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Summary

U.S.-China economic ties have expanded substantially since China began reforming its economy and liberalizing its trade regime in the late 1970s. Total U.S.-China merchandise trade rose from \$2 billion in 1979 (when China's economic reforms began) to \$636 billion in 2017. China is currently the United States' largest merchandise trading partner, its third-largest export market, and its biggest source of imports. In 2015, sales by U.S. foreign affiliates in China totaled \$482 billion. Many U.S. firms view participation in China's market as critical to their global competitiveness. U.S. imports of lower-cost goods from China greatly benefit U.S. consumers. U.S. firms that use China as the final point of assembly for their products, or use Chinese-made inputs for production in the United States, are able to lower costs. China is also the largest foreign holder of U.S. Treasury securities (at \$1.2 trillion as of April 2018). China's purchases of U.S. debt securities help keep U.S. interest rates low.

Despite growing commercial ties, the bilateral economic relationship has become increasingly complex and often fraught with tension. From the U.S. perspective, many trade tensions stem from China's incomplete transition to a free market economy. While China has significantly liberalized its economic and trade regimes over the past three decades, it continues to maintain (or has recently imposed) a number of state-directed policies that appear to distort trade and investment flows. Major areas of concern expressed by U.S. policymakers and stakeholders include China's alleged widespread cyber economic espionage against U.S. firms; relatively ineffective record of enforcing intellectual property rights (IPR); discriminatory innovation policies; mixed record on implementing its World Trade Organization (WTO) obligations; extensive use of industrial policies (such as subsidies and trade and investment barriers) to promote and protect industries favored by the government; and interventionist policies to influence the value of its currency. Many U.S. policymakers argue that such policies adversely impact U.S. economic interests and have contributed to U.S. job losses in some sectors.

The Trump Administration has pledged to take a more aggressive stance to reduce U.S. bilateral trade deficits, enforce U.S. trade laws and agreements, and promote "free and fair trade," including in regard to China. On March 8, 2018, President Trump announced a proclamation imposing additional tariffs on steel (25%) and aluminum (10%), based on Section 232 national security justifications (China is the world's largest producer of both of these commodities). On April 1, China announced that it had retaliated against the U.S. action by raising tariffs (from 15% to 25%) on various U.S. products, which together totaled \$3 billion in 2017. On March 22, President Trump announced that action would be taken against China under Section 301 over its IPR policies deemed harmful to U.S. stakeholders. In addition, he stated that he would seek commitments from China to reduce the bilateral trade imbalance and to achieve "reciprocity" on tariff levels. On June 15, the USTR announced a two-stage plan to impose 25% ad valorem tariffs on \$50 billion worth of Chinese imports. Under the first stage, U.S. tariffs would be increased on \$34 billion worth of Chinese products and effective July 6. For the second stage, the USTR proposed increasing tariffs on \$16 billion worth of Chinese imports, mainly targeting China's industrial policies. China released its own two-stage list of counter-retaliation of equal magnitude. President Trump then threatened 10% ad valorem tariffs on another \$400 billion worth of Chinese products. On July 6, the Trump Administration implemented the first round of tariff increases and China said it would implement countermeasures. These actions could sharply reduce U.S.-China commercial ties, disrupt global supply chains, raise import prices for U.S. consumers and importers of Chinese inputs, and diminish economic growth in the United States and abroad.

This report provides background and analysis of U.S.-China commercial ties, including history, major trends, issues, and outlook. It will be updated as events warrant.

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Introduction

Economic and trade reforms begun in 1979 have helped transform China into one of the world's biggest and fastest-growing economies. China's economic growth and trade liberalization, including comprehensive trade commitments made upon its entry to the World Trade Organization (WTO) in 2001, have led to a sharp expansion in U.S.-China commercial ties. Yet, bilateral trade relations have become increasingly strained in recent years over a number of issues, including China's mixed record on implementing its WTO obligations; infringement of U.S. intellectual property (such as through cyber-theft of U.S. trade secrets and forced technology requirements placed on foreign firms); increased use of industrial policies to promote and protect domestic Chinese firms; extensive trade and foreign investment restrictions; lack of transparency in trade rules and regulations; distortionary economic policies that have led to overcapacity in several industries; and its large merchandise trade surplus with the United States. China's economic and trade conditions, policies, and acts have a significant impact on the U.S. economy as whole as well as specific U.S. sectors and thus are of concern to Congress. This report provides an overview of U.S.-China commercial ties, identifies major issues of contention, describes the Trump Administration's trade policies toward China, and reviews possible outcomes.

Most Recent Developments: Section 301

U.S.-China commercial ties are complex and have become increasingly contentious, due largely to China's incomplete transition to a free market economy. The Trump Administration has indicated its intent to take a harder line on trade policy towards China (and other countries). The most significant action it has taken to date has been the initiation of a Section 301 case against China's policies on intellectual property rights, which could result in several rounds of tit-for-tat trade sanctions and retaliation (these issues are discussed in more detail later in the report).¹

Section 301 Actions Chronology

- On August 14, 2017, President Trump directed the U.S. Trade Representative (USTR) to determine whether it should launch a Section 301 investigation into any of China's laws, policies, practices, or actions that may be unreasonable or discriminatory and that may be harming American intellectual property rights (IPR), innovation, or technology development.²
- On August 18, 2017, the USTR announced that it would proceed with Section 301 case against China's IPR policies.³
- On March 22, 2018, the USTR released a report detailing findings of its investigation into China's IPR policies.⁴ On the same day, President Trump signed a Memorandum on Actions by the United States Related to the Section 301 Investigation. Described by the White House as a targeting of China's

¹ For additional information on what Section 301 is and how it works, see CRS In Focus IF10708, *Enforcing U.S. Trade Laws: Section 301 and China*, by (name redacted).

² See announcement at <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-united-states-trade-representative/>.

³ <https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF> and <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2017/august/ustr-announces-initiation-section>.

⁴ See <https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF>.

“economic aggression,” the memorandum identified four broad IPR-related policies that justified U.S. action under Section 301. The Administration proposed to (1) implement a 25% ad valorem tariffs on certain Chinese imports (which in sum are comparable to U.S. trade losses), including aerospace, information and communications technology, and machinery; (2) initiate a WTO dispute settlement case against China’s “discriminatory” technology licensing (which it did on March 23); and (3) propose new investment restrictions on Chinese efforts to acquire sensitive U.S. technology.⁵ During his remarks about the Section 301 Memorandum, President Trump said he had asked China to immediately reduce the bilateral trade imbalance by \$100 billion and indicated that he wanted trade “reciprocity.”⁶

On April 3, the USTR release a list of proposed ad valorem tariffs (25%) on 1,300 tariff lines covering about \$50 billion worth of imports from China.⁷ On April 4, China responded by releasing a list of U.S. products that would be subject to 25% tariff increases (including soybeans, aircraft, and motor vehicles) and initiated a WTO dispute settlement case against the United States.⁸ In response, Trump, on April 5, asked the USTR to consider proposing additional tariff hikes on an additional \$100 billion worth of Chinese goods.⁹

- On May 3-4, the two sides held high-level talks in Beijing. The U.S. side released a draft Framework for Discussion. It included calls for China to reduce the bilateral trade imbalance by \$200 billion over two years; address each of the four IPR practices identified in the Section 301 findings; halt subsidies for the *Made in China 2025* initiative; remove foreign investment restrictions, make China’s tariff levels comparable to U.S. tariff rates and remove certain nontariff barriers; improve market access for U.S. service providers and agricultural products; and agree not to oppose, challenge, or take any other action against the United States’ action, including in the WTO, if China failed to live up to a framework agreement.¹⁰
- On May 19, the United States and China released a joint statement outlining progress on a number of trade issues. China agreed that it would “significantly increase purchases of United States goods and services,” including U.S. agricultural and energy products. China also said it would strengthen its IPR laws and regulations, including on patents.¹¹

⁵ See <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-actions-united-states-related-section-301-investigation/>

⁶ <https://www.whitehouse.gov/briefings-statements/remarks-president-trump-signing-presidential-memorandum-targeting-chinas-economic-aggression/>.

