstances in 1971 amid a growing rift with Mao and allegations of an abortive coup d'état. [See Roderick MacFarquhar and Michael Schoenhals, *Mao's Last Revolution* (Cambridge, MA: Harvard University Press, 2006), pp. 277–278 and 333–336.] Mao's third appointed successor, Hua Guofeng, held little authority or prestige in the party—and may have been selected precisely because he lacked any independent standing and was completely beholden to Mao and Mao's legacy.

70. Zhao Ziyang, *Prisoner of the State: The Secret Journal of Zhao Ziyang*, Adi Ignatius, Bao Pu, and Renee Chiang, eds. (New York, NY: Simon & Schuster, 2009), part 4, chapter 1, "Hu Yaobang Resigns," pp. 161–182; Larry Wortzel, "The Tiananmen Massacre Reappraised: Public Protest, Urban Warfare, and the People's Liberation Army," in Larry Wortzel and Andrew Scobell, eds., *Chinese National Security Decisionmaking Under Stress* (Carlisle, PA: U.S. Army War College, 2005), pp. 55–84; See also David Shambaugh, "Deng Xiaoping: The Politician," *China Quarterly* 135 (1993). Footnote #70 from this article cites Mr. Deng saying of Hu Yaobang and Zhao Ziyang: "Two men failed, and they failed not because of problems in the economy but because they stumbled on the issue of opposing bourgeois liberalization." *CCP Central Committee Circular on Transmitting and Studying Comrade*

Deng Xiaoping's *Important Remarks* (Central Document No. 2, 1992), Foreign Broadcast Information Service, *Daily Report—China: Supplement* (hereafter *FBIS—CHI*), April 1, 1992, p. 6.

71. Dominik Mierzejewski, "On the Road to a Peaceful Transition: The CCP Strives for an 'Institutionalized' Succession" (University of Nottingham, UK: China Policy Institute, Discussion Paper #60, April 2010).

72. John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (Washington, DC: U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), p. 22.

73. "When Jiang Zemin served as mayor and party chief in Shanghai during the mid-1980s, he began to cultivate a web of patron-client ties based on his Shanghai associates. After becoming the party's top leader in 1989, Jiang appointed several of his confidants in Shanghai to important positions in Beijing." Cheng Li, "The 'Shanghai Gang': Force for Stability or Cause for Conflict?" *China Leadership Monitor* 1 (December 2001).

74. Xinhua, "Who's Who—Jiang Zemin" (official biographical entry). <http://www.china.com.cn/whol/jiangzemin.htm>.

75. Alice Miller, "The Problem of Hu Jintao's Successor," *China Leadership Monitor* 19 (Autumn 2006).

76. Andrew Scobell, "Jiang Zemin and China's Leadership Succession: Process, Precedent, the PLA, and Personality," testimony at the U.S.-China Economic and Security Review Commission hearing, *Chinese Leadership Succession and Its Implications* (September 23, 2002). http://www.uscc.gov/researchpapers/2000_2003/pdfs/scobel.pdf.

77. Kjeld Erik Brødsgaard, "Jiang Finally Steps Down: A Note on Military Personnel Changes and the CCP's Governing Capacity," *Copenhagen Journal of Asian Studies* 19 (2004).

78. Among many examples that could be cited, see Melinda Liu, "The Man in Jiang's Shadow," *Newsweek*, May 5, 2002; Joseph Fewsmith, "Studying the Three Represents," *China Leadership Monitor* 8 (Fall 2003); and Willy Lam, "Jiang Zemin Casts Long Shadow over National Day Parade," *China Brief* 9: 20 (October 7, 2009).

79. For examples, see Cheng Li, "China's Two Li's: Frontrunners in the Race to Succeed Hu Jintao," *China Leadership Monitor* 22 (Fall 2007). <http://media.hoover.org/sites/default/files/documents/CLM22CL.pdf>; Alice Miller, "Beijing Prepares to Convene the 17th Party Congress," *China Leadership Monitor* 22 (Fall 2007). <http://media.hoover.org/sites/default/files/documents/CLM22AM.pdf>.

80. *China Digital Times*, "Wikileaks: From Xi Jinping's Rise to Jiang Zemin's Buddhism," June 21, 2011. <http://chinadigitaltimes.net/2011/06/wikileaks-from-xi-jinpings-rise-to-jiang-zemins-buddhism>.

81. Xinhua, "Chinese Vice President Holds Talks with Merkel on China-Germany Ties," October 13, 2009. http://news.xinhuanet.com/english/2009-10/13/content_12219587.htm. For commentary on the significance of this event, see Victor Shih, "Xi Jinping Sends Signals by Giving Merkel Books by Jiang," *Elite Chinese Politics and Political Economy Blog*, October 15, 2009. http://chinesepolitics.blogspot.com/2009/10/01_archive.html; and Willy Lam, "Cracks in China's Great Politburo Wall," *Asia Sentinel* (Hong Kong), October 13, 2009.

82. John Garnaut, "Lifting the Lid on the Secret Life of Point Piper's Grand Princeling," *Sydney Morning Herald* (Australia), October 16, 2010.

83. Zheng Yongnian and Chen Gang, "Xi Jinping's Rise and Political Implications," *China: An International Journal* 7: 1 (March 2009).

84. *China Media Bulletin*, "Mystery Surrounds Newspapers' Leadership, Content Changes," No. 65 (July 19, 2012).

85. For a profile of the major "leading small groups" on the central CCP leadership, see Alice Miller, "The CCP Central Committee's Leading Small Groups," *China Leadership Monitor* 26 (Fall 2008).

86. Mark Jia, "Will China Continue to 'Turn Against Law?'" *Asia Unbound* (affiliated blog of the Council on Foreign Relations), July 31, 2012. <http://blogs.cfr.org/asia/2012/07/31/will-china-continue-to-turn-against-law/>; Chris Buckley, "China Considers Downgrading Domestic Security Tsar in Next Line-Up," Reuters, August 30, 2012.

87. Barbara Demick, "China Coup Rumors May Be Wild, But Tension Is Real," *Los Angeles Times*, March 22, 2012.

88. Radio Free Asia, "Security Officials Summoned to Beijing," March 22, 2012. <http://www.rfa.org/english/news/china/security-03222012102026.html>.

89. Michael Bristow, "China Veterans Urge Sacking of Politician Zhou Yongkang," BBC News online, May 16, 2012. <http://www.bbc.co.uk/news/world-asia-china-18091298>.

90. Nicholas Kristof, "Where the Chinese Go To Play," *New York Times*, September 13, 1993; Bruce Gilley, "The 'End of Politics' in Beijing," *China Journal* 51 (January 2004).

91. Willy Lam, "Bad Start for China's Beidaihe Meet," CNN.com, July 20, 2002. <http://edition.cnn.com/2002/WORLD/asiapcf/east/07/30/china.meetings>.

92. Cheng Li, "The China Diviner: China's New G9" (Sydney, Australia: Macquarie Economics Research, July 6, 2011). <http://macq.wir.jp/l.ut?t=dmw2jZW>.

93. Xinhua, "Chinese VP Greets Experts, Grassroots Talents," August 5, 2012. http://news.xinhuanet.com/english/china/2012-08/05/c_131762818.htm.

94. Barbara Demick, "China Leaders' Summer Retreat to Beidaihe Shrouded in Secrecy," *Los Angeles Times*, August 16, 2012. <http://articles.latimes.com/2012/aug/16/world/la-fg-china-beidaihe-20120817>.

95. Tom Hancock, "Inflatables and Politics as China's Leaders Hit the Beach," Agence France-Presse, August 11, 2012.

96. Mark MacKinnon, "China's Decision Makers Pick Future Leaders at Beach Conclave," *Globe and Mail* (Toronto, Canada), August 15 2012. <http://www.theglobeandmail.com/news/world/chinas-decision-makers-pick-future-leaders-at-beach-conclave/article4483408/>.

97. From 1985 to 1995, Ling Jihua served in senior administrative and propaganda positions in the Communist Youth League. ChinaVitae.com, "Ling Jihua." http://www.chinavitae.com/biography/Ling_Jihua/career. Hu Jintao served from 1982 to 1985 as the national secretary for the Communist Youth League. ChinaVitae.com, "Hu Jintao." http://www.chinavitae.com/biography/Hu_Jintao/career.

98. As one example, see mention of Ling Jihua traveling in Hu Jintao's entourage in People's Republic of China, "Hu Jintao Arrives in Washington, Kicking Off His State Visit to the U.S." (Beijing, China: Ministry of Foreign Affairs Press Release, January 19, 2011). <http://www.fmprc.gov.cn/eng/topics/hjtzxdmgfw/t788243.htm>.

