U.S.-China Economic and Security Review Commission

Economics and Trade Bulletin

September 5, 2018

Highlights of This Month's Edition

- **Bilateral trade:** The U.S.-China goods trade deficit reached $36.8 billion in July 2018, the highest monthly deficit on record.
- **Bilateral policy issues:** President Trump signs FIRRMA into law, expanding CFIUS's authority to screen foreign investment for national security threats; midlevel U.S. and Chinese financial officials meet to resume trade negotiations but accomplish little.
- **Policy trends in China's economy:** Beijing is shifting toward monetary stimulus, stepping up efforts to boost bank lending amid cooling economic growth and fears that an intensifying trade conflict with the United States might trigger a sharper slowdown; China introduces new measures to curb risks from peer-to-peer lending in response to rising defaults across the industry; Chinese regulators enhance controls on currency movements, stabilizing the renminbi exchange rate after months of rapid depreciation against the dollar; although the Hong Kong Stock Exchange's revised listing rules have improved its global competitiveness, the number of Chinese firms listed and the amounts raised are below initial expectations.
- **Sector Focus – Pork:** According to the U.S. Department of Agriculture, U.S. pork exports to China fell by 27 percent in May, then 19 percent in June relative to the previous year; Chinese tariffs on U.S. pork were raised to 62 percent in early July.

Contents

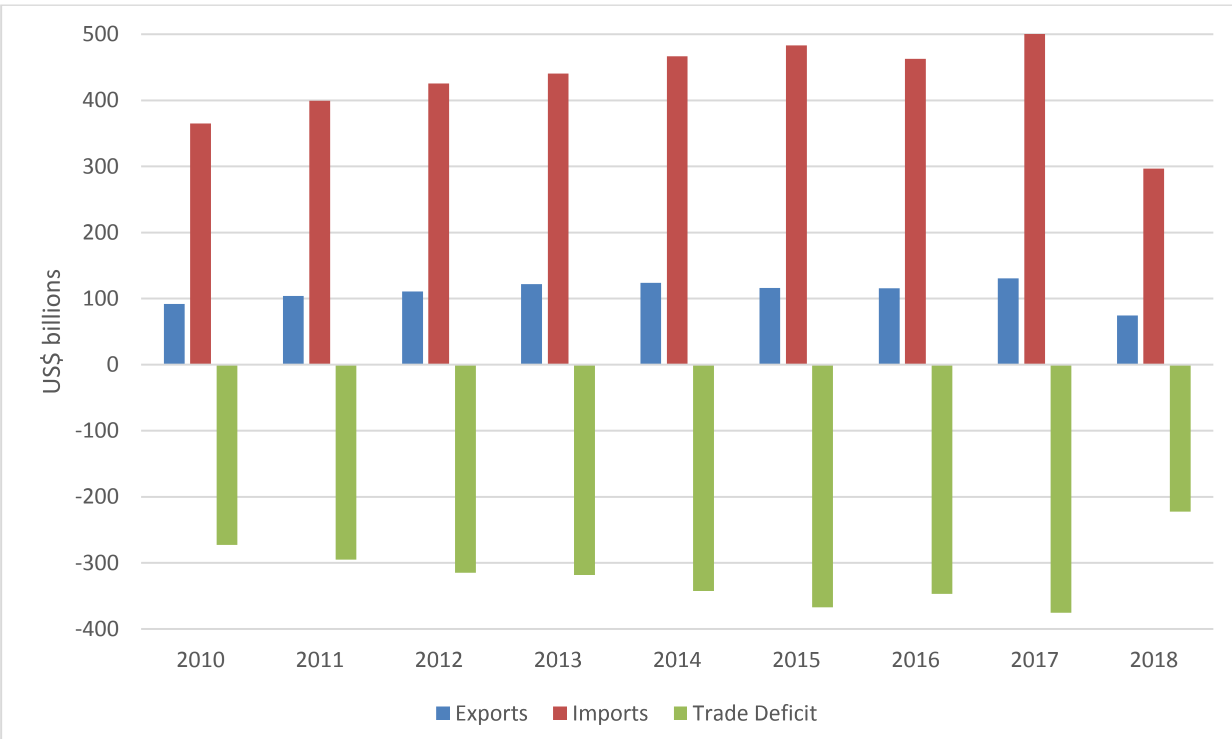
This issue of the Economics and Trade Bulletin *was prepared by Nargiza Salidjanova, Michelle Ker, Katherine Koleski, Sean O'Connor, and Suzanna Stephens. You may reach us at* contact@uscc.gov.

Bilateral Trade

U.S. Monthly Goods Trade Deficit with China Reaches $36.8 Billion in July 2018

In July 2018, the U.S. trade deficit in goods with China totaled $36.8 billion, its highest monthly level on record and an increase of 9.6 percent compared to July 2017.[1] U.S. exports to China declined from $11.1 billion in June 2018 to $10.3 billion in July, while U.S. imports from China surged to $47.1 billion, the highest level since November 2017.[2] Through the first seven months of the year, the U.S. goods trade deficit with China increased 8.7 percent year-on-year to $222.6 billion, and is poised to exceed the annual record of $375.6 billion set in 2017.[3] Year-to-date, the United States has exported $74.3 billion worth of goods to China, an 8 percent increase year-on-year, and imported $296.8 billion, up 8.5 percent year-on-year (see Figure 1).[4]

Figure 1: U.S. Goods Trade Balance with China, 2010–July 2018



Note: 2018 data are for the first seven months of the year.
Source: U.S. Census Bureau, *Trade in Goods with China*, September 5, 2018. *https://www.census.gov/foreign-trade/balance/c5700.html*.

Bilateral Policy Issues

Committee on Foreign Investment in the United States Reform Becomes Law

On August 13, 2018, President Trump signed into law the Foreign Investment Risk Review Modernization Act (FIRRMA) as part of the John S. McCain National Defense Authorization Act for fiscal year (FY) 2019.[5] FIRRMA reforms the Committee on Foreign Investment in the United States (CFIUS) for the first time since 2007.[*] Though

[*] For Commission's assessment of Chinese investment in the United States and recommendations for reforming the CFIUS process, see U.S.-China Economic and Security Review Commission, "Chinese Investment in the United States," in *2017 Annual Report to Congress*, November 2017, 71–111.

many of FIRRMA's provisions merely codify existing CFIUS practice (e.g., with regards to real estate acquisitions), FIRRMA also changes, broadens, or limits the committee's authority in a number of important ways. In particular, FIRRMA expands the definition of "covered transactions" (i.e., transactions subject to a CFIUS review) to include access to critical technology, critical infrastructure, and sensitive information, and certain types of investment fund transactions.

Congress identified several factors it wants CFIUS to consider when considering national security risks:

1. Whether a transaction involves a country of "special concern" that has the "strategic goal of acquiring a type of critical technology or critical infrastructure that would affect" U.S. leadership in those areas;
2. Impact of cumulative control by foreign persons of a particular critical technology or asset, and patterns of recent transactions for any given critical technology or asset;
3. Whether the foreign person involved in a transaction has "a history of complying with United States laws and regulations";
4. How the control by a foreign person of U.S. industries or activities "affects the capability and capacity of the United States to meet the requirements of national security";
5. The extent to which a transaction may expose sensitive information on U.S. citizens to exploitation by a foreign person or government;
6. Whether a transaction may exacerbate or create new cybersecurity vulnerabilities in the United States.[6]

Arguably, FIRRMA's most substantial change to the CFIUS process concerns the scope of covered transactions, including:

- *Critical technology:* FIRRMA broadens the definition of "critical technology" beyond traditional export controlled articles (i.e., defense articles covered in the U.S. Munitions List or Commerce Control List) to include "emerging and foundational technologies" as defined in the Export Control Reform Act of 2018 (ECRA).[*] [7] FIRRMA also requires the president to "establish and, in coordination with the Secretary, the Secretary of Defense, the Secretary of Energy, the Secretary of State, and the heads of other Federal agencies as appropriate, lead, a regular, ongoing interagency process to identify emerging and foundational technologies."[8]
- *Noncontrolling investment:* FIRRMA provides that any noncontrolling investment, direct or indirect, by a foreign person shall be subject to CFIUS scrutiny if such an investment grants a foreign person control over any unaffiliated U.S. business that (1) owns, operates, manufactures, supplies, or services critical infrastructure; (2) produces, designs, tests, manufactures, fabricates, or develops one or more critical technologies; or (3) maintains or collects sensitive personal data of United States citizens that may be exploited in a manner that threatens national security.[9]
    - *Investment fund investment:* FIRRMA provides an exception for any noncontrolling investment by a foreign person through an investment fund in a U.S. business with access to critical technology, critical infrastructure, or sensitive personal information if (1) "the fund is managed exclusively by a general partner, a managing member, or an equivalent" who is not a foreign person; (2) the fund is structured in a way that precludes the foreign person from guiding the fund's decision making; and (3) the foreign person does not gain access to nonpublic technical information as a result of the investment.[10] This provision could have significant implications for the ability of investment funds

[*] For ECRA's definition of emerging and foundational technologies, see John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1758.

(such as venture capital funds) with foreign capital to invest in U.S. assets without being subjected to the CFIUS review process (provided the investments remain completely passive).

- *Real estate:* The purchase or lease by a foreign person of real estate located in "close proximity" to a U.S. airport, port, military installation, or another sensitive facility is a CFIUS covered transaction.[11] This FIRRMA provision codifies existing CFIUS practice. In 2012, CFIUS ordered Ralls, a U.S.-domiciled subsidiary of Chinese corporate giant Sany, to divest of its wind farm property acquisition because of its proximity to a sensitive U.S. Navy training site.[12]

FIRRMA also makes changes to CFIUS's institutional structure and procedure, including:

- *Review period:* Lengthening the initial review period from 30 days to 45 days, with up to an additional 15 days in "extraordinary circumstances," to be defined in later regulations;[13]
- *Funding:* Establishing a "Committee on Foreign Investment in the United States Fund" with $20 million in appropriations for each of FYs 2019 through 2023, and authorizing CFIUS to collect filing fees of up to 1 percent of the transaction value, or $300,000, whichever is less;[14]
- *Expanding the reporting requirements:* FIRRMA introduces several new reporting requirements; in particular, it directs the secretary of commerce to produce a biannual report through 2026 on the value, ownership, sectoral breakdown, and investment type of Chinese investment, with analysis of whether patterns of Chinese investment align with the objectives outlined by the Chinese government in the Made in China 2025 plan.[15]
- *Declarations and mandatory declarations:* FIRRMA allows parties to a covered transaction to submit a short voluntary declaration (no more than five pages) to CFIUS. After considering the declaration, CFIUS may request the parties to file a written notice (i.e., apply for a formal review), initiate a unilateral review of the transaction, or notify that all action with respect to the transaction is completed. Certain types of transactions are also subject to mandatory declarations if they involve "the acquisition ... by a foreign person in which a foreign government has ... a substantial interest."[16]

Much of how CFIUS practice will change with FIRRMA's passing will be determined by the regulations to be written by the committee. The CFIUS chair is obligated to submit to Congress within 180 days a plan to implement FIRRMA,[17] although the committee may, at its discretion, run "pilot programs" to implement any provisions that do not immediately come into effect.[18]

U.S.-China Trade Talks Restarted, but Little Energy in Engagement

As a second round of reciprocal tariffs on imports worth $16 billion entered into force on August 23, midlevel U.S. and Chinese finance officials met on August 22 and 23 in an attempt to smooth out trade frictions ahead of U.S.-China multilateral meetings in November.[19] Neither side expected these discussions to achieve a breakthrough.