⁷ See <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/april/under-section-301-action-ustr>

⁸ See China’s tariff list at https://translate.google.com/translate?sl=zh-CN&tl=en&js=y&prev=_t&hl=en&ie=UTF-8&u=http%3A%2F%2Fwww.scio.gov.cn%2Fxfwbh%2Fxbwbfbh%2Fwqfbh%2F37601%2F38181%2Fzgzc38187%2FDocument%2F1626839%2F1626839.htm&edit-text=.

⁹ See <https://www.whitehouse.gov/briefings-statements/statement-president-donald-j-trump-additional-proposed-section-301-remedies/>.

¹⁰ For a copy of the *Framework for Discussion*, see <https://xqdoc.imedao.com/16329fa0c8b2da913fc9058b.pdf>,

¹¹ See <https://www.whitehouse.gov/briefings-statements/joint-statement-united-states-china-regarding-trade-consultations/>.

- On May 21, U.S. Secretary of the Treasury Steven Mnuchin stated that both sides had suspended threatened trade sanctions.¹²
- On May 29, the White House announced that it planned to move ahead with the proposed Section 301 sanctions against China by imposing 25% ad valorem tariffs on \$50 billion worth of imports from China, including those related to the Made in China 2025 initiative (final list of imports to be issued by June 15); (2) implementing new investment restrictions and enhanced export controls on Chinese entities and persons in regards to the acquisition of “industrially significant technology” for national security purposes (details to be released by June 30); and (3) continuing to pursue the WTO case against China’s licensing policies (initiated on March 23).¹³ A statement by the Chinese government said that the White House actions were “clearly contrary to the recent agreement between the two sides.”¹⁴
- On June 15, the USTR announced a two-stage plan to impose 25% ad valorem tariffs on \$50 billion worth of Chinese imports. Under the first stage, U.S. tariffs would be increased on 818 tariff lines on roughly \$34 billion worth of Chinese products that would be implemented on July 6. For the second stage, the USTR proposed increasing tariffs on 228 tariff lines on \$16 billion worth of Chinese imports, mainly targeting China’s industrial policies.¹⁵
- On June 16, China released a two-stage retaliation list of proposed tariff increases against the United States comparable in value to those announced by the United States on June 15.¹⁶
- In response to China’s June 16th announcement, President Trump on June 18 requested the USTR to propose a list of Chinese products valued at \$200 billion that would be subject to increased tariffs if China retaliated against the United States. He stated further that if China raised its tariffs yet again, the United States would pursue tariffs on another \$200 billion worth of Chinese products.¹⁷
- On June 27, President Trump announced that he would not issue new investment restrictions or export controls (as part of Section 301 action against China announcement on May 29) in lieu of legislation before Congress, the Foreign Investment Risk Review Modernization Act (FIRRMA), which, he said, would (if enacted) “provide additional tools to combat the predatory investment practices that threaten our critical technology leadership, national security, and future economic prosperity.”¹⁸

¹² See <http://www.foxnews.com/politics/2018/05/20/mnuchin-says-us-has-deal-with-china-to-cut-trade-deficit-will-hold-off-on-tariffs.html>.

¹³ See <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-confronting-chinas-unfair-trade-policies/>.

¹⁴ See <http://english.mofcom.gov.cn/article/newsrelease/significantnews/201805/20180502750321.shtml>.

¹⁵ See <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/june/ustr-issues-tariffs-chinese-products>.

¹⁶ For a translated copy of China’s tariff announcement, see https://translate.google.com/translate?sl=zh-CN&tl=en&js=y&prev=_t&hl=en&ie=UTF-8&u=http%3A%2F%2Fgss.mof.gov.cn%2Fzhengwuxinxi%2Fzhengcefabu%2F201806%2Ft20180616_2930325.html&edit-text.

¹⁷ See <https://www.whitehouse.gov/briefings-statements/statement-president-regarding-trade-china-2/>.

¹⁸ See <https://www.whitehouse.gov/briefings-statements/statement-president-regarding-investment-restrictions/>.

- On July 6, the Trump Administration implemented the first round of tariff increases on \$34 billion worth of Chinese products.¹⁹ China said it had taken countermeasures to increase tariffs on U.S. imports²⁰

U.S. Trade with China²¹

U.S.-China trade rose rapidly after the two nations reestablished diplomatic relations in January 1979, signed a bilateral trade agreement in July 1979, and provided mutual most-favored-nation (MFN) treatment, beginning in 1980.²² In that year (which was shortly after China’s economic reforms began), total U.S.-China trade (exports plus imports) was approximately \$4 billion. China ranked as the United States’ 24th-largest trading partner, 16th-largest export market, and 36th-largest source of imports. In 2017, total U.S. merchandise trade with China was \$636 billion, making China the United States’ largest trading partner (see **Table 1**).

Table 1. U.S. Merchandise Trade with China: 1980-2017

(\$ in billions)

Year	U.S. Exports	U.S. Imports	U.S. Trade Balance
1980	3.8	1.1	+2.7
1990	4.8	15.2	-10.4
2000	16.3	100.1	-83.8
2010	91.9	365.0	-273.0
2011	104.1	399.4	-295.3
2012	110.5	425.6	-315.1
2013	121.7	440.4	-318.7
2014	123.7	468.5	-344.8
2015	115.9	483.2	-367.3
2016	115.6	462.6	-347.0
2017	130.4	505.6	-375.2

Source: U.S. International Trade Commission (USITC) DataWeb.

¹⁹ See https://translate.google.com/translate?sl=zh-CN&tl=en&js=y&prev=_t&hl=en&ie=UTF-8&u=http%3A%2F%2Fwww.fmprc.gov.cn%2Fweb%2Ffyrbt_673021%2Ft1574589.shtml&edit-text=.

²⁰ See <http://www.chinadaily.com.cn/a/201807/06/WS5b3eec6ca3103349141e1258.html>.