99. For a fuller biographic profile of Ling Jihua, see Cheng Li, "Ling Jihua," *China's Top Future Leaders to Watch* (Washington, DC: The Brookings Institution web portal, undated). http://www.brookings.edu/about/centers/china/top-future-leaders/ling_jihua.

100. David Barboza, "Party Intrigue Seen in China as Official Is Demoted," *New York Times*, September 1, 2012.

101. Mark McDonald, "In China, a Ferrari Crashes and the Party is Dented," *New York Times*, September 3, 2012; Alexa Olesen, "Ling Gu Death: Sex Games In Ferrari Crash Lead To New Chinese Political Scandal," *Huffington Post*, September 4, 2012. http://www.huffingtonpost.com/2012/09/04/ling-gu-death-sex-games-ferrari-crash_n_1853698.html.

102. For discussion of the policy portfolios in the Politburo Standing Committee, see Alice L. Miller, "The Politburo Standing Committee under Hu Jintao," *China Leadership Monitor* 35 (Summer 2011); John Dotson, *The Chinese Communist Party and Its Emerging Next-Generation Leaders* (Washington, DC: U.S.-China Economic and Security Review Commission Staff Research Report, March 23, 2012), pp. 27–28.

103. David Holley, "Chinese Debating Deng's Plan to Quit Politburo," *Los Angeles Times*, October 29, 1987.

104. Kjeld Erik Brødsgaard, "Jiang Finally Steps Down: A Note on Military Personnel Changes and the CCP's Governing Capacity," *Copenhagen Journal of Asian Studies* 19 (2004).

105. For one example of academic speculation on this particular matter, see Kjeld Erik Brødsgaard, "Jiang Finally Steps Down: A Note on Military Personnel Changes and the CCP's Governing Capacity," *Copenhagen Journal of Asian Studies* 19 (2004).

106. For one account of Hu Jintao's reputed maneuvering to force Jiang Zemin to step down as Central Military Commission chairman, see Willy Wo-Lap Lam, *Chinese Politics in the Hu Jintao Era: New Leaders, New Challenges* (Armonk, NY: M.E. Sharpe, 2006), p. 27.

107. For two examples of such discussion among China scholars, see James Mulvenon, "Xi Jinping and the Central Military Commission: Bridesmaid or Bride?" *China Leadership Monitor* 34 (Winter 2011); Peter Mattis, "Hu Jintao's Doubtful Future on the Central Military Commission," *China Brief*, 12:16 (August 17, 2012).

COMPREHENSIVE LIST OF THE COMMISSION'S RECOMMENDATIONS

Chapter 1: The U.S.-China Trade and Economic Relationship

Section 2: Chinese State-owned and State-controlled Enterprises

The Commission recommends that:

1. Congress examine foreign direct investment from China to the United States and assess whether there is a need to amend the underlying statute (50 U.S.C. app 2170) for the Committee on Foreign Investment in the United States (CFIUS) to (1) require a mandatory review of all controlling transactions by Chinese state-owned and state-controlled companies investing in the United States; (2) add a net economic benefit test to the existing national security test that CFIUS administers; and (3) prohibit investment in a U.S. industry by a foreign company whose government prohibits foreign investment in that same industry.
2. Congress direct the U.S. Securities and Exchange Commission (SEC) to revise its protocols for reviewing filings by foreign entities listed on or seeking to be listed on the U.S. stock exchanges. The SEC should develop country-specific data to address unique country risks to assure that U.S. investors have sufficient information to make investment decisions. The SEC should focus, in particular, on state-owned and -affiliated companies, and subsidies and pricing mechanisms that may have material bearing on the investment.
3. Congress examine the access of small- and medium-sized enterprises to the remedies contained in the U.S. antidumping and countervailing duty laws. As part of this examination, Congress should consider whether to (1) grant enhanced authority to initiate antidumping and countervailing duty cases to the Senate and House Committees most responsible for international trade; and (2) include state and local governments as interested parties under the U.S. trade laws.
4. Congress adopt legislation that would provide a private right of action for domestic producers who suffer injury from antidumping and countervailing duty violations from the operations of Chinese state-owned or -affiliated firms operating in the U.S. market.

Section 3: The Evolving U.S.-China Trade and Investment Relationship

The Commission recommends that:

5. Congress assess the ability of the Office of the United States Trade Representative to adequately investigate, develop, resolve and/or adjudicate trade complaints. As part of this assessment, Congress should evaluate the availability of, and access to, information necessary to address unfair trade complaints; whether it is advisable to provide USTR with subpoena authority; and, if so, the nature of such authority.
6. Congress direct the U.S. Department of Commerce to report annually on Chinese investment in the United States including, among other things, data on investment in the United States by Chinese SOEs and other state-affiliated entities.
7. Congress direct that, in undertaking any bilateral investment treaty negotiation with China, the U.S. administration should insist upon terms that ensure reciprocity and explicitly address the unfair challenges posed by China's SOEs in all markets.
8. Congress monitor efforts to measure trade in value-added, such as the OECD-WTO joint initiative, and identify the potential impacts of value added measurements on U.S. trade law.

Chapter 2: China's Impact on U.S. Security Interests

Section 2: China's Cyber Activities

The Commission recommends that:

9. Congress require the Department of Defense to report to Congress on the extent to which its current procurement regulations and contracting procedures allow it to exclude the acquisition of any foreign-produced equipment from any department system where there is concern as to the potential impact of cyber vulnerabilities.
10. Relevant Congressional committees conduct an in-depth assessment of Chinese cyber espionage practices and their implications and report the findings in an unclassified format.
11. Congress conduct a review of existing legal penalties for companies found to engage in, or benefit from, industrial espionage.

Section 3: China's Nuclear Developments

The Commission recommends that:

12. Committees of jurisdiction seek input from relevant U.S. government agencies and international organizations to assess disparities in estimates of the size and disposition of China's nuclear forces.
13. Congress require the U.S. Department of State to detail current and planned efforts to integrate China into existing and future nuclear arms reduction, limitation, and control discus-

sions and agreements. Committees of jurisdiction within Congress should request periodic updates on these efforts.

Chapter 3: China in Asia

Section 1: China and the South China Sea

The Commission recommends that:

14. Congress direct the Department of Defense to work with U.S. friends and allies in the Asia Pacific region to strengthen mechanisms to share information on maritime activity in the South China Sea.
15. Congress urge the U.S. Navy to conduct regular transit operations in critical waterways in ways that demonstrate and reinforce U.S. values and interests related to freedom of navigation.
16. Congress direct the U.S. Coast Guard to take steps to promote the formation of, and participate in, a regional coast guard forum in Southeast Asia modeled on the North Pacific Coast Guard Forum.¹

Section 2: China and Taiwan

The Commission recommends that:

17. Congress urge the administration to remain engaged with Taiwan officials regarding Taiwan's future defense needs, particularly as they pertain to sales of arms and equipment such as may be necessary to offset the growing capabilities of the People's Liberation Army for coercive power projection.

Section 3: China and Hong Kong

The Commission recommends that:

18. Congress reauthorize Section 301 of the U.S.-Hong Kong Policy Act of 1992, which requires the U.S. secretary of State to submit an annual report to Congress on political, economic, and social developments in Hong Kong of relevance to the United States. This should include reporting on mainland interference in Hong Kong's internal political affairs and Chinese efforts to leverage the territory as a platform for the internationalization of the RMB.
19. Congress review the U.S.-Hong Kong Policy Act of 1992 to determine its continued applicability. In particular, Congress should review the security of advanced technology products exported from the United States to Hong Kong.
20. Members of Congress, when visiting mainland China, also visit Hong Kong and that Congress encourage senior administration

¹ Established in 2000, the North Pacific Coast Guard Forum includes the coast guards of Canada, China, Japan, Korea, Russia, and the United States. The forum aims to "foster multi-lateral cooperation by sharing information and establishing best practices in the North Pacific Ocean." The forum focuses on cooperation on maritime security, maritime domain awareness, illegal drug trafficking, illegal migration, fisheries enforcement, and combined operations. North Pacific Coast Guard Forum, "NPCGF—What is It?" <http://www.ccg-gcc.gc.ca/e0007869>.

officials, including the secretary of State, to make visits to Hong Kong part of their travel.