On August 22 and 23, U.S. Treasury Undersecretary for International Affairs David Malpass met with Chinese Vice Commerce Minister Wang Shouwen.[20] The negotiations represented an attempt to diffuse tensions after trade delegations' last formal meeting in June.[21] Lindsay Walters, a White House spokesperson, said both sides "exchanged views on how to achieve fairness, balance, and reciprocity in the economic relationship, including by addressing structural issues in China."[22] The *New York Times* reported that those familiar with the talks characterized them as "frank," with U.S. negotiators focused on structural changes to the Chinese economy rather than reducing the trade deficit.[23] On the Chinese side, officials expressed reluctance to offer concessions while tariff actions continue to be implemented.[24] To date, the United States has imposed tariffs on $50 billion worth of Chinese imports, and China has reciprocated in the same amount. The Office of the U.S. Trade Representative held hearings on proposed tariffs on $200 billion worth of imports during the Chinese delegation's stay in Washington, DC.[25] Chinese officials cannot impose tariffs on the same value of U.S. goods, as China does not purchase as much, but the Chinese Ministry of Commerce has announced additional tariffs on $60 billion of U.S. exports to China if the United States proceeds with the third tranche of tariffs.[26]

Neither side expressed optimism in a significant outcome, seeking instead to reestablish discussions ahead of higher-level talks later in the year. U.S. Secretary of Commerce Wilbur Ross noted that “these talks are not destined as of today for a big breakthrough,” though “there’s always hope of some sort of progress.”[27] Lu Kang, a Chinese Ministry of Foreign Affairs spokesperson, also expressed hope for “earnest discussions towards an outcome that is beneficial to both sides.”[28] President Donald Trump and Chinese President and General Secretary of the Chinese Communist Party Xi Jinping will next meet at the Asia-Pacific Economic Cooperation summit in mid-November, followed shortly by another meeting at the G20 summit. [29]

Policy Trends in China’s Economy

China Takes Steps to Boost Lending

Beijing is shifting toward monetary stimulus amid cooling economic growth and fears that an intensifying trade conflict with the United States might trigger a sharper slowdown. In recent months, Beijing has relaxed its focus on deleveraging and stepped up efforts to boost lending.[30] China’s banking and insurance regulator released a statement on August 11 encouraging banks to “expand the supply of credit and increase financing support for the real economy.”[31] In particular, the statement urged banks to ramp up lending for infrastructure projects and smaller firms.[32] The statement follows recent calls from the State Council (China’s cabinet) and the Politburo (China’s top decision-making body) to increase support for the economy through monetary and fiscal policies.[33]

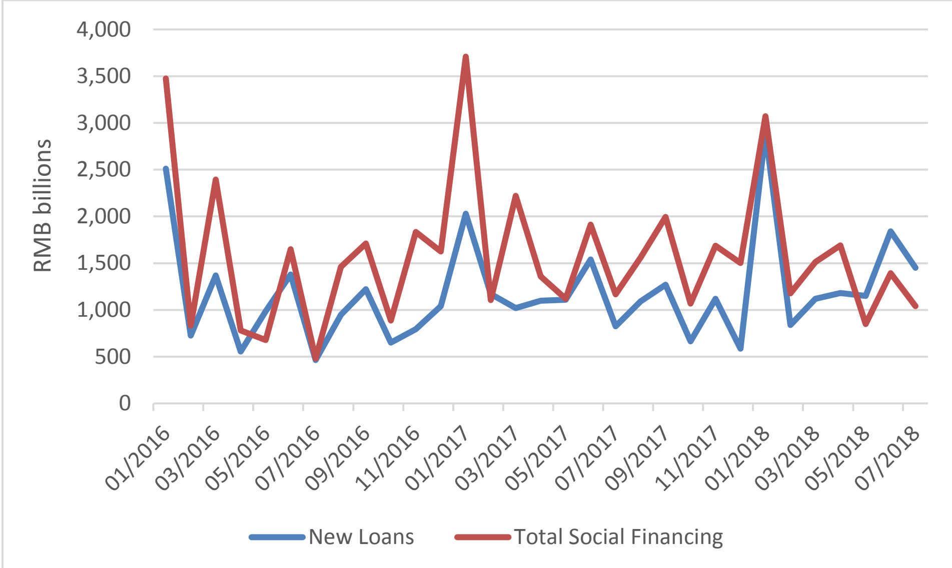
The People’s Bank of China (PBOC) is improving liquidity conditions in the banking system to boost lending. In recent weeks, the PBOC has increased the use of its medium-term lending facility (MLF). The MLF provides loans to commercial banks with longer maturities (generally, three to 12 months), allowing the central bank to inject liquidity into the banking system and influence interest rates for longer-term loans.[34] In late July 2018, the PBOC lent $74 billion in one-year loans to commercial banks through the MLF, its largest ever injection;[35] this was followed by a $22 billion injection of MLF loans on August 24.[36] Analysts say the increased availability of longer-term funding should enable commercial lenders to increase purchases of local government bonds and corporate bonds.[37] The increased use of MLF loans comes on top of other recent moves from the PBOC to ease monetary policy, including targeted cuts to banks’ reserve requirement ratio[*] and relaxed enforcement of bank loan quotas.[38]

As a result of these policies, the pace of formal bank lending has picked up. In July 2018, Chinese banks issued $211.7 billion (renminbi [RMB] 1.45 trillion) in new loans, a 76 percent year-on-year increase (see Figure 2).[39] However, growth in total social financing, a broad measure of credit and liquidity in the economy, fell to $151 billion (RMB 1.04 trillion) in July, a 10.7 percent year-on-year decrease, reflecting the impact of Beijing’s ongoing clampdown on shadow banking.[40] Total social financing—which includes off-balance-sheet types of financing that exist outside the formal banking sector, such as loans from trust companies, initial public offerings (IPOs), and bond sales—is an indicator of activity in China’s shadow banking sector.[41]

Chinese policymakers’ efforts to encourage banks to extend loans to smaller enterprises have had limited success.[42] In the first half of 2018, new loans for small and micro businesses accounted for 20.9 percent of new corporate loans, the lowest rate on record.[43] Commercial banks remain reluctant to lend to smaller firms as they are considered to be riskier than state-owned enterprises and large commercial firms.[44] Grace Wu, head of China Bank Ratings at Fitch, explains that “banks are not being adequately compensated for the risks they take in” when they are forced by regulators to lend to riskier segments at a lower rate than they would normally charge.[45]

* The PBOC cut the reserve requirement ratio for some banks three times this year and further cuts are expected; such measures lower the cash deposits banks need to keep on hand, allowing them to extend more credit.

Figure 2: New Loans Issued by Chinese Banks and Total Social Financing, January 2016–July 2018



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

China Moves to Curb Risks amid Rising Defaults on Peer-to-Peer Loans

Beijing's recent relaxation of its deleveraging campaign has not extended to the country's troubled peer-to-peer (P2P) lending industry.[46] P2P lending is a type of debt financing that directly connects borrowers with lenders, often promising high returns. The industry has grown rapidly, driven by China's high internet penetration, large supply of funds from investors, and unmet financial needs of small and medium-sized enterprises.[47] Since June 2018, at least 243 P2P companies have collapsed due to borrower defaults and fraud by platform operators amid an intensifying crackdown on shadow banking, part of a broader campaign to reduce financial risks.[48] The defaults have triggered protests across China from investors demanding compensation for investment losses, although most demonstrations were quickly suppressed by the authorities.[49] According to an executive from one of China's four state-owned asset management companies (AMCs), "After the P2P platforms collapsed, investors couldn't get hold of the lenders, so they go after the government and regulators, which has not only raised financial risks but also created social problems."[50]

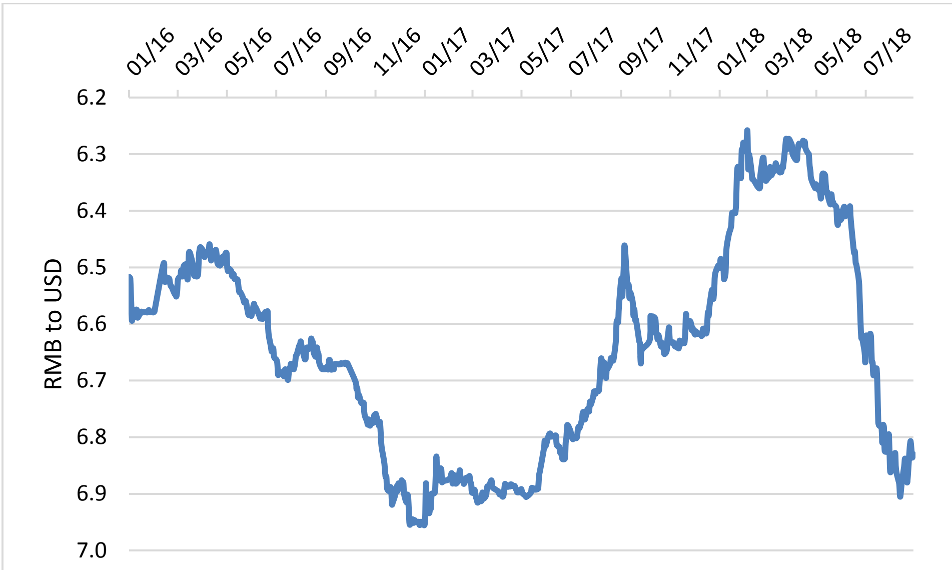
On August 12, a central government working group on curbing online finance risks announced 10 new measures to address financial risks from P2P lending. The measures include a freeze on approvals for new platforms and a requirement that local governments set up "communication windows" to receive investor complaints.[51] In addition, borrowers that "maliciously evade" loan repayments will be put on a blacklist in China's social credit system.[52] Chinese regulators have also asked China's AMCs—state-owned companies that specialize in dealing with bad loans—to help deal with nonperforming loans owed by P2P lending platforms.[*] [53] While AMCs have experience handling bad loans from banks and nonbank financial institutions, there is no precedent for AMCs to deal with P2P assets.[54] It is unclear whether the AMCs will acquire certain distressed P2P loans or play a more limited role by helping with the custody, liquidation, and restructuring of P2P assets.[55] Moreover, AMCs may have limited capability to absorb P2P assets as they too are bloated with distressed assets they are struggling to offload.[56]

[*] The four AMCs—China Huarong Asset Management, China Cinda Asset Management, China Orient Asset Management, and China Great Wall Asset Management—were created by the government over a decade ago to bail out China's four largest state-owned commercial banks. Wu Yujian and Denise Jia, "China Asks Bad-Debt Managers to Help Address P2P Risks," *Caixin*, August 16, 2018. *https://www.caixinglobal.com/2018-08-17/china-asks-bad-debt-managers-to-help-address-p2p-risks-101315883.html*.