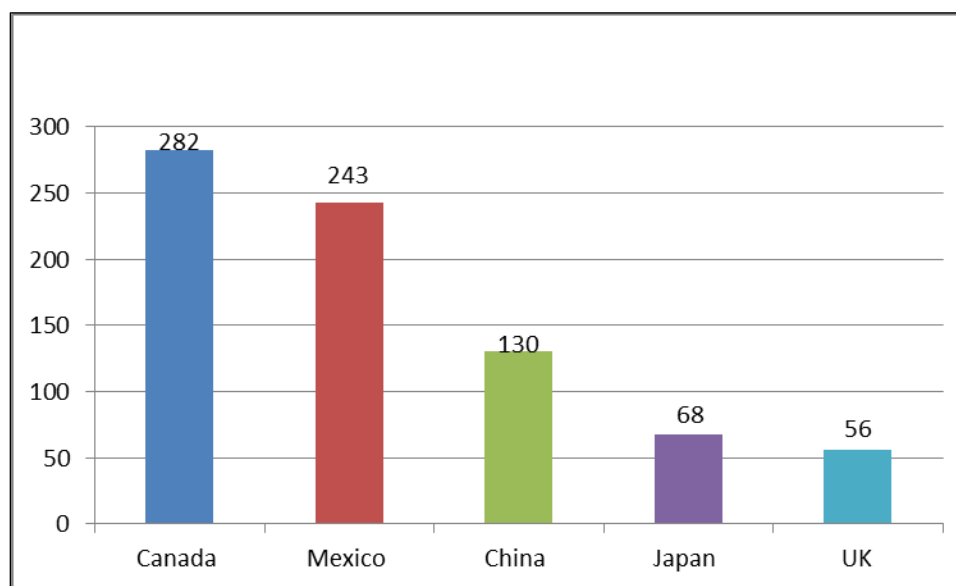
²¹ This report focuses primarily on U.S.-China trade relations. For information on China’s economy, see CRS Report RL33534, *China’s Economic Rise: History, Trends, Challenges, and Implications for the United States*, by (name redacted). For general information on U.S.-China political ties, see CRS Report R41108, *U.S.-China Relations: An Overview of Policy Issues*, by (name redacted).

²² The United States suspended China’s MFN status in 1951, which cut off most bilateral trade. China’s MFN status was conditionally restored in 1980 under the provisions set forth under Title IV of the 1974 Trade Act, as amended (including the Jackson-Vanik freedom-of-emigration provisions). China’s MFN status (which was re-designated under U.S. trade law as “normal trade relations” status, or NTR) was renewed on an annual basis until January 2002, when legislation was enacted in 2000 (P.L. 104-286) granting permanent NTR (PNTR) to China once it joined the WTO (which it did in December 2001).

U.S. Merchandise Exports to China

U.S. merchandise exports to China in 2017 were \$115.6 billion, up 12.8% from the previous year. China was the third-largest U.S. merchandise export market after Canada and Mexico (see **Figure 1**). China was the second-largest U.S. agricultural export market in 2017, at \$19.6 billion, 63% of which consisted of soybeans. From 2000 to 2017, the share of total U.S. merchandise exports going to China rose from 2.1% to 8.4%. As indicated in **Table 2**, the top five U.S. goods exports to China in 2017 were (1) aerospace products (mainly civilian aircraft and parts); (2) oil seeds and grains (mainly soybeans); (3) motor vehicles; (4) semiconductors and electronic components; and (5) waste and scrap. From 2002 to 2017, U.S. exports to China rose by 491%, faster than the growth rate for U.S. exports to any of its top 10 export markets in 2017 (see **Table 3**). During the first four months of 2018, U.S. merchandise exports to China rose by 7.8% year-on-year.

Figure 1. Top 5 U.S. Merchandise Export Markets in 2017
(\$ in billions)



Source: USITC DataWeb.

Table 2. Major U.S. Exports to China in 2017
(\$ in millions and percentage change)

NAIC Code	Products	2016	2017	Change 2016-2017
3364	AEROSPACE PRODUCTS & PARTS	14,578	16,273	11.6%
1111	OILSEEDS & GRAINS	15,524	13,724	-11.6%
3361	MOTOR VEHICLES	8,317	10,071	21.1%
3344	SEMICONDUCTORS & OTHER ELECTRONIC COMPONENTS	6,686	6,887	3.0%
2111	OIL & GAS	1,448	6,856	373.3%
9100	WASTE AND SCRAP	5,182	5,625	8.5%

NAIC Code	Products	2016	2017	Change 2016-2017
3345	NAVIGATIONAL/MEASURING/MEDICAL/CONTROL INSTRUMENTS	5,466	5,582	2.1%
3251	BASIC CHEMICALS	4,595	4,897	6.6%
3252	RESIN, SYN RUBBER, ARTF & SYN FIBERS/FIL	3,577	4,123	15.3%
3254	PHARMACEUTICALS & MEDICINES	2,818	3,401	20.7%
Total		115,602	130,370	12.8%

Source: USITC DataWeb.

Notes: NAIC is the North American Industrial Classification system.

Table 3. Major U.S. Merchandise Export Markets
(\$ in billions and percentage change)

Country	2002	2017	Percent Change 2002-2017
Canada	161	282	75.7%
Mexico	98	243	149.1%
China	22	130	491.2%
Japan	51	68	31.6%
United Kingdom	33	56	69.4%
Germany	27	53	100.9%
Korea	23	48	113.7%
Netherlands	18	42	130.3%
Hong Kong	13	40	217.4%
Brazil	12	37	198.8%
Global Total	693	1,547	123.1%

Source: USITC DataWeb and Global Trade Atlas.

Note: Ranked according to the top 10 U.S. merchandise export markets in 2017.

Many trade analysts argue that China could prove to be a much more significant market for U.S. exports in the future. China is one of the world's fastest-growing economies, and healthy economic growth is projected to continue in the years ahead, provided that it implements new comprehensive economic reforms. China's goals of modernizing its infrastructure, rebalancing the economy, upgrading industries, boosting the services sector, and enhancing the social safety net could generate substantial new demand for foreign goods and services. Economic growth has improved the purchasing power of Chinese citizens considerably, especially those living in urban areas along the east coast of China. In addition, China's large foreign exchange reserves (at \$3.1 trillion as of May 2018) and its huge population (at 1.39 billion) make it a potentially enormous market. To illustrate:

- A January 2017 study prepared by Oxford Economics for the U.S.-China Business Council estimated that in 2015 U.S. exports of goods and services to China plus bilateral FDI flows directly and indirectly supported 2.6 million U.S. jobs and contributed \$216 billion to U.S. GDP. The study further predicted that

U.S. exports of goods and services to China would grow from \$165 billion in 2015 to over \$520 billion by 2030.²³

- In 2016, Chinese visitors to the United States totaled 3.0 million (up 15.4% over the previous year), ranking China as the fifth-largest source of foreign visitors to the United States.²⁴ Chinese visitors spent \$33 billion in the United States in 2016 (including on education), which was the largest source of visitor spending in the United States.²⁵ The U.S. Department of Commerce projects that by 2021, Chinese visitors to the United States will total 5.7 million.²⁶
- China has the world's largest mobile phone network with 1.48 billion mobile phone subscribers as of April 2018,²⁷ and the largest number of internet users at 753 million,²⁸ as of December June 2017.
- China's online sales in 2016 totaled \$752 billion (more than double the U.S. level at \$369 billion).²⁹
- Boeing Corporation delivered 202 planes to China in 2017 (26% of total global deliveries), making it Boeing's largest market outside the United States.³⁰ Boeing predicts that over the next 20 years (2017-2036), China will need 7,240 new airplanes valued at nearly \$1.1 trillion and will be Boeing's largest commercial airplane customer outside the United States.³¹
- General Motors (GM) reported that it sold more cars and trucks in China than in the United States each year from 2010 to 2017.³² GM's China sales in 2017 were 3.9 million vehicles, compared to 3.0 million in the United States. Equity income from GM's joint venture operations in China was \$2.0 billion in 2016. GM vehicle unit sales to China accounted for 38.7% of its global total.³³ GM expects

²³ The U.S.-China Business Council, *Understanding the US-China Trade Relationship*, January 2017, available at <https://www.uschina.org/sites/default/files/Oxford%20Economics%20US%20Jobs%20and%20China%20Trade%20Report.pdf>.