Chapter 4: China's Global Reach

Section 1: China and Europe

The Commission recommends that:

21. Members of Congress and congressional bodies participating in transatlantic legislative dialogues such as the Transatlantic Policy Network or the Transatlantic Legislators Dialogue promote the discussion of economic, political, and security issues as they relate to China and Asia within these dialogues.
22. Congress direct the Department of Defense to survey NATO's current and planned exchanges and interactions with China to ensure that U.S. contributions are in compliance with the limitations enumerated in the National Defense Authorization Act of 2000.
23. Congress urge the administration to strengthen transatlantic cooperation on investment screening regimes and trade policy related to China with the European Union and individual EU member states through appropriate venues.
24. Congress urge the European Union and EU member states to strengthen the implementation of the 1989 Tiananmen arms embargo.

Section 2: China's Demand for and Control of Global Resources

The Commission recommends that:

25. Congress direct the administration to establish an interagency task force with the secretaries of Commerce, Defense, Energy, the Interior, and State and the director of the U.S. Geological Survey to (a) develop a governmentwide definition and list of "critical minerals"; (b) develop a plan regarding those minerals to reduce the vulnerability of the United States to pressure from China or any other country for political or economic advantage; and (c) require federal agencies to use existing statutory and regulatory tools to encourage critical minerals extraction and manufacture in the United States.
26. Congress assess the mandate, activities, and effectiveness of the Department of Defense's Strategic Materials Protection Board in order to ensure that the board meets its statutory responsibilities as mandated in 10 U.S.C. § 187.²
27. Congress maintain support for the U.S.-initiated Mekong River Initiative's Mekong Partnership for the Environment.

²The Strategic Materials Protection Board was created by statute (10 U.S.C. § 187) in 2007. The Board, which includes the Secretary of Defense; the Undersecretary of Defense for Acquisition, Technology, and Logistics; the Undersecretary of Defense for Intelligence; and the secretaries of the Army, Navy, and Air Force, is mandated to meet no less than once every two years to issue a report and recommendations on the security of supply for materials considered critical to national defense.

28. Congress maintain support for nongovernmental organizations involved in the U.S. Agency for International Development's Economic Support Fund for Tibet and the agency's Environmental Cooperation—Asia (ECO-Asia) programs for Water and Sanitation and Environmental Governance.
29. Congress direct the U.S. Department of State to assess the utility, interest of affected countries, and significance for the United States of creating an Asian regional water security framework to facilitate cooperative agreements among riparian countries and to promote transparency and information sharing on water security issues.

Chapter 5: Assessing China's Efforts to Become an Innovative Society

The Commission recommends that:

30. Congress ensure that the Office of the U.S. Trade Representative and the Interagency Trade Enforcement Center have sufficient resources so that the agencies can bring the necessary challenges against Chinese "innovation mercantilism" before the WTO.
31. Congress request that the administration assess and report to Congress on possible vulnerabilities for U.S. government and private sector parties in data storage and the provision of web services, such as cloud computing, in terms of national and economic security interests. Such assessment should focus on the provision of such services by Chinese companies and whether specific mitigation, abatement, or notice provisions are necessary.
32. Congress request that the National Academy of Sciences prepare a comprehensive study assessing China's strategies, policies and programs to become an innovative society and enhance its indigenous innovation. In conducting this study, the academy shall identify specific actions taken by the Chinese government to achieve the innovation goals outlined in the 12th Five-Year Plan. The academy shall include an evaluation of those leading-edge technologies where Chinese capabilities are comparable to or exceed those of the United States and provide appropriate measurement metrics. In addition, the academy shall identify the extent to which industrial espionage has been used as a tool to advance China's interest with specific examples, where possible. The academy shall also report on the extent to which U.S. companies have assisted in China's technological development.

ADDITIONAL VIEWS OF COMMISSIONERS WILLIAM REINSCH AND ROBIN CLEVELAND

This year's report arrives at an awkward time. It was written before the 18th Party Congress but appears after it concludes. As a result, the Commission was not able to provide any detailed analysis or comment on the change in leadership coming out of the Party Congress, which is perhaps the most significant political event in China in a decade. We are confident that at a future date the Commission will comment and that next year's report will also do so from the perspective of the year that has passed with the new Party leadership in place.

With respect to this report, once again we voted for it, although, as usual, we do not agree with all its conclusions or recommendations, which, we suspect, is also true of most, if not all, of our colleagues. It is a consensus document, and we very much appreciate the efforts of those commissioners who worked hard to achieve unanimity. Where the document is strong, as usual, is in its description of what China is doing wrong—from our point of view. Where it is weak, also as usual, is in its comments on what the Chinese are doing right, both internally and within the international space.

Sadly, also as usual, there is more of the former than the latter to discuss. As the Commission's previous reports have noted, China's government has, over the past 5–7 years, taken a sharp turn to the left. It has expanded the role of the state in the economy, focusing its own investment on national champion sectors and imposing new trade and investment restrictions and technology transfer demands on foreign competitors, European, Korean, and Japanese as well as American. These developments are amply described in this year's report, and in those of previous years.

The report also reminds us of the growing economic consensus that these are neither wise nor sustainable policies for China, not to mention everybody else. China's dilemma is that it cannot make significant changes without short term costs that will undermine popular support for the government and the Party's control of the state. The new development is that for the first time that choice is partly being made for them. Economic difficulties in Europe and slow growth in the United States have slowed down the Chinese export machine—it's hard to sell when there are no buyers.

In addition, there are small signs, particularly in the WTO, of a growing unity of view among the victims of China's policies—an increasing number of trade complaints, which, for the most part, have been successful, and small signs of increased interest in cooperation to deal with the Chinese challenge. Whether these factors combined will be enough to encourage meaningful policy change in China remains to be seen, but we continue to believe that the policies they are pursuing are unsustainable over the long term.

Two new areas in this year's report are trade data accounting and investment. With respect to the former, the report rightly notes that the rapid development of global supply chains makes our current method of determining origin and calculating bilateral trade deficits misleading. If we counted real value-added correctly, our deficit with some countries would be smaller and others would be larger, although the total would remain the same. Better data

inevitably means better policy, but this is not a change that can be made unilaterally. Fortunately, both the WTO and the OECD are working on a better approach, and we hope the Commission will follow that work closely.

With respect to investment, the report deserves credit for tackling a complex subject head on in its discussion of the difficulties American companies encounter in China and the risks Chinese FDI in the U.S. pose. What to do about it is more complicated. The report is more neutral on the issue of a Bilateral Investment Treaty than we would be. While the likelihood of successfully concluding a first class BIT is not great, it is nonetheless worth a try, and our report should have been more positive about it.

On the question of Chinese investment in the U.S., the report flirts with, but ultimately avoids, paranoia. There is no question that some Chinese investments pose national security risks, but the evidence thus far suggests that our current CFIUS process is adequate to catch them, and the current Administration has shown no reluctance to employ that tool. The more controversial questions are: (1) whether CFIUS' mandate should be expanded to include "economic security"; (2) whether an economic review mechanism should be established similar to other country models; and (3) whether we should adopt a policy of reciprocity with respect to Chinese investment—that is, prohibit it here in sectors where they prohibit it there. The report's recommendations on these points are compromises, which we appreciate, but they still go farther than we would like. While such steps are emotionally satisfying, and there is some evidence that reciprocity can, under the right circumstances, be a successful policy with China, these decisions would change our historic open investment policy and should be taken only after careful consideration of the consequences—far more consideration than the Commission has given. In addition, these actions cannot be completely confined to China, and the chilling effect on new investment at the very time we need it most could be devastating for our economy. In addition, we have never been impressed with the argument that we should do to the Chinese precisely what we have criticized them for doing to us. If the only way we can beat them is to become like them, then what will we have won?

APPENDIX I

UNITED STATES-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION CHARTER

22 U.S.C. 7002 (2001)

The Commission was created on October 30, 2000, by the Floyd D. Spence National Defense Authorization Act for 2001 § 1238, Pub. L. No. 106-398, 114 STAT. 1654A-334 (2000) (codified at 22 U.S.C. § 7002 (2001), as amended by the Treasury and General Government Appropriations Act for 2002 § 645 (regarding employment status of staff) & § 648 (regarding changing annual report due date from March to June), Pub. L. No. 107-67, 115 STAT. 514 (November 12, 2001); as amended by Division P of the “Consolidated Appropriations Resolution, 2003,” Pub. L. No. 108-7 (February 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of Commission); as amended by Pub. L. No. 109-108 (enacted November 22, 2005) (regarding responsibilities of Commission and applicability of FACA); as amended by Pub. L. No. 110-161 (enacted December 26, 2007) (regarding changing annual report due date from June to December; reporting unobligated balances and submission of quarterly financial reports; deemed Commission a committee of Congress for printing and binding costs; amended employee compensation levels, and performance-based reviews and awards subject to Title 5 USC; and directed that travel by members of the Commission and its staff shall be arranged and conducted under the rules and procedures applying to travel by members of the House of Representatives and its staff).