Chinese Currency's Value Stabilizes after Reintroduction of Government Controls

In August 2018, the RMB's value against the dollar ended a nearly four-month slide brought about by concerns over China's economic growth, including weakness across several key economic indicators and ongoing trade tensions with the United States. According to China's Foreign Exchange Trading Center, between March and July 2018 the RMB depreciated 7.6 percent against the U.S. dollar (see Figure 3).[57] During August 2018, the RMB's value remained relatively stable: on August 15 it depreciated to 6.9 RMB per U.S. dollar (a 15-month low), before appreciating 1.2 percent to 6.83 by the end of the month.[58] The RMB's value against the dollar remains at a similar level to where it was pegged from 2008 to 2010 (6.83 RMB per dollar).[59]

Figure 3: RMB to U.S. Dollar Exchange Rate, January 2016–August 2018



Source: China Foreign Exchange Trading Center via CEIC database.

The RMB's value stabilized after regulators implemented measures to increase their control over the exchange rate and discourage investors from betting against the currency. In a statement, the PBOC indicated the actions were taken to prevent "macro financial risks" and came as the currency's value was approaching the Chinese government's unofficial floor of 7 RMB per U.S. dollar exchange rate.[*] Policy actions taken to reverse the RMB's slide in August 2018 included:

- *Reinstituting the "counter-cyclical factor":* The PBOC reintroduced a banking mechanism (known as the "counter-cyclical factor") intended to limit the impact of market forces on determining the RMB exchange rate.[60] The mechanism allows the PBOC to set the daily midpoint of the RMB's dollar exchange rate, effectively dictating the range the RMB will trade in for a given day, rather than allowing market forces to determine the currency's value at the start of daily trading.[61] There are no details on how Chinese regulators derive the midpoint value.[62] Coupled with Beijing's policy limiting daily RMB exchange rate movements to within a 2 percent band, the mechanism prevents dramatic swings in the RMB's value.[63] The policy represents a reversal from a January 2018 decision in which regulators eliminated the mechanism due to the RMB's strength and reduced concern over capital outflows.[64]

[*] In 2016, during a period of severe Chinese capital outflows, Chinese regulators intervened to prevent the RMB to U.S. dollar exchange rate from slipping below 7. Saumya Vaishampayan, "China Fights Back after Yuan Slide," *Wall Street Journal*, August 3, 2018. *https://www.wsj.com/articles/trade-tensions-drag-yuan-to-one-year-lows-1533274533?mod=article_inline*.

- *Making it more expensive for investors to bet against the RMB:* The PBOC imposed a requirement on banks trading currency forward denominated in U.S. dollars to deposit 20 percent of their sales at the central bank.[65] The decision effectively makes it more expensive to bet against the RMB's value relative to the dollar.

Even with these measures in place, forecasters predict the RMB will remain at a similar level or weaken further against the dollar over the next year. Among analysts polled by Thomson Reuters, the median forecast predicts the RMB to dollar exchange rate will remain largely unchanged (around 6.7) by end-July next year.[66] Economists at Deutsche Bank, meanwhile, forecast the RMB to dollar exchange rate will be 6.95 by the end of this year and 7.4 by the end of 2019.[67]

Lukewarm Response to Chinese Firms' Hong Kong Stock Exchange Listings

Hong Kong's April 2018 revisions to its listings rules[*] have enhanced its attractiveness for large and more diverse IPOs. However, the number of Chinese firms attracted and amounts raised have fallen below initial expectations.[68] In June 2018, Xiaomi, the world's fourth-largest mobile phone manufacturer, used the new weighted voting share structure[†] to raise $4.7 billion in its Hong Kong IPO.[69] Xiaomi's IPO valued the company at $54 billion as compared to initial valuations of over $100 billion.[70] In July 2018, the state-owned telecommunications firm China Tower[‡] raised $6.9 billion in an IPO on the Hong Kong Stock Exchange.[71] Although it was the largest Hong Kong Exchange IPO in two years, China Tower anticipated raising $8.7 billion.[72] In addition, Hong Kong is allowing early stage biotechnology firms to list; these firms have at least one product that has passed Phase I of relevant drug and safety approvals but currently lack revenue or profit (traditional metrics for investment).[73] This change has already attracted two early stage Chinese biotechnology listings (Asceletis Pharm Inc. and BeiGene) and at least five other Chinese biotechnology IPO filings.[74]

There are several factors driving the low valuations, including overambitious stock pricing, new restrictions on Chinese investors' ability to buy stock in weighted voting share firms listed on the Hong Kong Stock Exchange, the potential impact of U.S. tariffs on the growth prospects of these Chinese firms, and a weakening RMB.[75] Bloomberg data found that as of July 2018, two-thirds of Hong Kong IPOs that raised more than $1 billion since July 2017 dropped below their offer prices after six months and three-quarters fell after a year.[76] Ben Kwong, executive director at financial services firm KGI Asia, stated, "Investors are becoming more cautious and selective toward new listings. The overall pace of the IPO market will slow down a bit and listing candidates may try to avoid this weak sentiment when they can't demand higher valuations."[77]

---

[*] These revisions include weighted voting rights share structure and allowance for pre-revenue biotechnology firms to list. Hong Kong Exchanges and Clearing, "HKEX Proposes Way Forward to Expand Hong Kong's Listing Regime," December 15, 2017. *https://www.hkex.com.hk/News/News-Release/2017/171215news?sc_lang=en*; Preetika Rana and Julie Steinberg, "No Revenue? No Problem—Hong Kong Draws Biotech Firms Looking to List," *Wall Street Journal*, March 22, 2018. *https://www.wsj.com/articles/no-revenue-no-problemhong-kong-draws-biotech-firms-looking-to-list-1521713516*.

[†] Weighted voting rights share structures create two different classes of stock; shares owned by founders and management account for multiple votes as opposed to the common one vote per share. This dual-class structure allows founders and management to retain control of the company even after publicly listing. Hong Kong Exchanges and Clearing, "HKEX Proposes Way Forward to Expand Hong Kong's Listing Regime," December 15, 2017. *https://www.hkex.com.hk/News/News-Release/2017/171215news?sc_lang=en*; Andrea Tan and Benjamin Robertson, "Dual-Class Shares Are Coming under Fire—Again," *Bloomberg*, September 27, 2017. *https://www.bloomberg.com/news/articles/2017-09-27/can-democracy-stage-a-comeback-at-stock-exchanges*; Pamela Ambler, "Why 2018 Will Be a Renaissance Year for Asia Tech IPOs, Undercutting New York," *South China Morning Post*, January 14, 2018. *https://www.forbes.com/sites/pamelaambler/2018/01/14/why-2018-will-be-a-renaissance-year-for-asia-ipos-undercutting-new-york/#7233602049bb*.

[‡] China Tower is owned by China Mobile (28.5 percent), China Unicom (28.1 percent), China Telecom (27.9 percent), and the state-owned investment fund China Reform Holdings Corporation (6 percent). China Mobile, China Unicom, and China Telecom together accounted for 99.8 percent of China Tower's 2017 operating revenue. China Tower, "Global Offering," *Hong Kong Stock Exchange*, 10, 45. *http://www.hkexnews.hk/listedco/listconews/SEHK/2018/0725/LTN20180725011.pdf*.

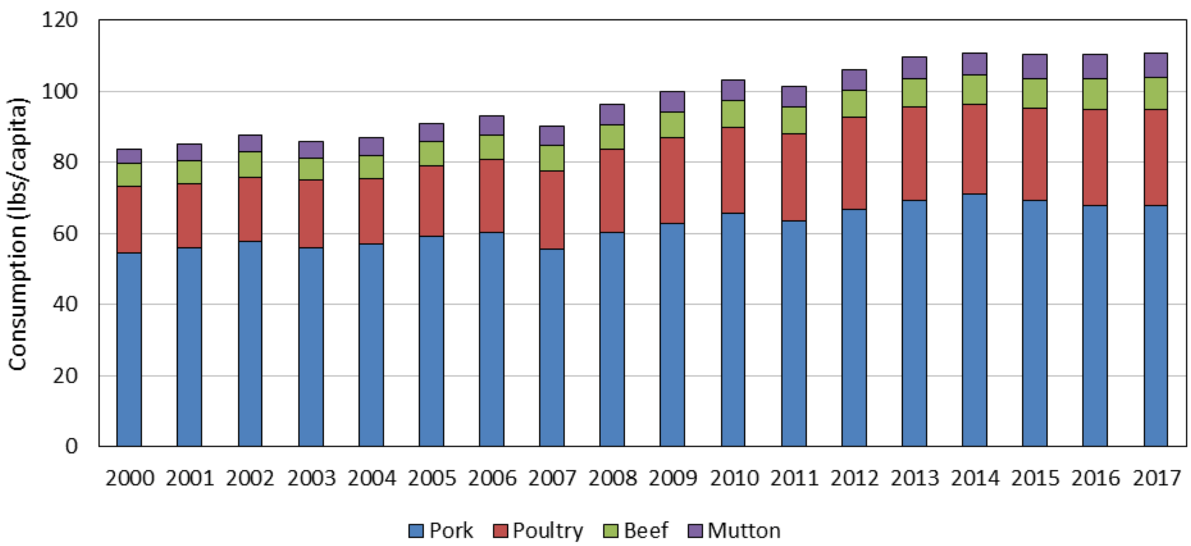
Sector Focus: Pork

Pork, the most widely consumed meat in China, represents a mainstay in many households' diets. U.S. hog farmers have sought to break into the Chinese pork market, though Chinese regulations have often prevented them from doing so. In 2017, U.S. pork exports to China amounted to only about $488 million or 9 percent of global U.S. pork exports.[78] Retaliatory tariffs of 62 percent may price U.S. producers out of the Chinese market in 2018. U.S. pork exports to China fell by 27 percent year-on-year in May, then 19 percent in June.[79] This setback comes at a difficult time: U.S. hog farmers also face 20 percent tariffs on exports to Mexico—the largest U.S. export market by volume[80]—while experiencing overproduction in the United States. Five outbreaks of African Swine Fever (ASF), which is deadly to pigs, have been reported in China since early August,[81] raising alarm and increasing market uncertainty.