²⁴ China reported that it had 122 million outbound tourists in 2016 and estimated that they spent \$110 billion.

²⁵ U.S. Department of Commerce, *International Trade Administration, Travel & Tourism Office*, News, available at http://tinet.ita.doc.gov/outreachpages/download_data_table/Fast_Facts_2016.pdf.

²⁶ U.S. Department of Commerce, *International Trade Administration, Travel & Tourism Office, News*, available at http://travel.trade.gov/view/f-2000-99-001/forecast/Forecast_Summary.pdf.

²⁷ Medium, "China Has World's Largest Online Population With 1.32 Bln Mobile Internet Subscribers" May 22, 2018, available at <https://medium.com/@yicaichina/china-has-worlds-largest-online-population-with-1-32-bln-mobile-internet-subscribers-e665e890302>.

²⁸ Xinhua, "China's mobile phone shipments resume growth in May," June 10, 2018, available at <http://en.people.cn/n3/2018/0610/c90000-9469677.html>.

²⁹ Data for China from Digital Commerce 360 at <https://www.digitalcommerce360.com/2017/02/06/online-shopping-china-grows-262-2016/> and U.S. data from the U.S. Census Bureau at <https://www2.census.gov/retail/releases/historical/ecom/16q4.pdf>.

³⁰ Xinhuanet, "Boeing delivers record high of 202 aircraft to China in 2017," January 25, 2018, at http://www.xinhuanet.com/english/2018-01/25/c_136924563.htm.

³¹ Boeing Corporation, *Current Market Outlook, 2017-2036*, September 2017, p. 32, at http://www.boeing.com/resources/boeingdotcom/commercial/market/current-market-outlook-2017/assets/downloads/2017-cmo-compressed_091917.pdf.

³² A large share of these vehicles was produced by GM and its joint-venture partners in China. GM's website states that it currently has 11 joint ventures and two wholly owned foreign enterprises (employing 58,000 workers) in China.

³³ General Motors, *2016 Full-Year and Fourth-Quarter Earnings*, February 2017, available at <http://media.gm.com/content/dam/Media/gmcom/investor/2017/feb/earnings/GeneralMotors-q4-2016-Earnings.pdf>.

China's vehicle market to increase by 5 million units or more by 2020.³⁴ In addition, U.S. motor vehicle exports to China were \$8.3 billion in 2016, making it the second-largest U.S. motor vehicle export market after Canada.³⁵

- According to estimates by Credit Suisse (a global financial services company), China overtook the United States in 2015 to become the country with the largest middle class at 109 million adults (with wealth between \$50,000 and \$500,000); the U.S. level was estimated at 92 million.³⁶ A study by the Brookings Institute predicts that spending by China's middle class (using 2011 purchasing power parity measurements) will rise from \$4.2 trillion in 2015 (12% of global total) to \$14.3 trillion (22% of global total) in 2030. China's 2030 middle class consumption levels are predicted to be more than three times U.S. levels.³⁷

From 2007 to 2016, China's private consumption grew at an average annual rate of 8.9%, compared to 1.6% growth in the United States.³⁸

Major U.S. Merchandise Imports from China

China was the largest source of U.S. merchandise imports in 2017, at \$506 billion, up 9.3% over the previous year. China's share of total U.S. merchandise imports rose from 8.2% in 2000 to 21.6% in 2017. The importance (ranking) of China as a source of U.S. imports has risen sharply, from eighth largest in 1990, to fourth in 2000, to second in 2004-2006, and to first in 2007-present (see **Figure 2**). The top five U.S. imports from China in 2017 were (1) communications equipment; (2) computer equipment; (3) miscellaneous manufactured commodities (such as toys and games); (4) apparel; and (5) semiconductors and other electronic components (see **Table 4**). China was also the fourth-largest source of U.S. agricultural imports in 2017 at \$4.5 billion.

³⁴ General Motors, Media, China, *General Motors Announces Growth Strategy for China*, March 21, 2016, available at http://media.gm.com/media/cn/en/gm/news.detail.html/content/Pages/news/cn/en/2016/Mar/0321_announcement.html.

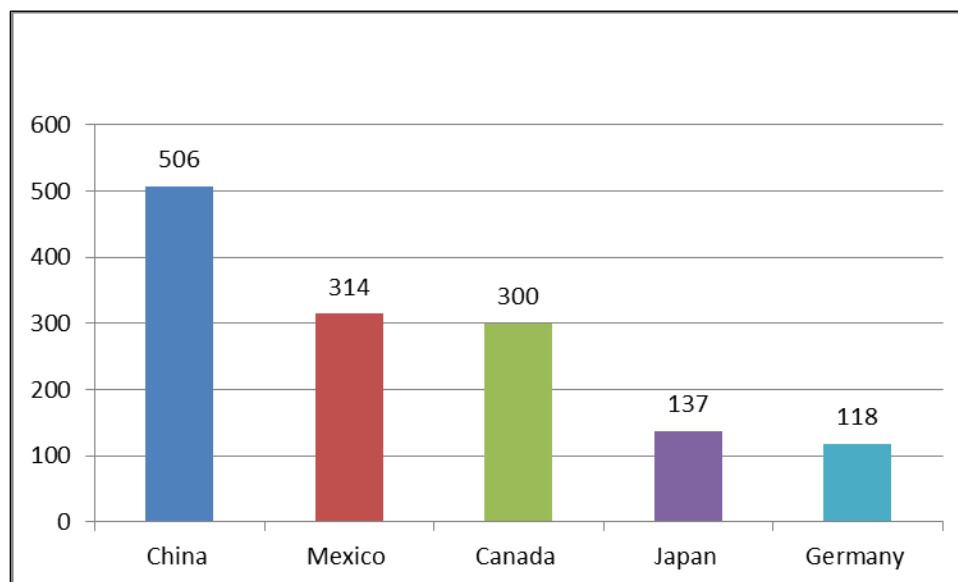
³⁵ Source: USITC DataWeb. From January to October 2017 U.S. auto exports to China rose 24.3% year-on-year.

³⁶ Credit Suisse, *Global Wealth in 2015: Underlying Trends Remain Positive*, October 3, 2015, available at <https://www.credit-suisse.com/us/en/about-us/research/research-institute/news-and-videos/articles/news-and-expertise/2015/10/en/global-wealth-in-2015-underlying-trends-remain-positive.html>.

³⁷ The Brookings Institution, *The Unprecedented Expansion of the Global Middle Class: An Update*, February 2017, p. 16, at https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf.

³⁸ Source: *Economist Intelligence Unit*, Country Data.

Figure 2. Top 5 Sources of U.S. Merchandise Imports: 2017
(\$ in billions)



Source: USITC DataWeb.

Table 4. Major U.S. Merchandise Imports From China in 2017
(\$ in millions and percentage change)

NAIC Code	Products	2016	2017	Percent Change 2016-2017
3342	COMMUNICATIONS EQUIPMENT	65,674	77,957	18.7%
3341	COMPUTER EQUIPMENT	52,180	58,609	12.3%
3399	MISCELLANEOUS MANUFACTURED COMMODITIES	34,408	36,497	6.1%
3152	APPAREL	25,483	24,559	-3.6%
3344	SEMICONDUCTORS & OTHER ELECTRONIC COMPONENTS	18,903	23,158	22.5%
3371	HOUSEHOLD & INSTITUTIONAL FURN & KITCHEN CABINETS	16,535	18,222	10.2%
3352	HOUSEHOLD APPLIANCES AND MISC MACHINES	14,062	14,494	3.1%
3162	FOOTWEAR	14,620	14,074	-3.7%
3261	PLASTICS PRODUCTS	12,319	13,771	11.8%
3363	MOTOR VEHICLE PARTS	13,117	13,533	3.2%
Total		462,618	505,597	9.3%

Source: USITC DataWeb.