§ 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 United States-China Economic and Security Review 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 the date of the enactment of this Act [enacted Oct. 30, 2000] shall serve as members of the United States-China Economic and Security Review Commission until such time as members are first appointed to the United States-China Economic and Security Review Commission under this paragraph.

(4) Retention of support. The United States-China Economic and Security Review Commission shall retain and make use of such staff, materials, and infrastructure (including leased premises) of the Trade Deficit Review Commission as the United States-China Economic and Security Review Commission determines, in the judgment of the members of the United States-China Economic and Security Review Commission, are required to facilitate the ready commencement of activities of the United States-China Economic and Security Review 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 June 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 portion of trade in goods and services with the United States that the People's Republic of China dedicates to military systems or systems of a dual nature that could be used for military purposes.

(B) The acquisition by the People's Republic of China of advanced military or dual-use technologies from the United States by trade (including procurement) and other technology transfers, especially those transfers, if any, that contribute to the proliferation of weapons of mass destruction or their delivery systems, or that undermine international agreements or United States laws with respect to nonproliferation.

(C) Any transfers, other than those identified under subparagraph (B), to the military systems of the People's Republic of China made by United States firms and United States-based multinational corporations.

(D) An analysis of the statements and writing of the People's Republic of China officials and officially-sanctioned writings that bear on the intentions, if any, of the Government of the People's Republic of China regarding the pursuit of military competition with, and leverage over, or cooperation with, the United States and the Asian allies of the United States.

(E) The military actions taken by the Government of the People's Republic of China during the preceding year that bear on the national security of the United States and the regional stability of the Asian allies of the United States.

(F) The effects, if any, on the national security interests of the United States of the use by the People's Republic of China of financial transactions and capital flow and currency manipulations.

(G) Any action taken by the Government of the People's Republic of China in the context of the World Trade Organization that is adverse or favorable to the United States national security interests.

(H) Patterns of trade and investment between the People's Republic of China and its major trading partners, other than the United States, that appear to be substantively different from trade and investment patterns with the United States and whether the differences have any national security implications for the United States.

(I) The extent to which the trade surplus of the People's Republic of China with the United States enhances the military budget of the People's Republic of China.

(J) An overall assessment of the state of the security challenges presented by the People's Republic of China to the United States and whether the security challenges are increasing or decreasing from previous years.

(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 United States-China Economic and Security Review 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 United States-China Economic and Security Review 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 [19 U.S.C. § 2213 note].

(3) Staff. An executive director and other additional personnel for the United States-China Economic and Security Review 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 [19 U.S.C. § 2213 note]. 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, United States Code, for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title [language of 2001 amendment, Sec. 645].

(4) Detail of government employees. Federal Government employees may be detailed to the United States-China Economic and Security Review 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 [19 U.S.C. § 2213 note].

(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 United States-China Economic and Security Re-

view Commission may procure temporary and intermittent services for the United States-China Economic and Security Review 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 [19 U.S.C. § 2213 note].

(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) Federal Advisory Committee Act. The provisions of the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Commission.

(h) Effective date. This section shall take effect on the first day of the 107th Congress.

Amendments:

SEC. 645. (a) Section 1238(e)(3) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted by Public Law 106–398) is amended by adding at the end the following: “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, United States Code, for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title.” (b) The amendment made by this section shall take effect on January 3, 2001.”

SEC. 648. DEADLINE FOR SUBMISSION OF ANNUAL REPORTS BY UNITED STATES-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION. Section 1238(c)(1) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted into law by section I of Public Law 106–398) is amended by striking “March” and inserting “June”.

Changes: Enacted into law by Division P of the “Consolidated Appropriations Resolution, 2003” Pub. L. No. 108–7 dated February 20, 2003:

H. J. Res. 2—

DIVISION P—UNITED STATES-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

SECTION 1. SHORT TITLE.—This division may be cited as the “United States-China Economic and Security Review Commission”.

SEC. 2. (a) APPROPRIATIONS.—There are appropriated, out of any funds in the Treasury not otherwise appropriated, \$1,800,000, to remain available until expended, to the United States-China Economic and Security Review Commission.

(b) NAME CHANGE.—

(1) IN GENERAL.—Section 1238 of the Floyd D. Spence National Defense Authorization Act of 2001 (22 U.S.C. 7002) is amended—as follows:

In each Section and Subsection where it appears, the name is changed to the “U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION”—

(2) REFERENCES.—Any reference in any Federal law, Executive Order, rule, regulation, or delegation of authority, or any document of or relating to the United States-China Security Review Commission shall be deemed to refer to the United States-China Economic and Security Review Commission.

(c) MEMBERSHIP, RESPONSIBILITIES, AND TERMS.—

(1) IN GENERAL.—Section 1238(b)(3) of the Floyd D. Spence National Defense Authorization Act of 2001 (22 U.S.C. 7002) is amended by striking subparagraph (F) and inserting the following:

“(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;”.

SEC. 635. (a) Modification of Responsibilities.—Notwithstanding any provision of section 1238 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (22 U.S.C. 7002), or any other provision of law, the United States-China Economic and Security Review Commission established by subsection (b) of that section shall investigate and report exclusively on each of the following areas:

(1) PROLIFERATION PRACTICES.—The role of the People’s Republic of China in the proliferation of weapons of mass destruction and other weapons (including dual use technologies), including actions, the United States might take to encourage the People’s Republic of China to cease such practices.

(2) ECONOMIC TRANSFERS.—The qualitative and quantitative nature of the transfer of United States production activities to the People’s Republic of China, including the relocation of high technology, manufacturing, and research and development facilities, the impact of such transfers on United States national security, the adequacy of United States export control laws, and the effect of such transfers on United States economic security and employment.

(3) ENERGY.—The effect of the large and growing economy of the People’s Republic of China on world energy supplies and the role the United States can play (including joint research and development efforts and technological assistance), in influencing the energy policy of the People’s Republic of China.

(4) ACCESS TO UNITED STATES CAPITAL MARKETS.—The extent of access to and use of United States capital markets by the People's Republic of China, including whether or not existing disclosure and transparency rules are adequate to identify People's Republic of China companies engaged in harmful activities.

(5) REGIONAL ECONOMIC AND SECURITY IMPACTS.—The triangular economic and security relationship among the United States, Taipei and the People's Republic of China (including the military modernization and force deployments of the People's Republic of China aimed at Taipei), the national budget of the People's Republic of China, and the fiscal strength of the People's Republic of China in relation to internal instability in the People's Republic of China and the likelihood of the externalization of problems arising from such internal instability.

(6) UNITED STATES-CHINA BILATERAL PROGRAMS.—Science and technology programs, the degree of non-compliance by the People's Republic of China with agreements between the United States and the People's Republic of China on prison labor imports and intellectual property rights, and United States enforcement policies with respect to such agreements.

(7) WORLD TRADE ORGANIZATION COMPLIANCE.—The compliance of the People's Republic of China with its accession agreement to the World Trade Organization (WTO).

(8) FREEDOM OF EXPRESSION.—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 the areas of economic and security policy.

(b) Applicability of Federal Advisory Committee Act.—Subsection (g) of section 1238 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 is amended to read as follows:

(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.

The effective date of these amendments shall take effect on the date of enactment of this Act [November 22, 2005].

Changes: Enacted into law by the Consolidated Appropriations Act, 2008, Pub. L. No. 110–161 dated December 26, 2007:

H.R. 2764—

For necessary expenses of the United States-China Economic and Security Review Commission, \$4,000,000, including not more than \$4,000 for the purpose of official representation, to remain available until September 30, 2009: *Provided*, That the Commission shall submit a spending plan to the Committees on Appropriations no later than March 1, 2008, which effectively addresses the recommendations of the Government Accountability Office's audit of the Commission (GAO–07–1128): *Provided further*, That the Commission shall provide to the Committees on Appropriations a quarterly accounting of the cumulative balances of any unobligated funds that were received by the Commission during any previous fiscal year: *Provided further*, That for purposes of costs relating to printing and binding, the Commission shall be deemed, effective on the date of its establishment, to be a committee of Congress: *Provided further*, That compensation for the executive director of the Commission may not exceed the rate payable for level II of the Ex-

ecutive Schedule under section 5314 of title 5, United States Code: *Provided further*, That section 1238(c)(1) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, is amended by striking “June” and inserting “December”: *Provided further*, That travel by members of the Commission and its staff shall be arranged and conducted under the rules and procedures applying to travel by members of the House of Representatives and its staff.