The Chinese Pork Market

Hogs hold a special place in China, which produces and consumes about half of global pork volume.[82] In 2017, China produced about 53 million metric tons of pork, or 48 percent of global production (110 million metric tons).[83] That same year, China consumed about 55 million metric tons of pork, of which only about 1.6 million metric tons (about 3 percent) were imported. [84] Over time, China's pork consumption has risen in tandem with incomes: demand climbed 5.7 percent per year between the late 1970s and 2014.[85] By 2017, the average person in China consumed about 68 pounds of pork annually, twice the amount in 1990.[86] Pork has consistently accounted for the bulk of China's meat consumption, reaching 60 percent in 2017 (see Figure 4). According to estimates from the Chinese Academy of Social Science, pork represents many households' largest single food purchase.[87]

Figure 4: China: Annual Meat Consumption, 2000–2017



Source: Organization for Economic Cooperation and Development-FAO Outlook, "2017 Edition: Meat Consumption," 2017. *https://data.oecd.org/agroutput/meat-consumption.htm*.

Chinese pork prices are renowned for their volatility due to supply fluctuations. Until very recently, hog farming was diffused across a large number of small-scale "backyard" farmers: farmers producing 50 or fewer hogs annually still represented a fifth of the market in 2017.[88] These farmers tend to produce and sell when pork prices rise high enough, leading to swings in supply and prices,[89] which sometimes cause inflation. Tom Orlik, now Bloomberg chief economist, reported that a pig epidemic caused the Consumer Price Index (CPI, a measure of price inflation) to jump to 8.7 percent year-on-year in February 2008; pork prices were blamed again for a CPI level above 6 percent year-on-year in June 2011.[*] [90] Mr. Orlik reported that pork prices rose 74 percent year-on-year in March 2008.[91] For comparison, between 2001 and 2011, Mr. Orlik cited National Bureau of Statistics data showing that general food prices peaked at a 23.3 percent year-on-year increase in February 2008, and non-food price increases peaked at less than 3 percent.[92]

China's Ractopamine Ban, Trade Retaliation Continue to Limit U.S. Pork Exports

For U.S. agricultural exporters, the Chinese pork market should present a tremendous opportunity. In addition to fragmented supply, hog farmers in China face higher feed costs than U.S. producers, and have lower labor productivity.[93] Fred Gale, a senior economist at the U.S. Department of Agriculture Economic Research Service, estimated that U.S. labor cost per 100 pounds of pork remained at $2–$3 between 2004 and 2015, while China's labor cost rose to $16 per 100 pounds between 2014 and 2015.[94] Despite these advantages, Chinese government policy has often obstructed U.S. pork exports to China.[95] As a result of these barriers and the high volume of Chinese local production, China only imports about 3 percent of its pork, with 1 percent from the United States.[96] The United States agricultural sector does participate in China's pork production indirectly: Chinese pork farmers import U.S. soybeans as feed to raise pigs locally.[97]

Swine Flu and Ractopamine Bans

In May 2009, China and several other countries imposed partial bans on U.S., Canadian, and Mexican pork imports due to an outbreak of H1N1 or "swine flu," thought to be transmitted through animal products.[98] This ban was lifted following a U.S.-China agreement in the spring of 2010.[99] In addition, in the wake of a Chinese pork contamination scandal in late 2011, China banned the use of the feed additive ractopamine, used to increase meat leanness, which has since affected many U.S. pork exporters.[100] Chinese regulators increased oversight of pork imports in early 2013, then barred imports from certain U.S. production sites in 2014 due to their use of ractopamine.[101]

Chinese Tariffs on U.S. Pork Exports

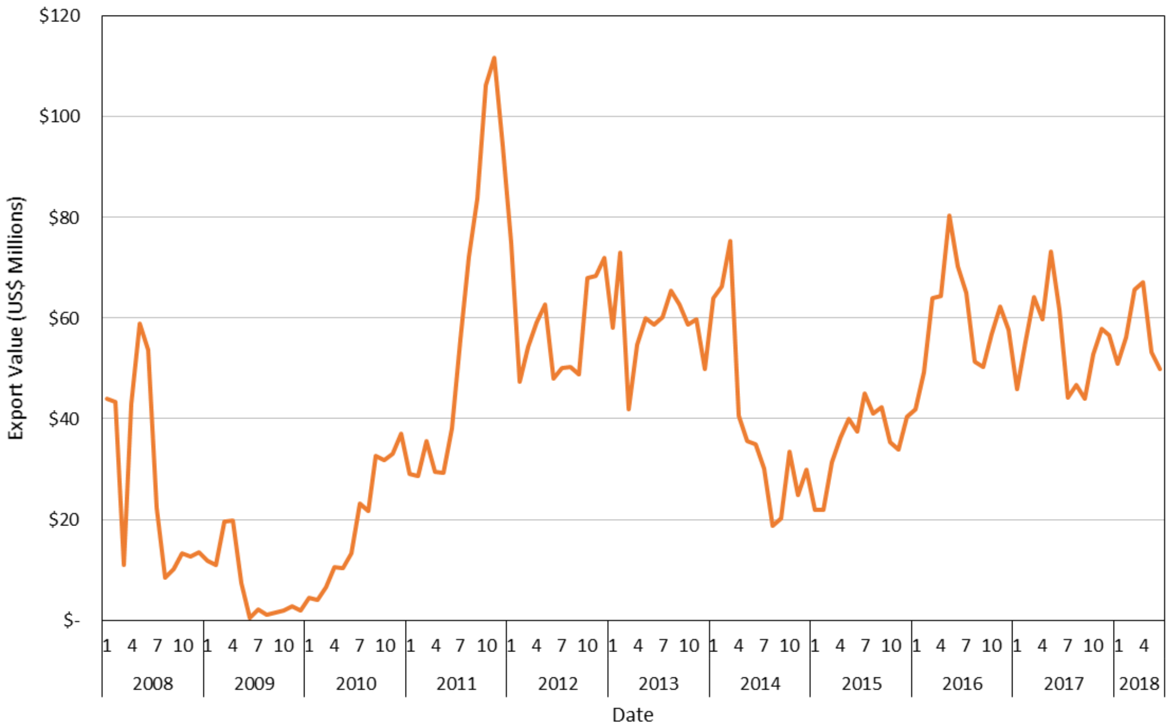
Though small, U.S. pork exports to China play an important role in the sale of offal (e.g., pigs' feet and organs), which sees little demand elsewhere. In 2017, the Chinese market comprised about 9 percent of U.S. pork exports (about $488 million in 2017), or 2 percent of total U.S. pork production (see Figure 5).[102] These exports consist of muscle cuts and hams—more commonly seen in U.S. supermarkets—and offal. In 2017, China was the fifth-largest purchaser of U.S. frozen pork muscle cuts and hams exports,[103] and the second-largest purchaser of U.S. pork offal exports (29 percent, $251 million in 2017).[104] Pork offal exports are particularly important since they raise the value U.S. farmers receive from each animal. In China, U.S. pork offal exporters received about $0.76 per pound in 2017, while the product can only be sold for about $0.18 per pound in the United States.[105]

Ongoing trade frictions have called U.S. pork exports into question. In April 2018, China placed a 25 percent tariff on pork following U.S. tariffs on steel and aluminum, on top of a 12 percent tariff already in effect.[106] Chinese regulators raised tariffs on U.S. pork to 62 percent in early July.[107] Chris Hurt, agricultural economist at Purdue University, said these tariffs would likely price U.S. producers out of the Chinese market.[108] Due to its large domestic production and low imports, China can easily switch to pork imports from Canada and the EU.[109] As the EU also bans the use of ractopamine, it may be well positioned to fill any supply gap: though EU hog export prices also declined June, EU pork exported volume to China grew by 6 percent over the previous year.[110]

---

[*] For comparison, in its review of China's annual inflation growth rate, the Organization of Economic Cooperation and Development cites 1.5 percent inflation in 2006, 4.8 percent inflation in 2007, and 5.9 percent inflation in 2008. Organization for Economic Cooperation and Development, *Inflation (CPI)*, accessed September 4, 2018. *https://data.oecd.org/price/inflation-cpi.htm*.

Figure 5: Monthly U.S. Pork Exports to China, January 2008–June 2018



Source: United States Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trade System (GATS), *Pork and Pork Products Exports. https://apps.fas.usda.gov/gats/ExpressQuery1.aspx.*

Beyond tariffs, reports indicate Chinese officials have implemented additional retaliatory actions. By May of 2018, Chinese border officials reportedly had increased customs inspections of U.S. pork products, which "[lengthens] the time product stays at the port," according to Luis Chein, a director at the pork corporate giant WH Group.[111] Pork imports have remained in Chinese ports for as long as two weeks.[112] Chinese tariffs on pork exports come at a difficult time for U.S. producers, as hog farmers have reported a jump in domestic pork production that may lower U.S. prices. Dr. Hurt concluded in April that "[domestic demand and export demand] are not enough to offset the higher supplies."[113] According to U.S. Department of Agriculture projections, U.S. pork production will increase about 4 percent in Q2018 and about 6 percent in Q4 2018 (over the equivalent period in 2017).[114]

Other tariffs also dim the outlook for U.S. pork producers: Mexico, the destination of nearly a quarter of U.S. pork exports in 2017,[115] has imposed tariffs of 20 percent on U.S. pork.[116] Yet as U.S. supply increases and tariffs set in, the average quarterly price for pork is projected to fall, first by about 15 percent in Q3 2018, then by about 22 percent in Q4 2018 (over the equivalent period in 2017).[117] Dr. Hurt warned the combination of rising costs in pork production and tariffs from China, Canada, and Mexico threaten 2018 profits, saying, "Losses will be small [in the summer of 2018], but then the bottom falls out."[118] According to his estimate in early June, losses of $11 per head are estimated in 2018 and $14 per head in 2019.[119]

The Trump Administration has moved to shield farmers from the tariff fallout. On August 27, U.S. Secretary of Agriculture Sonny Perdue released the details of a $4.7 billion market facilitation program to provide direct payments for famers targeted by retaliatory tariffs, including pork producers.[*] [120] In addition, the U.S. Department

[*] This program is scheduled for implementation on September 4. Ken Root, "Perdue Discusses Trade, Details Payments to Farmers," *Iowa Agribusiness Radio Network*, August 28, 2018. *https://www.iowaagribusinessradionetwork.com/perdue-discusses-trade-details-payments-to-farmers/.*

of Agriculture has committed to purchasing $1.2 billion in pork, dairy, and other commodities affected by tariffs.[121] Secretary Perdue commented, "[President Trump's] Administration will not stand by while farmers are treated unfairly by countries acting in bad faith."[122]