Throughout the 1980s and 1990s, nearly all U.S. imports from China were low-value, labor-intensive products, such as toys and games, consumer electronic products, footwear, and textiles and apparel. However, over the past few years, an increasing proportion of U.S. imports from China are more technologically advanced products (see **text box** below).

U.S.-China Trade in Advanced Technology Products

According to the U.S. Census Bureau, U.S. imports of “advanced technology products” (ATP) from China in 2017 totaled \$171.1 billion. Information and communications products were by far the largest U.S. ATP import from China, accounting for 91% of U.S. ATP imports from China and 60% of U.S. global imports of this category (see **Table 5**). ATP products accounted for 33.8% of total U.S. merchandise imports from China. In addition, 36.8% of total U.S. ATP imports were from China (compared with 14.1% in 2003). U.S. ATP exports to China in 2017 were \$35.7 billion; these accounted for 27.4% of total U.S. exports to China and 10.1% of U.S. global ATP exports. In comparison, U.S. ATP exports to China in 2003 were \$8.3 billion, which accounted for 29.2% of U.S. exports to China and 4.6% of total U.S. ATP exports.³⁹

The United States ran a \$135.3 billion deficit in its ATP trade with China in 2017, up from a \$21.0 billion deficit in 2003. Some see the large and growing U.S. trade deficit in ATP with China as a source of concern, contending that it signifies the growing international competitiveness of China in high technology. Others dispute this, noting that a large share of the ATP imports from China are in fact relatively low-end technology products and parts, such as notebook computers, or are products that are assembled in China using imported high technology parts that are largely developed and/or made elsewhere. Some Members of Congress have raised concerns over possible national security implications of China’s significant role in global supply chains for various ATP products, especially those that may be procured by U.S. government agencies.⁴⁰

Table 5. U.S Imports of ATP Products from China by Major Category in 2017

Advanced Technology Products (ATP) Category	U.S. Imports from China \$millions	Total U.S. Imports (\$millions)	Imports from China as percent of global ATP total (%)
Biotechnology	194	26,127	0.7
Life Sciences	2,594	45,705	5.7
Opto-Electronics	5,132	23,036	22.3
Information & communications	155,535	259,392	60.0
Electronics	4,482	41,426	10.8
Flexible Manufacturing	1,347	13,726	9.8
Advanced Materials	413	2,844	14.5
Aerospace	1,027	48,592	2.1
Weapons	138	902	15.3
Nuclear Technology	25	1,698	1.5
Total U.S. ATP imports	171,067	464,258	36.8

Source: U.S. Census Bureau

³⁹ U.S. Census Bureau, Foreign Trade, at available at <https://www.census.gov/foreign-trade/statistics/product/atp/2017/12/ctryatp/index.html#C>.

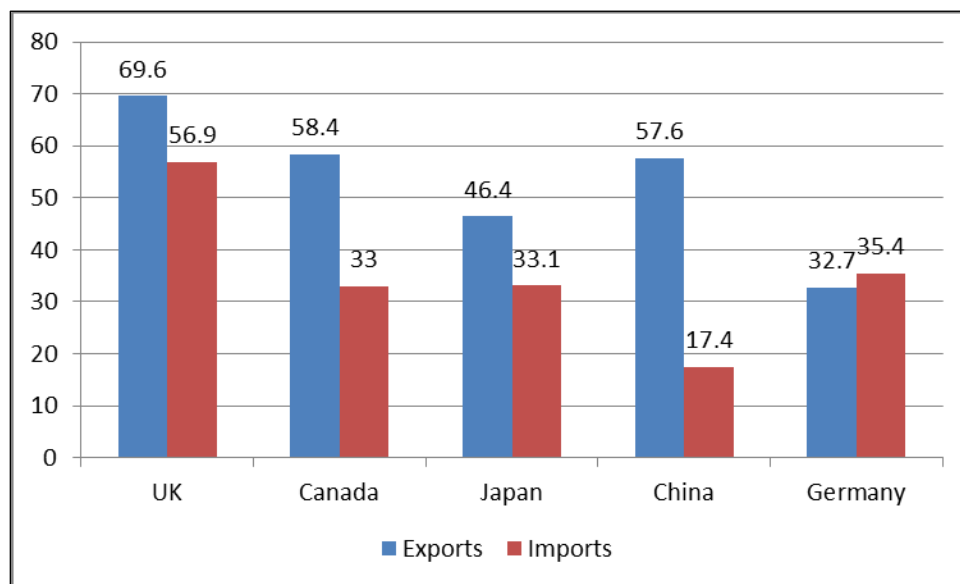
⁴⁰ See for example, U.S.-China Economic and Security Review Commission, *Supply Chain Vulnerabilities from China in U.S. Federal Information and Communications Technology*, April 2018, available at https://www.uscc.gov/sites/default/files/Research/Interos_Supply%20Chain%20Vulnerabilities%20from%20China%20in%20U.S.%20Federal%20ICT_final.pdf.

Trade in Services

China is a major U.S. trading partner in services. In 2017, China was the 4th-largest services trading partner at \$75 billion, the 3rd-largest services export market at \$57.6 billion, and the 8th-largest source of services imports at \$17.4 billion (see **Figure 3**). The United States ran a \$40.2 billion services trade surplus with China, which was the largest services surplus of any U.S. trading partner.

Figure 3. Major U.S. Services Trading Partners in 2017

(\$ in billions)



Source: BEA.

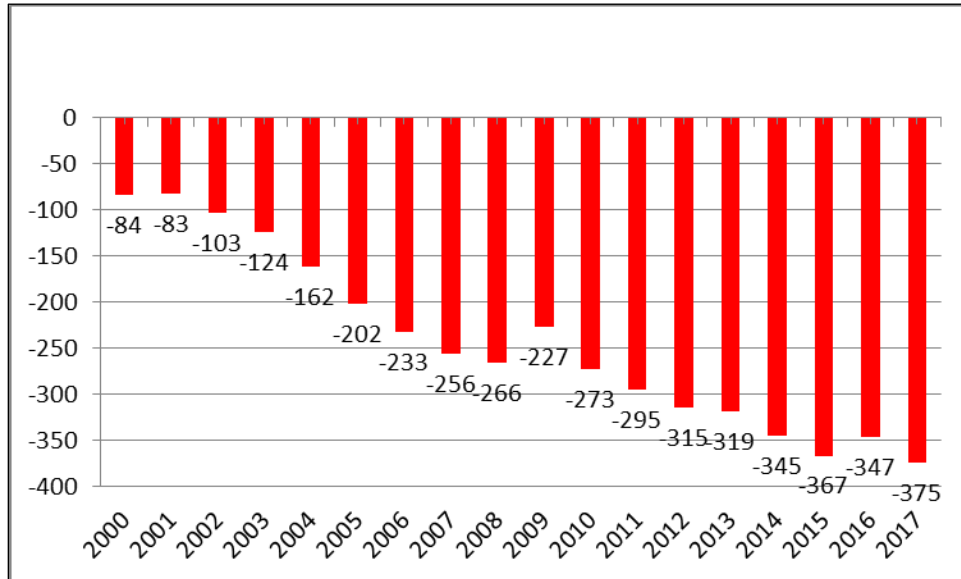
Note: Top five U.S. trading partners in total services trade (exports plus imports) in 2017.