COMMISSION FINANCIAL MANAGEMENT

SEC. 118. (a) REQUIREMENT FOR PERFORMANCE REVIEWS.—The United States-China Economic and Security Review Commission shall comply with chapter 43 of title 5, United States Code, regarding the establishment and regular review of employee performance appraisals.

(b) LIMITATION ON CASH AWARDS.—The United States-China Economic and Security Review Commission shall comply with section 4505a of title 5, United States Code, with respect to limitations on payment of performance-based cash awards.

APPENDIX II

BACKGROUND OF COMMISSIONERS

The Honorable Dennis C. Shea, Chairman

Chairman Dennis Shea was reappointed by Senate Republican Leader Mitch McConnell for a second two-year term expiring December 31, 2012. An attorney with 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.

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, 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, Commissioner 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, 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, 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, Chairman Shea led a team responsible for conducting much of the critical analysis necessary to support the Department's mission. In 2005, Chairman Shea left to serve as Senior Advisor to Senator Elizabeth Dole in her capacity as chairman of the National Republican Senatorial Committee.

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 Chairman currently resides in Alexandria, Virginia with his wife Elizabeth and daughter Juliette.

The Honorable William A. Reinsch, Vice Chairman

Vice Chairman William Reinsch was reappointed to the Commission by Senate Majority Leader Harry Reid for a seventh two-year term expiring December 31, 2013. He was elected as Vice Chairman of the Commission for the 2012 Report cycle effective January 1, 2012, and previously served as Chairman of the Commission for the 2011 Report cycle. Vice Chairman Reinsch served as Under Secretary for Export Administration in the U.S. Department of Commerce. As head of the Bureau of Export Administration, later named the Bureau of Industry and Security, Vice Chairman Reinsch was charged with administering and enforcing the export control policies of the U.S. government, including its antiboycott laws. Major accomplishments during his tenure included refocusing controls regarding economic globalization, most notably on high-performance computers, microprocessors, and encryption, completing the first revisions of the Export Administration regulations in over forty years. In addition, he revised the interagency process for reviewing applications and permitted electronic filing of applications over the Internet.

During this time, Vice Chairman Reinsch delivered more than two hundred speeches and testified fifty-three times before various committees of the Congress. Before joining the Department of Commerce, Mr. Reinsch was a senior legislative assistant to Senator John D. Rockefeller IV and was responsible for the senator's work on trade, international economic policy, foreign affairs, and defense. He also provided staff support for Senator Rockefeller's related efforts on the Finance Committee and the Commerce, Science, and Transportation Committee.

For over a decade, Vice Chairman Reinsch served on the staff of Senator John Heinz as chief legislative assistant, focusing on foreign trade and competitiveness policy issues. During that period, Senator Heinz was either the chairman or the ranking member of the Senate Banking Committee's Subcommittee on International Finance. Senator Heinz was also a member of the International Trade Subcommittee of the Finance Committee. Mr. Reinsch provided support for the senator on both subcommittees. This work included five revisions of the Export Administration Act and work on four major trade bills. Prior to joining Senator Heinz's staff, Vice Chairman Reinsch was a legislative assistant to Representatives Richard Ottinger and Gilbert Gude, acting staff director of the House Environmental Study Conference, and a teacher in Maryland.

Today Vice Chairman Reinsch is president of the National Foreign Trade Council. Founded in 1914, the council is the only business organization dedicated solely to trade policy, export finance, international tax, and human resources issues. The organization represents over three hundred companies through its offices in New York City and Washington.

In addition to his legislative and private sector work, Vice Chairman Reinsch served as an adjunct associate professor at the University of Maryland's University College Graduate School of Management and Technology, teaching a course in international trade and trade policy. He is also a member of the boards of the Executive Council on Diplomacy and the Center for International Private

Enterprise (CIPE). Vice Chairman Reinsch's publications include "Why China Matters to the Health of the U.S. Economy," published in *Economics and National Security*; "The Role and Effectiveness of U.S. Export Control Policy in the Age of Globalization" and "Export Controls in the Age of Globalization," both published in *The Monitor*. In addition, Vice Chairman Reinsch has published "Should Uncle Sam Control U.S. Technology Exports," published in *Insight Magazine*; "Encryption Policy Strikes a Balance," published in the *Journal of Commerce*, and "Building a New Economic Relationship with Japan," published with others in *Beyond the Beltway: Engaging the Public in U.S. Foreign Policy*.

Carolyn Bartholomew

Commissioner Carolyn Bartholomew was reappointed to the Commission by House Democratic Leader Nancy Pelosi for a sixth two-year term expiring on December 31, 2013. She previously served as the Commission's chairman for the 2007 and 2009 Report cycles and served as vice chairman for the 2010, 2009, and 2006 Report cycles.

Commissioner 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 William B. Richardson.

In these positions, Commissioner 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. Ms. 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. Currently, she serves on the board of directors of the Kaiser Aluminum Corporation and the nonprofit organization Asia Catalyst.

Commissioner 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.

Daniel A. Blumenthal

Commissioner Daniel Blumenthal was reappointed to the Commission by Senate Republican Leader Mitch McConnell for a fourth two-year term expiring on December 31, 2013. Commissioner Blumenthal served as the Commission's vice chairman for the 2007 Report cycle.

Commissioner Blumenthal was the country director for China, Taiwan, and Hong Kong in the Office of the Assistant Secretary of Defense for International Security Affairs, later becoming a senior director for China, Taiwan, Hong Kong, and Mongolia during the first term of President George W. Bush. Commissioner Blumenthal developed and implemented defense policy toward China, Taiwan, Hong Kong, and Mongolia. Commissioner Blumenthal was awarded the Office of the Secretary of Defense's Medal for Exceptional Public Service. Prior to joining the Defense Department, Commissioner Blumenthal was an associate attorney in the Corporate and Asia Practice Groups at Kelly Drye & Warren LLP. Earlier, he was an editorial and research assistant for *Near East Policy*.

Currently, Commissioner Blumenthal is the Director of Asian Studies and a resident fellow at the American Enterprise Institute for Public Policy Research. He is a member of the Academic Advisory Group of the Congressional U.S.- China Working Group and has been a member of the Project 2049 Institute's board of advisors since 2008. He is the co-author of *An Awkward Embrace: The United States and China in the 21st Century* (AEI Press, November 2012). In addition, Commissioner Blumenthal has written extensively on national security issues. He has written articles and op-eds for the *Washington Post*, the *Wall Street Journal*, the *Weekly Standard*, *National Review*, and numerous edited volumes.

Commissioner Blumenthal received a Master of Arts in International Relations and International Economics from The Johns Hopkins University School of Advanced International Studies and a Juris Doctorate from Duke University.

Peter T.R. Brookes

Commissioner Peter Brookes was reappointed to the Commission by Speaker of the House John Boehner for a two-year term expiring on December 31, 2013. Commissioner Brookes is currently a senior fellow for National Security Affairs at The Heritage Foundation. Prior to Heritage, he served in the George W. Bush Administration as the deputy assistant secretary of Defense for Asian and Pacific Affairs, with the Committee on International Relations in the U.S. House of Representatives, at the Central Intelligence Agency, at the State Department at the United Nations, in the defense industry, and in the U.S. Navy. He is a doctoral candidate at Georgetown University and a graduate of the U.S. Naval Academy, the Defense Language Institute, the Naval War College, and The Johns Hopkins University.

Robin Cleveland

Commissioner Robin Cleveland was reappointed by Senate Republican Leader Mitch McConnell for a two-year term expiring December 31, 2012. After three decades of government service, Commissioner Cleveland is now serving as a professional school counselor. Previously, Commissioner Cleveland worked for U.S. Senator Mitch McConnell in a number of senior positions 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, as the associate director of the Office of Management and Budget at The White House, and as principal with Olivet Consulting, LLC. During her tenure in The White House, Commissioner Cleveland co-led the interagency effort to develop two Presidential initiatives: the Millennium Challenge Corporation and the President's Emergency Plan for AIDS Relief. These efforts reflect her experience linking 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 C. Richard D'Amato

Commissioner C. Richard D'Amato was reappointed to the U.S.-China Economic and Security Review Commission by Senate Majority Leader Harry Reid on December 8, 2010, for a two-year term expiring on December 31, 2012. He previously served on the Commission from March 2001 to December 2007, serving as the chairman and vice chairman of the Commission from April 2001 through December 20, 2005. He is an attorney and a member of the Maryland and DC Bars. He is a former delegate to the General Assembly of the State of Maryland (1998–2002), representing the Annapolis, Maryland, region, and served on the Appropriations Committee. He is also a retired captain in the United States Navy Reserve, served two tours of duty in the Vietnam theatre aboard the *USS KING* (DLG-10), and three years as an assistant professor of Government at the U.S. Naval Academy. He served on the Trade Deficit Review Commission, a Congressional advisory body, as a member from 1999 to 2000.