African Swine Fever Outbreak in Northeastern China

China's domestic pork industry is experiencing a supply disruption due to a disease outbreak, which may boost imports. On August 3, China's Ministry of Agriculture and Rural Affairs reported an outbreak of ASF in Liaoning Province.[123] According to the UN Food and Agriculture Organization, this disease has no effect on humans, but it is 100 percent lethal to pigs in its most severe form, with no known vaccine.[124] It is also highly contagious and hardy: ASF can survive for long periods in extreme temperatures, even in smoked or cured pork products.[125] Another outbreak, reported on August 14 in central Henan Province, occurred far from the initial outbreak in Liaoning, raising concerns the disease could spread rapidly.[126] To control its spread, by August 28 Chinese regulators had culled about 24,000 pigs in four provinces.[127] In addition, Beijing has requested a halt on the transportation of live hogs from affected areas to limit the spread of the disease.[128]

Though these are the first reported cases of ASF in China, officials have attempted to prepare for them. In 2016, China's Ministry of Agriculture and Rural Affairs' report on the pork industry noted a risk that ASF could spread to China.[129] It subsequently issued a high alert in April 2017 when reports of ASF emerged in Moldova, Russia, and Ukraine, and released an emergency program notice in October 2017 as the disease appeared in Poland and in Romanian and Czech wild boar populations.[130] In addition, the UN Food and Agriculture Organization's Emergency Center for Transboundary Animal Diseases collaborated with the Ministry of Agriculture and Rural Affairs to establish an ASF contingency plan.[131] It is yet to be seen if these efforts can contain the spread while continuing to meet China's pork demand. In 2007, when another swine epidemic led to high pork prices, China responded with a surge in pork imports from abroad.[132]

1 U.S. Census Bureau, *Trade in Goods with China*, September 5, 2018. *https://www.census.gov/foreign-trade/balance/c5700.html*.
2 U.S. Census Bureau, *Trade in Goods with China*, September 5, 2018. *https://www.census.gov/foreign-trade/balance/c5700.html*.
3 U.S. Census Bureau, *Trade in Goods with China*, September 5, 2018. *https://www.census.gov/foreign-trade/balance/c5700.html*.
4 U.S. Census Bureau, *Trade in Goods with China*, September 5, 2018. *https://www.census.gov/foreign-trade/balance/c5700.html*.
5 White House, *President Donald J. Trump Signs H.R. 5515 into Law*, August 13, 2018. *https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-signs-h-r-5515-law/*.
6 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1702.
7 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1703.
8 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1758.
9 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1703.
10 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1703.
11 John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1703.

[12] Rachelle Younglai, "Obama Blocks Chinese Wind Farms in Oregon over Security," *Reuters*, September 29, 2012. *https://www.reuters.com/article/us-usa-china-turbines/obama-blocks-chinese-wind-farms-in-oregon-over-security-idUSBRE88R19220120929*.

[13] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1709.

[14] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1723.

[15] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1719.

[16] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1706.

[17] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1721.

[18] John S. McCain National Defense Authorization Act for Fiscal Year 2019, Public Law No. 115-232, 2018, Sec. 1727.

[19] Lingling Wei and Bob Davis, "U.S., China Plot Road Map to Resolve Trade Dispute by November," *Wall Street Journal*, August 17, 2018. *https://www.wsj.com/articles/u-s-china-plot-road-map-to-resolve-trade-dispute-by-november-1534528756*.

[20] Tom Mitchell, Demetri Sevastopulo, and Tim Bradshaw, "U.S. and China to Attempt Revival of Trade Negotiations," *Financial Times*, August 21, 2018. *https://www.ft.com/content/cea76a70-a510-11e8-8ecf-a7ae1beff35b*.

[21] James Politi and Tom Mitchell, "U.S.-China Trade Negotiations End with Little Progress," *Financial Times*, August 23, 2018. *https://www.ft.com/content/fa72e338-a71c-11e8-926a-7342fe5e173f*.

[22] Ana Swanson and Alan Rappeport, "Chill Remains between China and United States in Latest Talk," *New York Times*, August 23, 2018. *https://www.nytimes.com/2018/08/23/us/politics/us-china-trade-talks.html*.

[23] Ana Swanson and Alan Rappeport, "Chill Remains between China and United States in Latest Talk," *New York Times*, August 23, 2018. *https://www.nytimes.com/2018/08/23/us/politics/us-china-trade-talks.html*.

[24] Tom Mitchell, Demetri Sevastopulo, and Tim Bradshaw, "U.S. and China to Attempt Revival of Trade Negotiations," *Financial Times*, August 21, 2018. *https://www.ft.com/content/cea76a70-a510-11e8-8ecf-a7ae1beff35b*.

[25] Jeff Mason and Steve Holland, "Exclusive: Trump Doesn't Expect Much from China," *Reuters,* August 20, 2018. *https://www.reuters.com/article/us-usa-trump-china-exclusive/exclusive-trump-doesnt-expect-much-from-china-trade-talks-this-week-idUSKCN1L5226*.

[26] Keith Bradsher and Cao Li, "China Threatens New Tariffs on $60 Billion of U.S. Goods," *New York Times*, August 3, 2018. *https://www.nytimes.com/2018/08/03/business/china-us-trade-tariffs.html*.

[27] Ana Swanson and Alan Rappeport, "Chill Remains between China and United States in Latest Talk," *New York Times*, August 23, 2018. *https://www.nytimes.com/2018/08/23/us/politics/us-china-trade-talks.html*.

[28] David Lawder, "U.S. and China Officials Meet as Thursday Tariff Deadline Looms," *Reuters*, August 22, 2018. *https://www.reuters.com/article/us-usa-trade-china/us-china-to-resume-trade-talks-in-washington-amid-low-expectations-idUSKCN1L70HR*.

[29] Lingling Wei and Bob Davis, "U.S., China Plot Road Map to Resolve Trade Dispute by November," *Wall Street Journal*, August 17, 2018. *https://www.wsj.com/articles/u-s-china-plot-road-map-to-resolve-trade-dispute-by-november-1534528756*.

[30] Leng Cheng, "China Regulator to Banks: Lend More, Please," *Caixin*, August 13, 2018. *https://www.caixinglobal.com/2018-08-13/china-regulator-to-banks-lend-more-please-101314495.html*.

[31] China Banking and Insurance Regulatory Commission, *Strengthen Regulatory Guidance and Enhance Monetary Policy Transmission Mechanism: Enhance the Quality of Finance to Serve the Real Economy*, August 11, 2018. Translation. *http://www.cbrc.gov.cn/chinese/newShouDoc/F92A510E538D4FB4876F850121180FF9.html*.

[32] China Banking and Insurance Regulatory Commission, *Strengthen Regulatory Guidance and Enhance Monetary Policy Transmission Mechanism: Enhance the Quality of Finance to Serve the Real Economy*, August 11, 2018. Translation. *http://www.cbrc.gov.cn/chinese/newShouDoc/F92A510E538D4FB4876F850121180FF9.html*.

[33] Fitch Solutions, "Chinese Policymakers to Speed up Tax Cuts and Infrastructure Projects," August 28, 2018. *https://www.fitchsolutions.com/country-risk-sovereigns/economics/chinese-policymakers-speed-tax-cuts-and-infrastructure-projects-28-08-2018*; *Bloomberg*, "China Says Regulators Will Work to Unclog Monetary Transmission," August 3, 2018. *https://www.bloomberg.com/news/articles/2018-08-03/china-says-regulators-will-work-to-unclog-monetary-transmission*.

[34] Gabriel Wildau, "China Injects $22 Billion into Banking System through Loans," *Financial Times*, August 24, 2018. *https://www.ft.com/content/08ef1488-a74d-11e8-8ecf-a7ae1beff35b*; Yen Nee Chen, "China's Monetary Policy Is Complex and Shifting. Here's What You Need to Know," *CNBC*, August 5, 2018. *https://www.cnbc.com/2018/08/06/china-monetary-policy-how-pboc-controls-money-supply-interest-rate.html*; Gabriel Wildau and James Kynge, "China's $74 Billion Cash Injection Highlights Growth Worries," *Financial Times*, July 23, 2018. *https://www.ft.com/content/393cba1c-8e59-11e8-b639-7680cedcc421*.

[35] Mike Bird and Saumya Vaishampayan, "Chinese Lending Rates Drop Steeply to Three-Year Lows," *Wall Street Journal*, August 9, 2018. *https://www.wsj.com/articles/chinese-lending-rates-drop-steeply-to-three-year-lows-1533813172*.

[36] Gabriel Wildau, "China Injects $22 Billion into Banking System through Loans," *Financial Times*, August 24, 2018. *https://www.ft.com/content/08ef1488-a74d-11e8-8ecf-a7ae1beff35b*.

[37] Gabriel Wildau, "China Injects $22 Billion into Banking System through Loans," *Financial Times*, August 24, 2018. *https://www.ft.com/content/08ef1488-a74d-11e8-8ecf-a7ae1beff35b*.

[38] *Bloomberg*, "China's Central Bank Steps up Effort to Boost Lending," August 1, 2018. *https://www.bloomberg.com/news/articles/2018-08-01/china-s-central-bank-is-said-to-step-up-effort-to-boost-lending*.

[39] Peng Qinqin and Han Wei, "China Posts Stronger New Loan Growth amid Policy Push," *Caixin*, August 13, 2018.

[40] Andrew Polk, "China's Growth Woes Aren't Going Away," *Bloomberg*, August 26, 2018. *https://www.bloomberg.com/view/articles/2018-08-26/china-s-government-can-t-make-the-economy-grow-so-easily*; Kevin Yao and Fang Cheng, "China July New Loans Stronger than Expected; Money Supply Picks Up," *Reuters*, August 13, 2018. *https://www.cnbc.com/2018/08/13/reuters-america-wrapup-3-china-july-new-loans-stronger-than-expected-money-supply-picks-up.html*; Peng Qinqin and Han Wei, "China Posts Stronger New Loan Growth amid Policy Push," *Caixin*, August 13, 2018. *https://www.caixinglobal.com/2018-08-14/china-posts-stronger-new-loan-growth-amid-policy-push-101314618.html*.

[41] Peng Qinqin and Han Wei, "China Posts Stronger New Loan Growth amid Policy Push," *Caixin*, August 13, 2018. *https://www.caixinglobal.com/2018-08-14/china-posts-stronger-new-loan-growth-amid-policy-push-101314618.html*.

[42] Orange Wang, "Brother Can You Spare a Dime: China's Small Firms Can't Get Loans Even with the Government's Push," *South China Morning Post*, August 29, 2018. *https://www.scmp.com/business/china-business/article/2161759/brother-can-you-spare-dime-chinas-small-firms-cant-get-loans*.