The U.S. Merchandise Trade Deficit with China

A major concern among some U.S. policymakers is the size of the U.S. merchandise trade deficit with China, which rose from \$10 billion in 1990 to \$367 billion in 2015 (see **Figure 4**). The deficit fell to \$347 billion in 2016, but rose to \$375 billion in 2017.⁴¹ For the past several years, the U.S. merchandise trade deficit with China has been significantly larger than with any other U.S. trading partner (see **Figure 5**). Some analysts contend that the large U.S. merchandise trade deficits with China indicate that the trade relationship is somehow unbalanced, unfair, and damaging to the U.S. economy. Others argue that such deficits are largely a reflection of shifts in global production and the emergence of extensive and complex supply chains, where China is often the final point of assembly for export-oriented multinational firms that source goods from multiple countries.

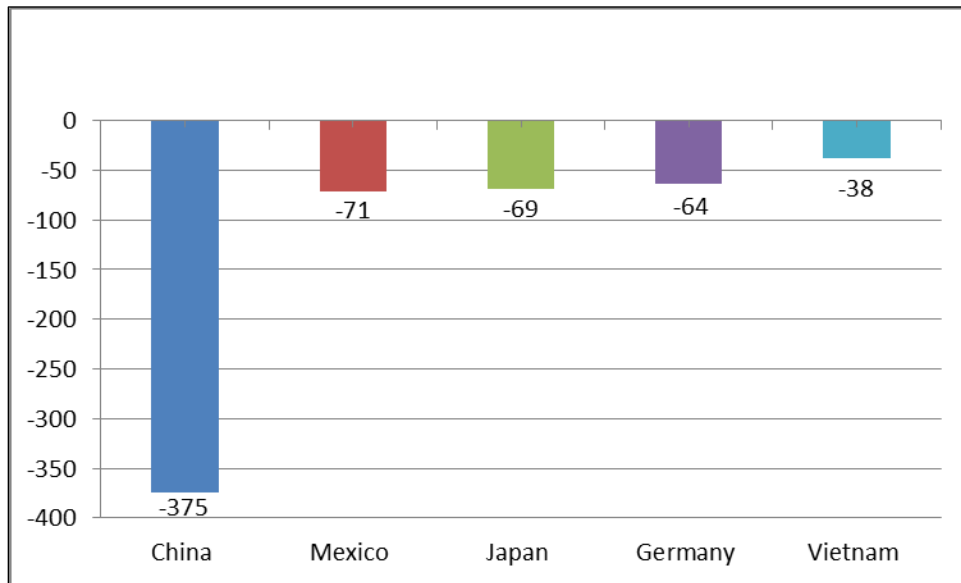
⁴¹ During the first four months of 2018, the U.S. merchandise trade deficit with China was 11.8% higher than during the comparable period in 2017. If this trend continues, the total U.S. merchandise deficit with China could reach \$420 billion in 2018.

Figure 4. U.S. Merchandise Trade Balance with China: 2000-2017
(\$ in billions)



Source: USITC DataWeb.

Figure 5. Five Largest U.S. Merchandise Trade Imbalances in 2017
(\$ in billions)



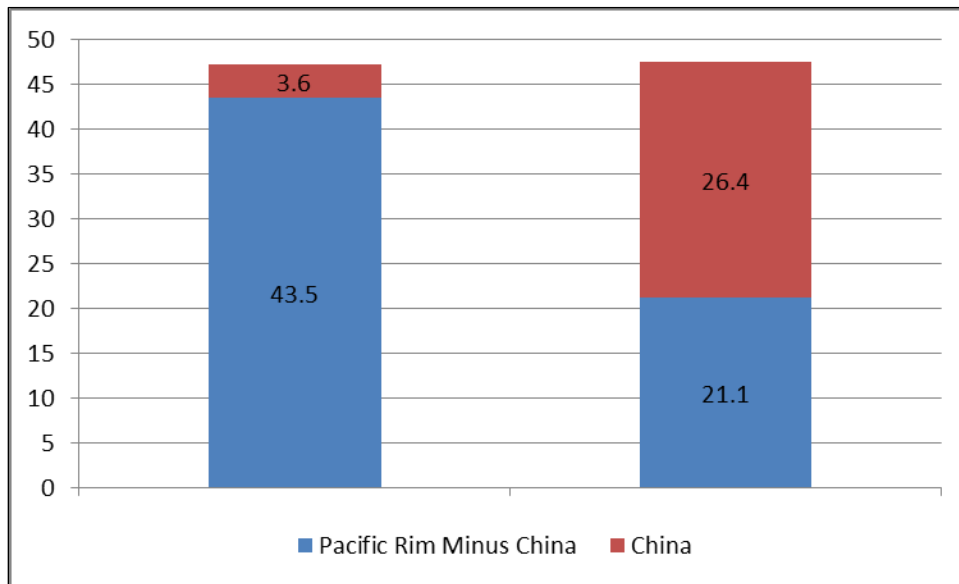
Source: USITC DataWeb.

The Transfer of Pacific Rim Production to China by Multinational Firms

Many analysts contend that the sharp increase in U.S. imports from China (and hence the growing bilateral trade imbalance) is largely the result of movement in production facilities from other (primarily Asian) countries to China. That is, various products that used to be made in such places

as Japan, Taiwan, Hong Kong, etc., and then exported to the United States, are now made in China (in many cases, by foreign firms). To illustrate, in 1990, the share of U.S. manufactured imports from Pacific Rim countries (including China) was 47.1%, and in 2017, that share remained relatively constant at 47.1% (see **Figure 6**).⁴² What changed was the country source of those imports. In 1990, China accounted for 7.6% of the share of U.S. manufactured imports from the Pacific Rim, but by 2017, that share increased to 55.4%. In other words, between 1990 and 2016, the role of China as a supplier of U.S. manufactured products among Pacific Rim countries increased sharply, while the relative importance of the rest of the Pacific Rim (excluding China) for these products sharply decreased. This was partly due to many multinational firms shifting their export-oriented manufacturing facilities from other countries to China.

Figure 6. U.S. Manufactured Imports from Pacific Rim Countries as a Percentage of Total U.S. Manufactured Imports: 1990 and 2017



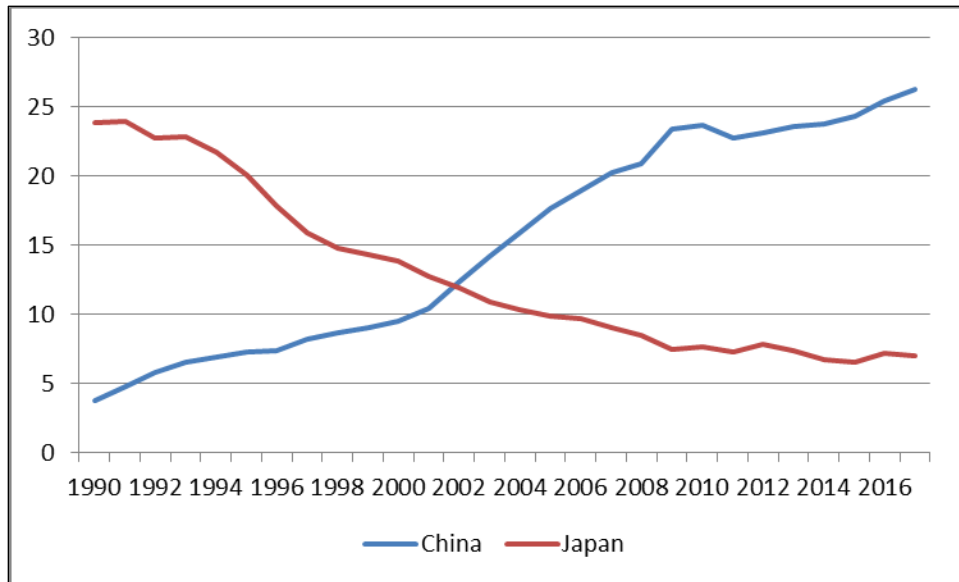
Source: USITC DataWeb.