He served as vice president for development of Synergics, Inc., an international energy company and developer of alternative energy projects, particularly wind energy. He also serves as an official presenter and participant in former Vice President Al Gore's climate project and as a member of Maryland Governor Martin O'Malley's commission on climate change.

From 1988 to 1998, Commissioner D'Amato was the Democratic counsel for the Committee on Appropriations of the U.S. Senate. He was responsible for coordinating and managing the annual appropriations bills and other legislation on policy and funding of U.S. defense, foreign policy, trade, and intelligence matters. He served from 1980 to 1988 as senior foreign policy and defense advisor to the former Democratic Senate leader, Senator Robert C. Byrd. In this position, he supervised work on major foreign policy, national security, and trade policies and was the co-director for the Senate Arms Control Observer Group, a bipartisan leadership organization, which served as liaison with The White House on all arms control negotiations with the Soviet Union. He also served on the Senate delegation to the Kyoto negotiations on global warming.

Mr. D'Amato began his career as legislative director for Congressman James Jeffords (Ind.-VT) from 1975 to 1978 and then as chief of staff for Senator Abraham Ribicoff (D-CT) until 1980.

He has been active in other aspects of public service, having founded the annual Taste-of-the-Nation dinner in Annapolis as part of the nationwide "Share Our Strength" hunger relief organi-

zation and created an annual scholarship for college-bound African-American women in Anne Arundel County, Maryland. He currently serves on the boards of the Annapolis Symphony Orchestra, the U.S. Coast Guard Foundation, the Chesapeake Legal Alliance, the Maryland State Prosecutor Selection & Disabilities Commission, the Center for American Politics at the University of Maryland, and the Maryland League of Conservation Voters (Anne Arundel County). He is a founding member of the National Sailing Hall of Fame.

Commissioner D'Amato received his B.A. (cum laude) from Cornell University in 1964 and served on the Cornell board of trustees' Advisory Council. He received his M.A. from the Fletcher School of Law and Diplomacy in Boston in 1967 and received his legal education from Harvard Law School and from the Georgetown University Law Center (J.D., 1980). He resides in Annapolis with his wife, Dee.

Jeffrey L. Fiedler

Commissioner Jeffrey Fiedler was reappointed to the Commission by House Democratic Leader Nancy Pelosi on December 23, 2011, for a fourth two-year term expiring December 31, 2013. He is assistant to the general president, and director, Special Projects and Initiatives, for the International Union of Operating Engineers. Previously, he was President of Research Associates of America (RAA) and the elected president of the Food and Allied Service Trades Department, AFL-CIO ("FAST"). This constitutional department of the AFL-CIO represented ten unions with a membership of 3.5 million in the United States and Canada. The focus of RAA, like FAST before it, was organizing and bargaining research for workers and their unions.

He served as a member of the AFL-CIO Executive Council committees on International Affairs, Immigration, Organizing, and Strategic Approaches. He also served on the board of directors of the Consumer Federation of America and is a member of the Council on Foreign Relations. In 1992, Mr. Fiedler co-founded the Laogai Research Foundation (LRF), an organization devoted to studying the forced labor camp system in China. When the foundation's Executive Director, Harry Wu, was detained in China in 1995, Mr. Fiedler coordinated the campaign to win his release. He no longer serves as director of the LRF.

Mr. Fiedler has testified on behalf of the AFL-CIO before the Senate Foreign Relations Committee and the House International Affairs Committee and its various subcommittees, as well as the Trade Subcommittee of the House Ways and Means Committee concerning China policy. He attended three of the American Assembly conferences on China sponsored by Columbia University and has participated in a Council on Foreign Relations task force and study group on China. He has been interviewed on CBS, NBC, ABC, CNN, and CNBC on China policy, international trade issues, human rights, and child labor.

A Vietnam veteran, he served with the U.S. Army in Hue in 1967-68. He received his B.A. in Political Science from Southern Illinois University. He is married with two adult children and resides in Virginia.

The Honorable Carte P. Goodwin

Senator Carte Goodwin was appointed to the Commission by Senate Majority Leader Harry Reid for a two-year term expiring on December 31, 2013.

He is an attorney with the Charleston, West Virginia, law firm of Goodwin & Goodwin, LLP. His practice includes commercial litigation, appellate advocacy, and intellectual property.

In July of 2010, West Virginia Governor Joe Manchin III appointed Senator 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, Senator 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, Senator 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, Senator 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.

Senator 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, Senator 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.

Senator Goodwin currently resides in Charleston, West Virginia, with his wife, Rochelle; son, Wesley Patrick; and daughter, Anna Vail.

Daniel M. Slane

Commissioner Daniel Slane was reappointed to the Commission by Speaker of the House John Boehner for a third two-year term expiring on December 31, 2013. 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 university, 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. Com-

missioner 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.

Michael R. Wessel

Commissioner Michael Wessel, an original member of the U.S.-China Economic and Security Review Commission, was reappointed by House Democratic Leader Nancy Pelosi for a sixth two-year term expiring on December 31, 2012.

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.

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 1995, he developed the Ten Percent Tax Plan, a comprehensive tax reform initiative that would enable roughly four out of five taxpayers to pay no more than a ten percent rate in federal income taxes, the principal Democratic tax reform alternative.

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.

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. He was formerly the Executive Vice President at the Downey McGrath Group, Incorporated. Commissioner Wessel is a member of the board of directors of Goodyear Tire and Rubber. 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.

Commissioner Larry Wortzel was reappointed by Speaker of the House John Boehner for a sixth two-year term expiring on December 31, 2012. Dr. Wortzel has served on the Commission since November 2001, was the Commission's chairman for the 2006 and 2008 Report cycles, and served as vice chairman for the 2009 Report cycle.

A leading authority on China, Asia, national security, and military strategy, Commissioner Wortzel had a distinguished career in the U.S. Armed Forces. Following three years in the Marine Corps, Commissioner Wortzel enlisted in the U.S. Army in 1970. His first assignment with the Army Security Agency took him to Thailand, where he focused on Chinese military communications in Vietnam and Laos. Within three years, he had graduated from the Infantry Officer Candidate School and the Airborne and Ranger schools. After four years as an infantry officer, Commissioner Wortzel shifted to military intelligence. Commissioner Wortzel traveled regularly throughout Asia while serving in the U.S. Pacific Command from 1978 to 1982. The following year, he attended the National University of Singapore, where he studied advanced Chinese and traveled in China and Southeast Asia. He next worked for the Under Secretary of Defense for Policy, developing counterintelligence programs to protect emerging defense technologies from foreign espionage. Also, the Commissioner managed programs to gather foreign intelligence for the Army Intelligence and Security Command.

From 1988 to 1990, Commissioner Wortzel was the Assistant Army Attaché at the U.S. Embassy in Beijing, where he witnessed and reported on the Tiananmen Massacre. After assignments as an

army strategist and managing army intelligence officers, he returned to China in 1995 as the army attaché. In December 1997, Commissioner Wortzel became a faculty member of the U.S. Army War College, serving as the Director of the Strategic Studies Institute. He retired from the army as a colonel.

After his military retirement, Commissioner Wortzel served as the director of the Asian Studies Center and vice president for foreign policy at The Heritage Foundation from 1999 to 2006. Commissioner Wortzel's books include *Class in China: Stratification in a Classless Society*; *China's Military Modernization: International Implications*; *The Chinese Armed Forces in the 21st Century*; and *Dictionary of Contemporary Chinese Military History*. His newest book, *The Dragon Extends its Reach: Chinese Military Power Goes Global*, will be published by Potomac Books, Inc., in 2013.

A graduate of the Armed Forces Staff College and the U.S. Army War College, Commissioner Wortzel earned his Bachelor of Arts from Columbus College and his Master of Arts and Ph.D. from the University of Hawaii. He and his wife live in Williamsburg, Virginia.

Michael R. Danis, Executive Director

Before joining the U.S.-China Economic and Security Review Commission in August 2009, Michael Danis served as a senior intelligence officer with the Defense Intelligence Agency for 25 years. Mr. Danis managed the agency's technology transfer division. This division is 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-technology corporations. Mr. Danis 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

<p>Full transcripts and written testimonies are available online at the Commission's website: www.uscc.gov.</p>

January 26, 2012: Public Hearing on “China’s Global Quest for Resources and Implications for the United States” Washington, DC

Commissioners present: Hon. Dennis C. Shea, Chairman; Hon. William A. Reinsch, Vice Chairman; Carolyn Bartholomew; Daniel A. Blumenthal; Robin Cleveland; Hon. C. Richard D’Amato (Hearing Co-Chair); Hon. Carte P. Goodwin; Daniel M. Slane (Hearing Co-Chair); Larry M. Wortzel.