[43] *Reuters*, "China's July New Loans Seen Easing; Policymakers Wary of Trade Tensions: Reuters Poll," August 6, 2018. *https://www.reuters.com/article/us-china-economy-loans/chinas-july-new-loans-seen-easing-policymakers-wary-of-trade-tensions-reuters-poll-idUSKBN1KR0VN*.

[44] *Reuters*, "China's July New Loans Seen Easing; Policymakers Wary of Trade Tensions: Reuters Poll," August 6, 2018. *https://www.reuters.com/article/us-china-economy-loans/chinas-july-new-loans-seen-easing-policymakers-wary-of-trade-tensions-reuters-poll-idUSKBN1KR0VN*.

[45] *Reuters*, "China's July New Loans Seen Easing; Policymakers Wary of Trade Tensions: Reuters Poll," August 6, 2018. *https://www.reuters.com/article/us-china-economy-loans/chinas-july-new-loans-seen-easing-policymakers-wary-of-trade-tensions-reuters-poll-idUSKBN1KR0VN*.

[46] Leng Cheng, "China Holds to Hard Line on Peer-to-Peer Lending, Pledged-Stock Loans," *Caixin Global*, August 28, 2018. *https://www.caixinglobal.com/2018-08-28/china-holds-to-hard-line-on-peer-to-peer-lending-pledged-stock-loans-101319817.html*.

[47] Jiefei Liu, "The Dramatic Rise and Fall of Online P2P Lending in China," *TechCrunch*, August 2, 2018. *https://techcrunch.com/2018/08/01/the-dramatic-rise-and-fall-of-online-p2p-lending-in-china/*.

[48] Wu Yujian and Denise Jia, "China Asks Bad-Debt Managers to Help Address P2P Risks," *Caixin*, August 16, 2018. *https://www.caixinglobal.com/2018-08-17/china-asks-bad-debt-managers-to-help-address-p2p-risks-101315883.html*.

[49] *Reuters*, "China Cabinet to Curb Risks in Online Finance, Share-Backed Loans," August 27, 2018. *https://www.reuters.com/article/us-china-economy/china-cabinet-to-curb-risks-in-online-finance-share-backed-loans-idUSKCN1LC09Y*.

[50] Wu Yujian and Denise Jia, "China Asks Bad-Debt Managers to Help Address P2P Risks," *Caixin*, August 16, 2018. *https://www.caixinglobal.com/2018-08-17/china-asks-bad-debt-managers-to-help-address-p2p-risks-101315883.html*.

[51] *Xinhua*, "Ten Measures to Deal with Online Lending Risks," August 12, 2018. *Translation. http://www.xinhuanet.com/fortune/2018-08/12/c_1123258027.htm*.

[52] *Xinhua*, "Ten Measures to Deal with Online Lending Risks," August 12, 2018. Translation. *http://www.xinhuanet.com/fortune/2018-08/12/c_1123258027.htm*.

[53] Martin Chorzempa, "Massive P2P Failures in China: Underground Banks Going Under," *Peterson Institute for International Economics*, August 21, 2018. *https://piie.com/blogs/china-economic-watch/massive-p2p-failures-china-underground-banks-going-under*; *Reuters*, "China Calls on Bad Debt Managers to Resolve P2P Lending Risks—Sources," August 15, 2018. *https://www.reuters.com/article/china-amcs/china-calls-on-bad-debt-managers-to-resolve-p2p-lending-risks-sources-idUSL4N1V646C*.

[54] Gabriel Wildau, "China Orders Bad-Loan Managers to Help Failing P2P Lenders," *Financial Times*, August 17, 2018. *https://www.ft.com/content/aa5ef0b0-a1e7-11e8-85da-eeb7a9ce36e4*.

[55] Gabriel Wildau, "China Orders Bad-Loan Managers to Help Failing P2P Lenders," *Financial Times*, August 17, 2018. *https://www.ft.com/content/aa5ef0b0-a1e7-11e8-85da-eeb7a9ce36e4*; Wu Yujian and Denise Jia, "China Asks Bad-Debt Managers to Help Address P2P Risks," *Caixin*, August 16, 2018. *https://www.caixinglobal.com/2018-08-17/china-asks-bad-debt-managers-to-help-address-p2p-risks-101315883.html*.

[56] Xie Yu, "China Regulator Orders Bailout of Peer-to-Peer Lenders by Managers of Distressed Assets," *South China Morning Post*, August 17, 2018. *https://www.scmp.com/business/china-business/article/2160085/chinas-regulator-orders-bailout-peer-peer-lenders-managers*; Anjani Trivedi, "China's Bad Banks Face a Case of Indigestion," *Wall Street Journal*, February 2, 2018. *https://www.wsj.com/articles/chinas-bad-banks-face-a-case-of-indigestion-1517548601*; Anjani Trivedi, "China's Bad Banks Show It Still Has a Big Bad Loan Problem," *Wall Street Journal*, September 7, 2017. *https://www.wsj.com/articles/chinas-bad-banks-show-it-still-has-a-big-bad-loan-problem-1504763799*.

[57] China Foreign Exchange Trading Center via CEIC database.

[58] China Foreign Exchange Trading Center via CEIC database.

[59] Brad Setser, "China's Currency Is Back in Play," *Follow the Money* (Council on Foreign Relations Blog), July 23, 2018. *https://www.cfr.org/blog/chinas-currency-back-play*; *Reuters*, "Timeline: China's Reforms of Yuan Exchange Rate," April 14, 2012. *https://www.reuters.com/article/us-china-yuan-timeline/timeline-chinas-reforms-of-yuan-exchange-rate-idUSBRE83D03820120414*.

[60] *Reuters*, "Yuan Hits Four-Week High as China Signals Support, Revives X-Factor for Fixing," August 26, 2018. *https://www.reuters.com/article/us-china-yuan-spot/yuan-hits-four-week-high-as-china-signals-support-revives-x-factor-for-fixing-idUSKCN1LC04I*.

[61] *Reuters*, "China Central Bank Adjusts Yuan Fix Factors to Keep FX Market Stable," August 24, 2018. *https://www.reuters.com/article/us-china-yuan-factor/china-central-bank-adjusts-yuan-fix-factors-to-keep-fx-market-stable-idUSKCN1L91EH*.

[62] *Reuters*, "Yuan Hits Four-Week High as China Signals Support, Revives X-Factor for Fixing," August 26, 2018. *https://www.reuters.com/article/us-china-yuan-spot/yuan-hits-four-week-high-as-china-signals-support-revives-x-factor-for-fixing-idUSKCN1LC04I*.

[63] Saumya Vaishampayan, "Why China's Yuan Will Struggle to Rally Further," *Wall Street Journal*, August 28, 2018. *https://www.wsj.com/articles/why-chinas-yuan-will-struggle-to-rally-further-1535435801*; Daniel Shane, "This Is How China Controls its Currency," *CNN Money*, August 16, 2018. *https://money.cnn.com/2018/08/16/news/economy/china-currency-yuan-rmb/index.html*.

[64] Kelly Olsen, "China's New Currency Policy Is a Dovish Signal in the Trade War, Analysts Say," *CNBC*, August 27, 2018. *https://www.cnbc.com/2018/08/27/china-yuan-counter-cyclical-factor-currency-tweak-is-trade-war-dovish.html?__source=sharebar|twitter&par=sharebar*; *Bloomberg News*, "China Changes the Way It Manages Yuan after Currency's Jump," January 8, 2018. *https://www.bloomberg.com/news/articles/2018-01-09/china-is-said-to-shift-way-it-manages-yuan-after-currency-s-jump*.

[65] Saumya Vaishampayan, "China Fights Back after Yuan Slide," *Wall Street Journal*, August 3, 2018. *https://www.wsj.com/articles/trade-tensions-drag-yuan-to-one-year-lows-1533274533?mod=article_inline*.

[66] Saumya Vaishampayan, "Why China's Yuan Will Struggle to Rally Further," *Wall Street Journal*, August 28, 2018. *https://www.wsj.com/articles/why-chinas-yuan-will-struggle-to-rally-further-1535435801*.

[67] Saumya Vaishampayan, "China Fights Back after Yuan Slide," *Wall Street Journal*, August 3, 2018. *https://www.wsj.com/articles/trade-tensions-drag-yuan-to-one-year-lows-1533274533?mod=article_inline*.

[68] Hong Kong Exchanges and Clearing, "HKEX Proposes Way Forward to Expand Hong Kong's Listing Regime," December 15, 2017. *https://www.hkex.com.hk/News/News-Release/2017/171215news*; Preetika Rana and Julie Steinberg, "No Revenue? No Problem—Hong Kong Draws Biotech Firms Looking to List," *Wall Street Journal*, March 22, 2018. *https://www.wsj.com/articles/no-revenue-no-problemhong-kong-draws-biotech-firms-looking-to-list-1521713516*.

[69] Alexandra Stevenson, "Xiaomi's Weak I.P.O. Raises Doubts about China's Tech Boom," *New York Times*, July 8, 2018. *https://www.nytimes.com/2018/07/08/business/xiaomi-hong-kong-ipo.html*; Crystal Tse, "Xiaomi's IPO Raises $4.7 Billion after Pricing on Low End," *Bloomberg*, June 29, 2018. *https://www.bloomberg.com/news/articles/2018-06-29/xiaomi-ipo-is-said-to-raise-4-7-billion-after-low-end-pricing*.

[70] Alexandra Stevenson, "Xiaomi's Weak I.P.O. Raises Doubts about China's Tech Boom," *New York Times*, July 8, 2018. *https://www.nytimes.com/2018/07/08/business/xiaomi-hong-kong-ipo.html*; Crystal Tse, "Xiaomi's IPO Raises $4.7 Billion after Pricing on Low End," *Bloomberg*, June 29, 2018. *https://www.bloomberg.com/news/articles/2018-06-29/xiaomi-ipo-is-said-to-raise-4-7-billion-after-low-end-pricing*.

[71] Don Weinland, "China Tower Looks to Raise $8.7bn in Hong Kong IPO," *Financial Times*, July 22, 2018. *https://www.ft.com/content/8716e1a4-8e13-11e8-b639-7680cedcc421*; Fiona Lau and Julie Zhu, "China Tower Raises $6.9 Billion in World's Largest IPO in Two Years: Sources," *Reuters*, August 1, 2018. *https://www.reuters.com/article/us-china-tower-ipo/china-tower-raises-6-9-billion-in-worlds-largest-ipo-in-two-years-sources-idUSKBN1KM3L1*; China Tower, "Global Offering," *Hong Kong Stock Exchange*, 18. *http://www.hkexnews.hk/listedco/listconews/SEHK/2018/0725/LTN20180725011.pdf*.