Note: Standard International Trade Classification (SITC) definition of manufactured imports.

A significant amount of the shift in production appears to have involved Japan. In 1990, Japan was the source of 23.8% of U.S. manufactured imports, but by 2017 this level had dropped to 7.0%. Conversely, China's share of U.S. manufactured imports rose from 3.8% to 26.2% (see **Figure 7**). Japan accounted for the single largest U.S. bilateral merchandise trade deficit for many years until it was overtaken by China in 2000.

⁴² Pacific Rim countries include Australia, Brunei, Cambodia, China, Hong Kong, Indonesia, Japan, South Korea, Laos, Macao, Malaysia, New Zealand, North Korea, Papua New Guinea, the Philippines, Singapore, Taiwan, Thailand, Vietnam, and several small island nations.

Figure 7. U.S. Manufactured Imports from China and Japan as a Percentage of U.S. Total Imports: 1990-2017 (%)

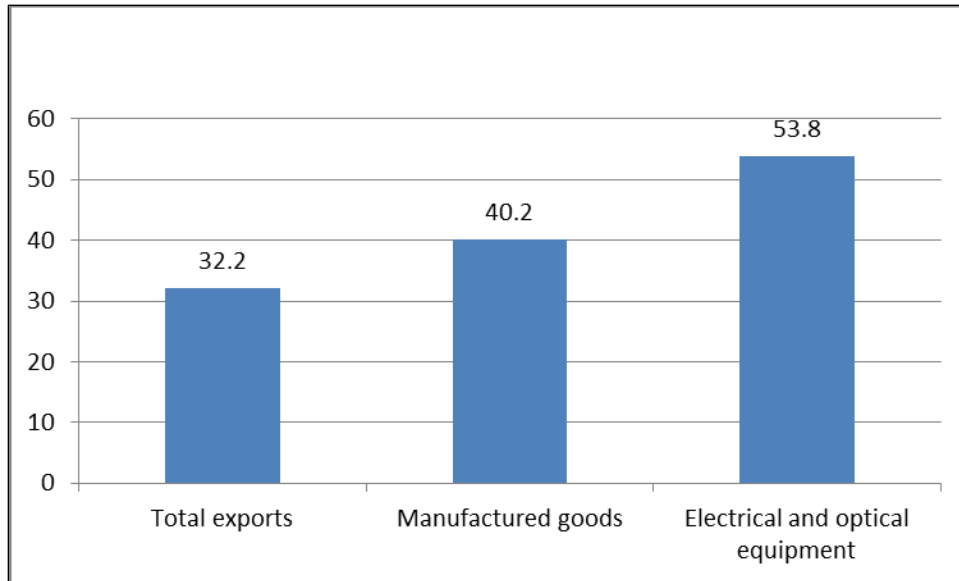


Source: USITC DataWeb.

China as a Major Center for Global Supply Chains

A joint study by the Organisation for Economic Co-operation and Development (OECD) and the WTO has sought to estimate trade flows according to the value that was added in each country. For example, the OECD/WTO study estimated that in 2011, 32.2% of the overall value of China's gross exports was comprised of foreign imports. This level increased to 40.2% for China's total manufactured exports, and for electrical and optical equipment, it was 53.8% (see **Figure 8**). The study estimated that if bilateral trade imbalances were measured according to the value of trade that occurred domestically in each country, the U.S. trade deficit in goods and services with China in 2011 (the most recent year available) would decline by 35% (from \$278.6 billion to \$181.1 billion) (see **Figure 9**). This is largely because of the role of trade in intermediate goods (parts and materials imported to make products). For example, the World Bank estimates that U.S. intermediate exports and imports to and from China in 2016 were \$19.3 billion and \$33.5 billion, respectively.⁴³ Thus, many Chinese products contain U.S.-made inputs and some U.S. products contain Chinese-made inputs.

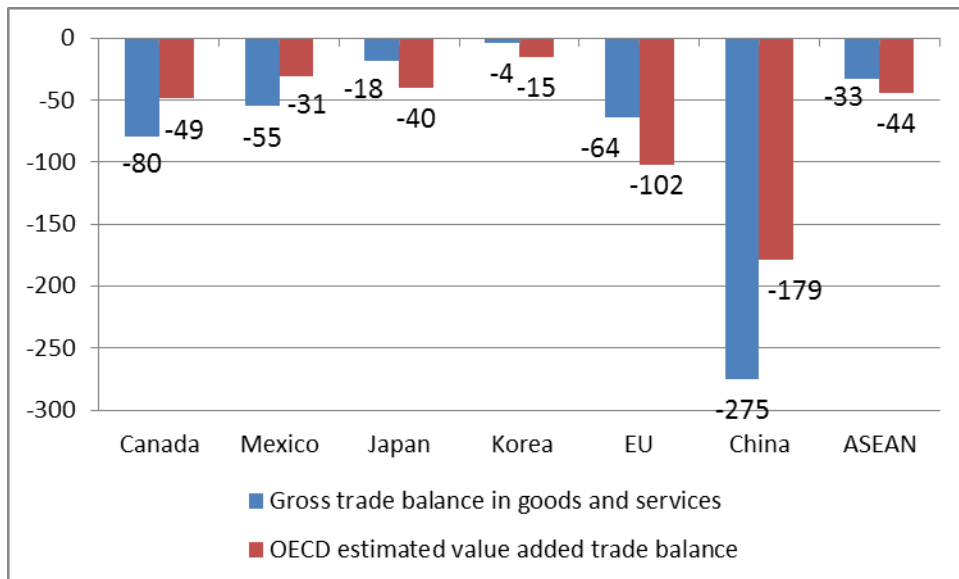
⁴³ World Bank, *World Integrated Trade Solution*, available at <http://wits.worldbank.org/Default.aspx?lang=en>.

Figure 8. Estimated Percentage Foreign Value-Added to China's Exports in 2011

Source: OECD/WTO Trade in Value-Added, October 2015.

Figure 9. Two Measurements of U.S. Trade in Goods and Services: 2011

(\$ in billions)



Source: OECD/WTO Trade in Value-Added, October 2015.