Witnesses: W. David Menzie, U.S. Geological Survey; Elizabeth Economy, Council on Foreign Relations; Grace Mang, International Rivers; Jennifer Turner, Woodrow Wilson International Center for Scholars; Mikkal E. Herberg, National Bureau of Asian Research; Sarah M. Forbes, World Resources Institute; Jeffery A. Green, J.A. Green & Company; Tabitha Grace Mallory, The Johns Hopkins University, SAIS; Patrick M. Cronin, Center for a New American Security; Lyle J. Goldstein, U.S. Naval War College; Brahma Chellaney,* Centre for Policy Research; Environmental and Development Desk,* Central Tibetan Administration.

February 15, 2012: Public Hearing on “Chinese State-Owned and State-Controlled Enterprises” Washington, DC

Commissioners present: Hon. Dennis C. Shea, Chairman; Carolyn Bartholomew; Daniel A. Blumenthal; Robin Cleveland (Hearing Co-Chair); Hon. C. Richard D’Amato; Jeffrey L. Fiedler; Hon. Carte P. Goodwin; Daniel M. Slane; Michael R. Wessel (Hearing Co-Chair); Larry M. Wortzel.

Congressional Perspectives: Hon. Peter J. Visclosky, U.S. Representative from the state of Indiana; Hon. Sue Myrick, U.S. Representative from the state of North Carolina.

Witnesses: Andrew Szamosszegi, Capital Trade, Inc.; Adam Hersh, Center for American Progress; Roselyn Hsueh, Temple University; Timothy C. Brightbill, Wiley Rein, LLP; David F. Gordon, Eurasia Group; Paul T. Saulski, Georgetown University Law Center; Elizabeth J. Drake, Stewart and Stewart; Derek Scissors, The Heritage Foundation; Curtis J. Milhaupt, Columbia Law School.

**March 26, 2012: Public Hearing on “Developments in China’s
Cyber and Nuclear Capabilities”
Manassas, VA**

Commissioners present: Hon. Dennis C. Shea, Chairman; Hon. William A. Reinsch, Vice Chairman; Carolyn Bartholomew; Daniel A. Blumenthal; Robin Cleveland; Hon. C. Richard D’Amato; Jeffrey L. Fiedler (Hearing Co-Chair); Hon. Carte P. Goodwin; Daniel M. Slane; Michael R. Wessel; Larry M. Wortzel (Hearing Co-Chair).

Congressional Perspectives: Hon. Frank Wolf, U.S. Representative from the state of Virginia.

Witnesses: James Cartwright, Center for Strategic and International Studies; Richard Bejtlich, Mandiant; Nart Villeneuve, Trend Micro; Jason Healey, Atlantic Council; Phillip A. Karber, Georgetown University; Henry Sokolski, Nonproliferation Policy Education Center; Mark Schneider, National Institute of Public Policy; Phillip C. Saunders, National Defense University; Mark Stokes,* Project 2049 Institute.

**April 19, 2012: Public Hearing on “The China-Europe
Relationship and Transatlantic Implications”
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Chairman; Hon. William A. Reinsch, Vice Chairman; Carolyn Bartholomew (Hearing Co-Chair); Daniel A. Blumenthal (Hearing Co-Chair); Robin Cleveland; Hon. C. Richard D’Amato; Jeffrey L. Fiedler; Daniel M. Slane; Michael R. Wessel; Larry M. Wortzel.

Congressional Perspectives: Hon. Dana Rohrabacher, U.S. Representative from the state of California.

Witnesses: Andrew Small, German Marshall Fund of the United States; Jonas Parello-Plesner, European Council on Foreign Relations; May-Britt Stumbaum, Free University of Berlin; Øystein Tunsjø, Norwegian Institute for Defence Studies; Christina Lin, The Johns Hopkins University, SAIS; Jonathan Holslag, Brussels Institute for Contemporary China Studies; Gudrun Wacker, German Institute for International and Security Affairs; Michal Meidan,* Eurasia Group.

**May 10, 2012: Public Hearing on “Assessing China’s Efforts to
Become an Innovation Society—A Progress Report”
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Chairman (Hearing Co-Chair); Hon. William A. Reinsch, Vice Chairman; Carolyn Bartholomew; Robin Cleveland; Hon. C. Richard D’Amato; Hon. Carte P. Goodwin (Hearing Co-Chair); Daniel M. Slane; Michael R. Wessel.

Witnesses: Robert D. Atkinson, Information Technology and Innovation Foundation; Dan Breznitz, Georgia Institute of Technology; Richard P. Suttmeier, University of Oregon; Denis Fred Simon, Arizona State University; Earl C. Joseph II, IDC; Horst

Simon, Lawrence Berkeley National Laboratory; Timothy K. Harder, EMC, Cloud Infrastructure Division; Thomas Mahnken, U.S. Naval War College; Kathleen Walsh, U.S. Naval War College.

**June 14, 2012: Public Hearing on “The Evolving U.S.-China Trade and Investment Relationship”
Washington, DC**

Commissioners present: Hon. Dennis C. Shea, Chairman; Hon. William A. Reinsch, Vice Chairman (Hearing Co-Chair); Carolyn Bartholomew; Daniel A. Blumenthal; Hon. C. Richard D’Amato; Jeffrey L. Fiedler; Hon. Carte P. Goodwin; Daniel M. Slane (Hearing Co-Chair); Michael R. Wessel; Larry M. Wortzel.

Witnesses: Judith Dean, Brandeis University; Shang-Jin Wei, Columbia University; Yingying Xu, Manufacturers Alliance for Productivity and Innovation; Michael McCarthy, Infinera Corporation; James Fellowes, Fellowes, Inc.; Ahmed Siddiqui, Go Go Mongo; David Fagan, Covington and Burling, LLP; Nova Daly, Wiley Rein, LLP.

*Submitted material for the record.

APPENDIX IIIA
LIST OF WITNESSES TESTIFYING BEFORE
THE COMMISSION
2012 Hearings

Full transcripts and written testimonies are available online at the Commission's website: www.uscc.gov .

Alphabetical Listing of Panelists Testifying before the USCC

Panelist Name	Panelist Affiliation	USCC Hearing
Atkinson, Robert D.	Information Technology and Innovation Foundation	May 10, 2012
Bejtlich, Richard	Mandiant	March 26, 2012
Brennitz, Dan	Georgia Institute of Technology	May 10, 2012
Brightbill, Timothy C.	Wiley Rein, LLP	February 15, 2012
Cartwright, James	Center for Strategic and International Studies	March 26, 2012
Chellaney, Brahma *	Centre for Policy Research	January 26, 2012
Cronin, Patrick M.	Center for a New American Security	January 26, 2012
Daly, Nova	Wiley Rein, LLP	June 14, 2012
Dean, Judith	Brandeis University	June 14, 2012
Drake, Elizabeth J.	Stewart and Stewart	February 15, 2012
Economy, Elizabeth	Council on Foreign Relations	January 26, 2012
Environmental and Development Desk *	Central Tibetan Administration	January 26, 2012
Fagan, David	Covington and Burling, LLP	June 14, 2012
Fellowes, James	Fellowes, Inc.	June 14, 2012
Forbes, Sarah M.	World Resources Institute	January 26, 2012
Goldstein, Lyle J.	U.S. Naval War College	January 26, 2012
Gordon, David F.	Eurasia Group	February 15, 2012
Green, Jeffery A.	J.A. Green & Company	January 26, 2012