[72] Don Weinland, "China Tower Looks to Raise $8.7bn in Hong Kong IPO," *Financial Times*, July 22, 2018. *https://www.ft.com/content/8716e1a4-8e13-11e8-b639-7680cedcc421*; Fiona Lau and Julie Zhu, "China Tower Raises $6.9 Billion in World's Largest IPO in Two Years: Sources," *Reuters*, August 1, 2018. *https://www.reuters.com/article/us-china-tower-ipo/china-tower-raises-6-9-billion-in-worlds-largest-ipo-in-two-years-sources-idUSKBN1KM3L1*; China Tower, "Global Offering," *Hong Kong Stock Exchange*, 18. *http://www.hkexnews.hk/listedco/listconews/SEHK/2018/0725/LTN20180725011.pdf*.

[73] Hong Kong Exchanges and Clearing, "HKEX Proposes Way Forward to Expand Hong Kong's Listing Regime," December 15, 2017. *https://www.hkex.com.hk/News/News-Release/2017/171215news?sc_lang=en*; Hong Kong Exchanges and Clearing, "FAQ on New Board Concept Paper Consultation Conclusions," December 15, 2017. *https://www.hkex.com.hk/-/media/HKEX-Market/News/News-Release/2017/171215news/concept-paper-FAQ_e.pdf?la=en*.

[74] Julia Fioretti and Kane Wu, "China's Ascletis Closes Flat on Debut in HK's First Float under New Biotech Rules," *Reuters*, July 31, 2018. *https://www.reuters.com/article/us-ascletis-ipo/chinas-ascletis-closes-flat-on-debut-in-hks-first-float-under-new-biotech-rules-idUSKBN1KM3CD*; Coco Feng, "Hong Kong Dangles More Biotech Bait but Investors Don't Bite," *Caixin*, August 8, 2018. *https://www.caixinglobal.com/2018-08-08/hong-kong-dangles-more-biotech-bait-but-investors-dont-bite-101312971.html*.

[75] Laura He and Yujing Liu, "China Tower's Retail Shares Only Just Sell out as Biggest IPO of 2018 Fails to Woo the Public," *South China Morning Post*, July 31, 2018. *https://www.scmp.com/business/companies/article/2157688/china-towers-retail-shares-only-just-sell-out-biggest-ipo-2018*.

[76] Nisha Gopalan, "Hong Kong's IPO Takeoff Is Running out of Runway," *Bloomberg*, August 8, 2018. *https://www.bloomberg.com/view/articles/2018-08-08/hong-kong-s-ipo-frenzy-looks-to-be-heading-for-a-crash*.

[77] Julie Zhu and Donny Kwok, "China Tower Joins Growing List of Subdued Hong Kong IPO Debuts," *Reuters*, August 7, 2018. *https://www.reuters.com/article/us-china-tower-listing/china-tower-joins-growing-list-of-subdued-hong-kong-ipo-debuts-idUSKBN1KT057*.

[78] Staff calculations; U.S. Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trading System, accessed August 31, 2018. *https://apps.fas.usda.gov/gats/ExpressQuery1.aspx*. HS6 codes include fresh and frozen swine hams, cuts, offal, livers, and carcasses: 020312, 020319, 020649, 020329, 020322, 020630, 020311, 020321, and 020641.

[79] U.S. Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trade System (GATS), *Pork and Pork Products Exports*. *https://apps.fas.usda.gov/gats/ExpressQuery1.aspx.*

[80] *Reuters*, "Mexico Targets U.S. Steel, Pork, Bourbon, and Motor Boats," June 5, 2018. *https://www.reuters.com/article/us-usa-trade-mexico-factbox/mexico-targets-u-s-steel-pork-bourbon-and-motor-boats-idUSKCN1J122T*.

[81] *Dim Sums*, "Fifth African Swine Fever Outbreak in China," August 31, 2018. *http://dimsums.blogspot.com/2018/08/fifth-african-swine-fever-outbreak-in.html*.

[82] *Economist*, "China Launches a Pork-Price Index to Smooth the 'Pig Cycle,'" April 21, 2017. *https://www.economist.com/graphic-detail/2017/04/21/china-launches-a-pork-price-index-to-smooth-the-pig-cycle*; Fred Gale, "China's Pork Imports Rise along with Production Costs," U.S. Department of Agriculture, Economic Research Service, January 2017, 1. *https://www.ers.usda.gov/webdocs/publications/81948/ldpm-271-01.pdf?v=0*.

[83] U.S. Department of Agriculture, Foreign Agricultural Service, "Livestock and Poultry: World Markets and Trade," April 10, 2018, 11-12. *https://apps.fas.usda.gov/psdonline/circulars/livestock_poultry.pdf*.

[84] U.S. Department of Agriculture, Foreign Agricultural Service, "Livestock and Poultry: World Markets and Trade," April 10, 2018, 11-12. *https://apps.fas.usda.gov/psdonline/circulars/livestock_poultry.pdf*.

[85] Organization for Economic Cooperation and Development-FAO Outlook, "2017 Edition: Meat Consumption," 2017. *https://data.oecd.org/agroutput/meat-consumption.htm*; Dominique Patton, "China's Pork Demand Hits a Peak, Shocking Producers, as Diets Get Healthier," *Reuters*, June 19, 2017. *https://www.reuters.com/article/us-china-meat-demand-insight/chinas-pork-demand-hits-a-peak-shocking-producers-as-diets-get-healthier-idUSKBN19A31C*.

[86] Organization for Economic Cooperation and Development-FAO Outlook, "2017 Edition: Meat Consumption," 2017. *https://data.oecd.org/agroutput/meat-consumption.htm*.

[87] Tom Orlik and Melissa Powers, "Why Pork Prices Are Such a Big Deal in China," *Wall Street Journal: China Real Time Report*, July 8, 2011. *https://blogs.wsj.com/chinarealtime/2011/07/08/why-pork-prices-are-such-a-big-deal-in-china/*.

[88] *Economist*, "China Launches a Pork-Price Index to Smooth the 'Pig Cycle,'" April 21, 2017. *https://www.economist.com/graphic-detail/2017/04/21/china-launches-a-pork-price-index-to-smooth-the-pig-cycle*.

[89] *Economist*, "China Launches a Pork-Price Index to Smooth the 'Pig Cycle,'" April 21, 2017. *https://www.economist.com/graphic-detail/2017/04/21/china-launches-a-pork-price-index-to-smooth-the-pig-cycle*; Fred Gale, "China's Pork Imports Rise along with Production Costs," U.S. Department of Agriculture, Economic Research Service, January 2017. *https://www.ers.usda.gov/webdocs/publications/81948/ldpm-271-01.pdf?v=0*.

[90] Tom Orlik and Melissa Powers, "Why Pork Prices Are Such a Big Deal in China," *Wall Street Journal: China Real Time Report*, July 8, 2011. *https://blogs.wsj.com/chinarealtime/2011/07/08/why-pork-prices-are-such-a-big-deal-in-china/*.

[91] Tom Orlik and Melissa Powers, "Why Pork Prices Are Such a Big Deal in China," *Wall Street Journal: China Real Time Report*, July 8, 2011. *https://blogs.wsj.com/chinarealtime/2011/07/08/why-pork-prices-are-such-a-big-deal-in-china/*.

[92] Tom Orlik and Melissa Powers, "Why Pork Prices Are Such a Big Deal in China," *Wall Street Journal: China Real Time Report*, July 8, 2011. *https://blogs.wsj.com/chinarealtime/2011/07/08/why-pork-prices-are-such-a-big-deal-in-china/*.

[93] Fred Gale, "China's Pork Imports Rise along with Production Costs," U.S. Department of Agriculture, Economic Research Service, January 2017, 15–16. *https://www.ers.usda.gov/webdocs/publications/81948/ldpm-271-01.pdf?v=0*.

[94] Fred Gale, "China's Pork Imports Rise along with Production Costs," U.S. Department of Agriculture, Economic Research Service, January 2017, 15–16. *https://www.ers.usda.gov/webdocs/publications/81948/ldpm-271-01.pdf?v=0*.

[95] Mandy Zuo, "Why China's Pork Producers Can Survive without U.S. Soybean Imports," *South China Morning Post*, August 2, 2018. *https://www.scmp.com/news/china/diplomacy-defence/article/2157396/why-chinas-farmers-can-survive-without-us-soybean*; Brendan Greely, "The China Pig Put," *Financial Times*, July 27, 2018. *https://ftalphaville.ft.com/2018/07/27/1532702414000/The-China-pig-put/*.

[96] *Agweb*, "Chris Hurt: Pork Tariffs Sour Industry Outlook," April 3, 2018. *https://www.agweb.com/article/chris-hurt-pork-tariffs-sour-industry-outlook/*.

[97] Brendan Greely, "The China Pig Put," *Financial Times*, July 27, 2018. *https://ftalphaville.ft.com/2018/07/27/1532702414000/The-China-pig-put/*.

[98] Renee Johnson, "Potential Farm Sector Effects of 2009 H1N1 'Swine Flu': Questions and Answers," *Congressional Research Service R40575*, June 24, 2009, 6. *https://fas.org/sgp/crs/misc/R40575.pdf*; Laura MacInnis, "Flu Fears Prompt New Bans on Pork, Meat Imports," May 4, 2009. *https://www.reuters.com/article/us-flu-who-trade/flu-fears-prompt-new-bans-on-pork-meat-imports-idUSTRE5434NP20090504;* Bryan Salvage, "End Chinese Import Ban on U.S. Pork: USTR," *Meat + Poultry*, May 8, 2009. *https://www.meatpoultry.com/articles/915-end-chinese-import-ban-on-u-s-pork-u-s-t-r*.

[99] National Pork Producers Council, "China Lifts H1N1-Related Ban on U.S. Pork," March 19, 2010. *http://nppc.org/china-lifts-h1n1-related-ban-on-u-s-pork/*.

[100] *China Daily*, "China Bans Production, Sale of Ractopamine," December 23, 2011. *http://usa.chinadaily.com.cn/china/2011-12/23/content_14318130.htm*.

[101] Theopolis Waters, "China Seeks Extra Testing of U.S. Pork for Feed Additive," *Reuters*, February 19, 2013. *https://www.reuters.com/article/us-china-pork-additive/china-seeks-extra-testing-of-u-s-pork-for-feed-additive-*

idUSBRE91J05G20130220; *Reuters*, "China Halts Some U.S. Pork Imports over Feed Additive Use," August 12, 2014. *https://www.reuters.com/article/us-china-pork-additive-idUSKBN0GC20Y20140812*.