Alphabetical Listing of Panelists Testifying before the USCC
Continued

Panelist Name	Panelist Affiliation	USCC Hearing
Harder, Timothy K.	EMC, Cloud Infrastructure Division	May 10, 2012
Healey, Jason	Atlantic Council	March 26, 2012
Herberg, Mikkal E.	National Bureau of Asian Research	January 26, 2012
Hersh, Adam	Center for American Progress	February 15, 2012
Holslag, Jonathan	Brussels Institute for Contemporary China Studies	April 19, 2012
Hsueh, Roselyn	Temple University	February 15, 2012
Joseph II, Earl C.	IDC	May 10, 2012
Karber, Phillip A.	Georgetown University	March 26, 2012
Lin, Christina	The Johns Hopkins University, SAIS	April 19, 2012
Mahnken, Thomas	U.S. Naval War College	May 10, 2012
Mallory, Tabitha Grace	The Johns Hopkins University, SAIS	January 26, 2012
Mang, Grace	International Rivers	January 26, 2012
McCarthy, Michael	Infinera Corporation	June 14, 2012
Meidan, Michal *	Eurasia Group	April 19, 2012
Menzie, W. David	U.S. Geological Survey	January 26, 2012
Milhaupt, Curtis J.	Columbia Law School	February 15, 2012
Myrick, Sue	U.S. Representative from the state of North Carolina	February 15, 2012
Parello-Plesner, Jonas	European Council on Foreign Relations	April 19, 2012
Rohrabacher, Dana	U.S. Representative from the state of California	April 19, 2012
Saulski, Paul T.	Georgetown University Law Center	February 15, 2012
Saunders, Phillip C.	National Defense University	March 26, 2012
Schneider, Mark	National Institute of Public Policy	March 26, 2012
Scissors, Derek	The Heritage Foundation	February 15, 2012
Siddiqui, Ahmed	Go Go Mongo	June 14, 2012
Simon, Denis Fred	Arizona State University	May 10, 2012

Alphabetical Listing of Panelists Testifying before the USCC
Continued

Panelist Name	Panelist Affiliation	USCC Hearing
Simon, Horst	Lawrence Berkeley National Laboratory	May 10, 2012
Small, Andrew	German Marshall Fund of the United States	April 19, 2012
Sokolski, Henry	Nonproliferation Policy Education Center	March 26, 2012
Stokes, Mark *	Project 2049 Institute	March 26, 2012
Stumbaum, May-Britt	Free University of Berlin	April 19, 2012
Suttmeier, Richard P.	University of Oregon	May 10, 2012
Szamosszegi, Andrew	Capital Trade, Inc.	February 15, 2012
Tunnsjø, Øystein	Norwegian Institute for Defence Studies	April 19, 2012
Turner, Jennifer	Woodrow Wilson International Center for Scholars	January 26, 2012
Villeneuve, Nart	Trend Micro	March 26, 2012
Visclosky, Peter J.	U.S. Representative from the state of Indiana	February 15, 2012
Wacker, Gudrun	German Institute for International and Security Affairs	April 19, 2012
Walsh, Kathleen	U.S. Naval War College	May 10, 2012
Wei, Shang-Jin	Columbia University	June 14, 2012
Wolf, Frank	U.S. Representative from the state of Virginia	March 26, 2012
Xu, Yingying	Manufacturers Alliance for Productivity and Innovation	June 14, 2012

*Submitted material for the record.

**APPENDIX IV
INTERLOCUTORS' ORGANIZATIONS**

**Asia Fact-Finding Trips
May and September 2012**

THE PHILIPPINES AND CHINA, MAY 15–25, 2012

During the visit of a U.S.-China Commission delegation to the Philippines and China in May 2012, the delegation met with representatives of the following organizations:

In The Philippines

U.S. Government

- U.S. Embassy in Manila

Government of the Philippines

- Philippine Coast Guard
- Department of National Defense
- Department of Foreign Affairs
- Department of Energy

Universities

- University of the Philippines
- De La Salle University

Private Enterprise

- Subic Bay Freeport Zone

In China

U.S. Government

- U.S. Embassy in Beijing
- U.S. Consulate in Shanghai

Government of the People's Republic of China

- Ministry of Science and Technology
- Chinese Academy of Science and Technology for Development
- Suzhou Municipal Officials

Research Organizations

- Changzhou Institute of Advanced Manufacturing Technology
- Changzhou Science and Education Town

Private Enterprise

- Mettler Toledo (Changzhou) Measurement Technology, Ltd.
- Smith Drilling Equipment (Changzhou, Ltd.)
- Changzhou Ashland Modern Chemical Co. Ltd.
- Black & Decker (Suzhou) Precisions Manufacturing
- Rogers Corporation, Advanced Circuit Materials Productions Facility

TAIWAN, SEPTEMBER 4–8, 2012

During the visit of a U.S.-China Commission delegation to Taiwan in September 2012, the delegation met with representatives of the following organizations:

In Taiwan

Government of Taiwan

- National Security Council
- Ministry of Defense
- Ministry of Foreign Affairs

Research Organizations

- Institute of International Relations, National Chengchi University

Private Enterprise

- American Institute in Taiwan

APPENDIX V
LIST OF RESEARCH MATERIAL
Contracted and Staff Research Reports
Released in 2012

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 P.L. 106-398 and P.L. 108-7. 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 Research Reports

An Analysis of Chinese Investments in the U.S. Economy

Prepared for the USCC by Andrew Szamosszegi/Capital Trade,
Incorporated
November 2012

http://www.uscc.gov/researchpapers/2012/11-7-12_An_Analysis_of_Chinese_Investments_in_the_U.S._Economy%28CTI%29.pdf

China's Evolving Space Capabilities: Implications for U.S. Interests

Prepared for the USCC by Mark Stokes and Dean Cheng/Project
2049 Institute
April 2012

http://www.uscc.gov/RFP/2012/USCC_China-Space-Program-Report_April-2012.pdf

Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage

Prepared for the USCC by Bryan Krekel, Patton Adams, and
George Bakos/Northrop Grumman Corporation
March 2012

http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf

Staff Research Reports and Backgrounders

Export Assistance and the China Challenge

Written by USCC Policy Analyst Anna Tucker

April 2012

http://www.uscc.gov/researchpapers/2012/5.7.2012_ExportAssistanceandtheChinaChallenge.pdf

China and the Arctic: Objectives and Obstacles

Written by USCC Policy Analyst Caitlin Campbell

April 2012

http://www.uscc.gov/researchpapers/2012/China-and-the-Arctic_Apr2012.pdf

Indigenous Weapons Development in China's Military Modernization

Written by USCC Research Fellow Amy Chang and

Research Coordinator John Dotson

April 2012

<http://www.uscc.gov/researchpapers/2012/China-Indigenous-Military-Developments-Final-Draft-03-April2012.pdf>

The China Rising Leaders Project, Part 1: The Chinese Communist Party and its Emerging Next-Generation Leaders

Written by USCC Research Coordinator John Dotson and

Research Fellows Shelly Zhao and Andrew Taffer

March 2012

http://www.uscc.gov/RFP/2012/USCC_Staff_Report_Rising_Leaders_inthe_CCP_%28March%202012%29.pdf

China's First Deployment of Combat Forces to a UN Peacekeeping Mission—South Sudan

Written by USCC Senior Policy Analyst Daniel Hartnett

March 2012

http://www.uscc.gov/researchpapers/2012/MEMO-PLA-PKO_final.pdf

China Media Watch: Chinese State-Run Media Depicts Xi Visit as Victory Lap, Lecture Tour

Written by USCC Research Fellow David Herbert

February 2012

http://www.uscc.gov/researchpapers/2012/2_17_12_XiMemo_am_edits.pdf

APPENDIX VI

ACRONYMS AND ABBREVIATIONS

2PLA	Second Department of the PLA General Staff Department
3PLA	Third Department of the PLA General Staff Department
4PLA	Fourth Department of the PLA General Staff Department
A2/AD	anti-access/area denial
app	application
ASEAN	Association of Southeast Asian Nations
ATP	advanced technology products
CCP	Chinese Communist Party
CEO	Chief executive officer
CFIUS	Committee on Foreign Investment in the United States
CIC	China Investment Corporation
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
ECFA	Economic Cooperation Framework Agreement
EEZ	exclusive economic zone
EU	European Union
Ex-Im Bank	Export-Import Bank of the United States
FDI	foreign direct investment
GDP	gross domestic product
GPA	Government Procurement Agreement
HED	(EU-China) High-Level Economic and Trade Dialogue
ICBC	Industrial and Commercial Bank of China
IMF	International Monetary Fund
IP	intellectual property
IT	information technology
IUU	illegal, unreported, and unregulated
Km	kilometer
MOFCOM	(China's) Ministry of Commerce
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
OECD	Organization for Economic Co-operation and Development
PLA	People's Liberation Army
PRC	People's Republic of China
PSC	Politburo Standing Committee
PWC	Pratt & Whitney Canada
R&D	research and development
RMB	renminbi

ROC	Republic of China (Taiwan)
S&ED	Strategic and Economic Dialogue
SASAC	State-owned Assets Supervision and Administration Commission
SCO	Shanghai Cooperation Organization
SEC	Securities and Exchange Commission
SEI	strategic emerging industry
SIE	state-invested enterprise
Sinopec	China Petrochemical Corporation
SME	small- and medium-sized enterprise
SOE	state-owned enterprise
SRBM	short-range ballistic missile
SUV	sport utility vehicle
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
WTO	World Trade Organization
ZTE	Zhongxing Telecommunications Equipment

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