[102] Staff calculations; U.S. Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trading System, accessed August 31, 2018. *https://apps.fas.usda.gov/gats/ExpressQuery1.aspx*. HS6 codes include fresh and frozen swine hams, cuts, offal, livers, and carcasses: 020312, 020319, 020649, 020329, 020322, 020630, 020311, 020321, and 020641; *Agweb*, "Chris Hurt: Pork Tariffs Sour Industry Outlook," April 3, 2018. *https://www.agweb.com/article/chris-hurt-pork-tariffs-sour-industry-outlook/*.

[103] Jenny Hopkinson, "China's Retaliatory Tariffs on Selected U.S. Agricultural Products," *Congressional Research Service* IN10880, April 4, 2018. *https://fas.org/sgp/crs/row/IN10880.pdf*.

[104] Jenny Hopkinson, "China's Retaliatory Tariffs on Selected U.S. Agricultural Products," *Congressional Research Service* IN10880, April 4, 2018. *https://fas.org/sgp/crs/row/IN10880.pdf*; U.S. Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trade System (GATS), *Pork and Pork Products Exports*. *https://apps.fas.usda.gov/gats/ExpressQuery1.aspx*.

[105] Tom Polansek, "Trade War Puts the Hoof into U.S. Pig Part Exports to China," *Reuters*, July 17, 2018. *https://www.reuters.com/article/us-usa-trade-china-pork/trade-war-puts-the-hoof-into-u-s-pig-part-exports-to-china-idUSKBN1K71EA*.

[106] National Pork Producers Council, "China Tariff on U.S. Pork Now Tops 60 Percent; American Pork Producers Face Financial Crisis," July 6, 2018. *http://nppc.org/china-tariff-on-u-s-pork-now-tops-60-percent-american-pork-producers-face-financial-crisis/*.

[107] National Pork Producers Council, "China Tariff on U.S. Pork Now Tops 60 Percent; American Pork Producers Face Financial Crisis," July 6, 2018. *http://nppc.org/china-tariff-on-u-s-pork-now-tops-60-percent-american-pork-producers-face-financial-crisis/*.

[108] *Agweb*, "Chris Hurt: Pork Tariffs Sour Industry Outlook," April 3, 2018. *https://www.agweb.com/article/chris-hurt-pork-tariffs-sour-industry-outlook/*.

[109] *Agweb*, "Chris Hurt: Pork Tariffs Sour Industry Outlook," April 3, 2018. *https://www.agweb.com/article/chris-hurt-pork-tariffs-sour-industry-outlook/*.

[110] Agriculture and Horticulture Development Board, "EU Pork Exports Grow in June, in Tough Global Conditions," August 2018. *https://pork.ahdb.org.uk/prices-stats/news/2018/august/eu-pork-exports-grow-in-june-in-tough-global-conditions/*.

[111] Dominique Patton, "Exclusive: China Ramps up Checks on U.S. Pork Imports in Potentially Costly Slowdown," *Reuters*, May 8, 2018. *https://www.reuters.com/article/us-usa-trade-china-pork-exclusive/exclusive-china-ramps-up-checks-on-u-s-pork-imports-in-potentially-costly-slowdown-idUSKBN1I91I2*.

[112] Dominique Patton, "Exclusive: China Ramps up Checks on U.S. Pork Imports in Potentially Costly Slowdown," *Reuters*, May 8, 2018. *https://www.reuters.com/article/us-usa-trade-china-pork-exclusive/exclusive-china-ramps-up-checks-on-u-s-pork-imports-in-potentially-costly-slowdown-idUSKBN1I91I2*.

[113] *Agweb*, "Chris Hurt: Pork Tariffs Sour Industry Outlook," April 3, 2018. *https://www.agweb.com/article/chris-hurt-pork-tariffs-sour-industry-outlook/*.

[114] Staff calculations; U.S. Department of Agriculture, Office of the Chief Economist, "World Agricultural Supply and Demand Estimates – 580 – 31: U.S. Quarterly Animal Product Production, August 2018," August 2018, Tab 31. *https://www.usda.gov/oce/commodity/wasde/*.

[115] Staff calculations; U.S. Department of Agriculture, Foreign Agricultural Service, Global Agricultural Trading System, accessed August 31, 2018. *https://apps.fas.usda.gov/gats/ExpressQuery1.aspx*. HS6 codes include fresh and frozen swine hams, cuts, offal, livers, and carcasses: 020312, 020319, 020649, 020329, 020322, 020630, 020311, 020321, and 020641.

[116] David Alire Garcia, "Exclusive: Mexico Set to Impose 20 Percent Tariff on U.S. Pork Legs – Sources," *Reuters*, June 4, 2018. *https://www.reuters.com/article/us-usa-trade-mexico-pork-exclusive/exclusive-mexico-set-to-impose-20-percent-tariff-on-us-pork-legs-sources-idUSKCN1J103V*.

[117] Staff calculations; U.S. Department of Agriculture, Office of the Chief Economist, "World Agricultural Supply and Demand Estimates – 580 – 31: U.S. Quarterly Animal Product Production, August 2018," August 2018, Tab 31. *https://www.usda.gov/oce/commodity/wasde/*.

[118] *Agweb*, "Chris Hurt: Pork Industry May Face Large Losses," June 5, 2018. *https://www.agweb.com/article/chris-hurt-pork-industry-may-face-large-losses/*.

[119] Gregory Meyer, "Knives out for U.S. Pork in Tariffs War," *Financial Times*, June 11, 2018. *https://www.ft.com/content/d14decea-6b5e-11e8-b6eb-4acfcfb08c11*.

[120] Ken Root, "Perdue Discusses Trade, Details Payments to Farmers," *Iowa Agribusiness Radio Network*, August 28, 2018. *https://www.iowaagribusinessradionetwork.com/perdue-discusses-trade-details-payments-to-farmers/*; Michael Hirtzer, Caroline Stauffer, and P.J. Huffstutter, "U.S. Government to Pay $4.7 Billion in Tariff-Related Aid to Farmers," *Reuters*, August 27, 2018. *https://www.reuters.com/article/us-usa-trade-farmers/us-government-to-pay-47-billion-in-tariff-related-aid-to-farmers-idUSKCN1LC23X*.

[121] Michael Hirtzer, Caroline Stauffer, and P.J. Huffstutter, "U.S. Government to Pay $4.7 Billion in Tariff-Related Aid to Farmers," *Reuters*, August 27, 2018. *https://www.reuters.com/article/us-usa-trade-farmers/us-government-to-pay-47-billion-in-tariff-related-aid-to-farmers-idUSKCN1LC23X*.

[122] Ken Root, "Perdue Discusses Trade, Details Payments to Farmers," *Iowa Agribusiness Radio Network*, August 28, 2018. *https://www.iowaagribusinessradionetwork.com/perdue-discusses-trade-details-payments-to-farmers/*.

[123] Hallie Gu and Josephine Mason, "China Reports First African Swine Fever Outbreak, Culls 1,000 Hogs," *Reuters*, August 3, 2018. *https://www.reuters.com/article/us-china-swineflu-pigs/china-reports-first-african-swine-fever-outbreak-culls-1000-hogs-*

idUSKBN1KO0Y8; *Dim Sums*, "African Swine Fever's Great Leap to China," August 7, 2018. *http://dimsums.blogspot.com/2018/08/african-swine-fevers-great-leap-to-china.html*.

[124] UN Food and Agriculture Organization, "Outbreak of African Swine Fever Threatens to Spread from China to Other Asian Countries," August 28, 2018. *http://www.fao.org/news/story/en/item/1150618/icode/*.

[125] Abraham Inouye, "Multiple Outbreaks of African Swine Fever Reported in China," *U.S. Department of Agriculture Foreign Agricultural Service*, August 22, 2018, 3–4. *https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Multiple%20Outbreaks%20of%20African%20Swine%20Fever%20Reported%20in%20China_Beijing_China%20-%20Peoples%20Republic%20of_8-22-2018.pdf*; UN Food and Agriculture Organization, "Outbreak of African Swine Fever Threatens to Spread from China to Other Asian Countries," August 28, 2018. *http://www.fao.org/news/story/en/item/1150618/icode/*.

[126] Josephine Mason, "World's Top Pork Firm Shuts China Slaughterhouse in Race to Contain Deadly Swine Fever," *Reuters*, August 16, 2018. *https://www.reuters.com/article/us-china-swinefever-pigs/worlds-top-pork-firm-shuts-china-slaughterhouse-in-race-to-contain-deadly-swine-fever-idUSKBN1L206Z*; *Dim Sums*, "African Swine Fever Incident No. 2," August 16, 2018. *http://dimsums.blogspot.com/2018/08/african-swine-fever-incident-no-2.html*.

[127] UN Food and Agriculture Organization, "Outbreak of African Swine Fever Threatens to Spread from China to Other Asian Countries," August 28, 2018. *http://www.fao.org/news/story/en/item/1150618/icode/*.

[128] Lee Jeong-ho, "China Warns There May Be More African Swine Fever Outbreaks," *South China Morning Post*, August 29, 2018. *https://www.scmp.com/news/china/society/article/2161870/china-warns-there-may-be-more-african-swine-fever-outbreaks*.

[129] *Dim Sums*, "African Swine Fever's Great Leap to China," August 7, 2018. *http://dimsums.blogspot.com/2018/08/african-swine-fevers-great-leap-to-china.html*.

[130] United Kingdom Department for Environment, Food, and Rural Affairs, Animal and Plant Health Agency, Veterinary & Science Policy Advice Team – International Disease Monitoring, *Updated Outbreak Assessment: Update #8 on African Swine Fever in Eastern Europe*, April 10, 2017. *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608680/asf-east-europe-update8.pdf*; United Kingdom Department for Environment, Food, and Rural Affairs, Animal and Plant Health Agency, Veterinary & Science Policy Advice Team – International Disease Monitoring, *Update Outbreak Assessment #10: African Swine Fever in Eastern Europe*, July 25, 2017. *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608680/asf-east-europe-update8.pdf*; *Dim Sums*, "African Swine Fever's Great Leap to China," August 7, 2018. *http://dimsums.blogspot.com/2018/08/african-swine-fevers-great-leap-to-china.html*.

[131] UN Food and Agriculture Organization, "Outbreak of African Swine Fever Threatens to Spread from China to Other Asian Countries," August 28, 2018. *http://www.fao.org/news/story/en/item/1150618/icode/*.

[132] David Barboza, "Virus Spreading Alarm and Pig Disease in China," *New York Times*, August 16, 2007. *https://www.nytimes.com/2007/08/16/business/worldbusiness/16pigs.html*; Fred Gale, Daniel Marti, and Dinghuan Hu, "China's Volatile Pork Industry," *United States Department of Agriculture, Economic Research Service*, February 2012, 6. *http://usda.mannlib.cornell.edu/usda/ers/LDP-M/2010s/2012/LDP-M-02-07-2012_Special_Report.pdf*.