Note: Gross trade balances are U.S. reported data, while OECD data are estimated balances based on measurements of the value added that occurred in each country,

According to Apple Corporation, it used over 200 corporate suppliers with nearly 900 facilities located around the world. The top five largest country sources of these facilities in 2017 were China (358), Japan (137), the United States (64), Taiwan (55), and South Korea (34) (see **Figure 10**). Some U.S. corporate suppliers to Apple have facilities located in many countries. For example, Intel Corporation has 10 facilities that supply products to Apple, three of which are located in the United States, two in China, two in Malaysia, and one each in Ireland, Israel,

Malaysia, and Vietnam.⁴⁴ Apple iPhones are mainly assembled in China by Taiwanese companies (Foxconn and Pegatron) using a number of intermediate goods imported from abroad (or in many cases, intermediates made by foreign firms in China). Many analysts have estimated that the value-added that occurs in China in the production of the iPhone is small relative to the total value of the product because it mainly involves assembling foreign-made or foreign-owned components. Apple Corporation, on the other hand, is thought to be the single largest beneficiary (in terms of gross profit) on the sale of the iPhone. However, conventional trade data does not accurately attribute the value-added that occurs in each stage of making the iPhone. Rather, when the United States imports iPhones from China, U.S. trade data attributes nearly the full value of the product as originating in China, which some argue artificially inflates the size of the U.S. trade deficit with China.

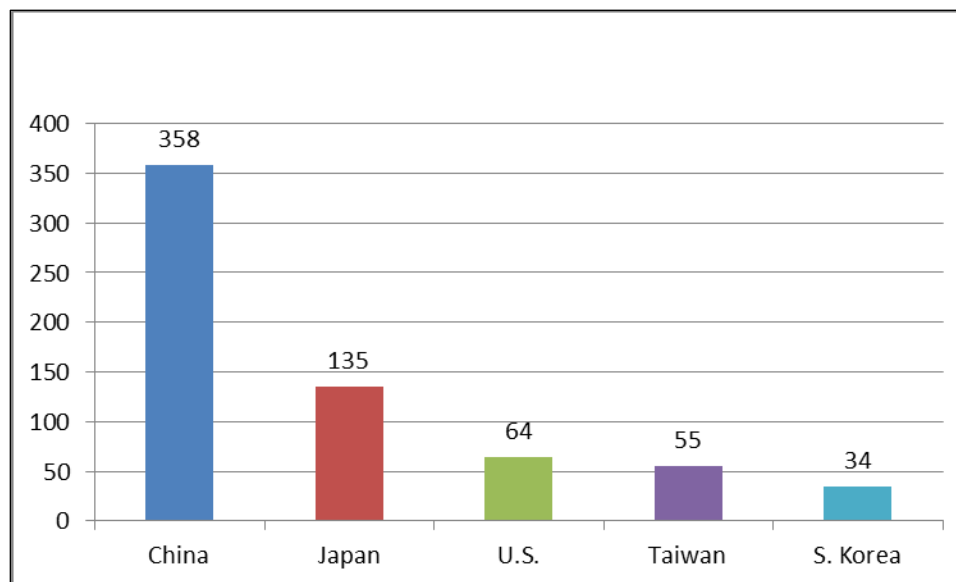
One 2010 study estimated that in 2009, China exported 11.3 million iPhones to the United States, with a shipping price of \$179 per unit and total export value at \$2.0 billion. The study estimated that 96.4% of the value of the iPhone was attributed to foreign suppliers and producers of components and parts, including the United States (at \$122 million). Standard trade data would put China's trade surplus in iPhone trade with the United States at \$1.9 billion, but that level would fall to \$73.5 million if that trade was measured according to the value-added that occurred in each country.⁴⁵ Several analysts have concluded that Apple's innovation in developing and engineering its products, along with its ability to source most of its production in low-cost countries, such as China, has helped enable the company to become a highly competitive and profitable firm (as well as a source for high-paying jobs in the United States).⁴⁶ Apple products illustrate that the rapidly changing nature of global supply chains has made it increasingly difficult to interpret the implications of U.S. trade data because, while they may show where products are being imported from, they often fail to reflect who benefits from that trade.

⁴⁴ Apple Corporation, *2017 Supplier List*, February 2018, available at <https://images.apple.com/supplier-responsibility/pdf/Apple-Supplier-List.pdf>.

⁴⁵ ADB Institute, *How the iPhone Widens the United States Trade Deficit with the People's Republic of China*, December 2010, available at <http://www.adb.org/publications/how-iphone-widens-united-states-trade-deficit-peoples-republic-china>. Note, given the changing nature of Apple's supply chains, it is unclear if the estimates of value-added still hold true today.

⁴⁶ Communications of the ACM, *Who Captures Value in a Global Innovation Network? The Case of Apple's iPod*, March 2009.

Figure 10. Top Five Country Locations of Facilities that Supplied Apple Corporation in 2017



Source: Apple Corporation 2017 Supplier List.

Note: Includes suppliers of materials, manufacturing, and assembly of products worldwide.

China Trade and U.S. Jobs

Measuring and assessing the benefits and costs of growing U.S.-China economic ties are often hotly debated among U.S. policymakers and economists, particularly in regard to its impact on various manufacturing sectors and workers.

The impact on U.S. employment (especially in various manufacturing sectors) resulting from imports from China (particularly after it joined the WTO in 2001) has been a major point of contention. Some critics of U.S. trade policy toward China attempt to link U.S. job losses to the growth and size of U.S. imports from China and/or the bilateral trade imbalance. For example, a study by the Economic Policy Institute (EPI) in December 2014 claims that growth in the U.S. goods trade deficit with China between 2001 and 2013 “eliminated or displaced” 3.2 million U.S. jobs (three-fourths of which were in manufacturing).⁴⁷ The authors stated that they used an input-output model that “estimated the amount of labor, or number of jobs, that is required to produce a given volume of exports and the labor displaced when a given volume of imports is substituted for domestic output.” The difference between the two numbers is thus the estimated jobs displaced by the trade deficit. Critics of the EPI study argue that the methodology used is flawed. First, the study essentially takes the Department of Commerce’s estimates of the number of jobs “supported” by each \$1 billion in exports (5,744 in 2016)⁴⁸ and makes the assumption that each \$1 billion in imports must displace the same level of jobs, a notion that most economists would disagree with. For example, not all imports from China compete directly with U.S. producers.

⁴⁷ EPI, *China Trade, Outsourcing and Jobs*, December 11, 2014, available at <http://www.epi.org/publication/china-trade-outsourcing-and-jobs/>.

⁴⁸ U.S. Department of Commerce, International Trade Administration, *Jobs Supported by Exports 2016: An Update*, August 2, 2017, available at https://www.trade.gov/mas/ian/build/groups/public/@tg_ian/documents/webcontent/tg_ian_005543.pdf.

Many are products that used to be made in other countries, and thus an increase in imports from China alone did not necessarily displace U.S. domestic producers. In addition, some imports from China contain U.S.-made intermediate parts (such as semiconductors) made in the United States. Many imports from China are final assembled products (such as Apple iPhones) with a relatively small share of value-added from China, and the jobs generated or supported by innovating the products are not accounted for in the trade data. Finally, factors other than trade, such as technological innovation, may also affect job levels in some sectors.

Similarly, while China is the largest source of U.S. merchandise imports, the overall impact on the U.S. economy is relatively small. A Federal Reserve Bank of San Francisco study examined U.S. consumer spending and estimated that, in 2010, U.S. personal consumption expenditures (PCE) of domestically sourced goods and services goods was 88.5% of total U.S. PCE (total imports accounted for 11.5%). Imports from China accounted for 2.7% of U.S. PCE, but less than half of this amount was attributed to the actual cost (price) of Chinese imports—the rest went to U.S. businesses and workers transporting, selling, and marketing the Chinese-made products, which, the study estimated, would reduce China’s share of U.S. PCE to 1.9%.⁴⁹

Economists generally argue that trade has an overall positive impact on the economy. Low-cost imports boost consumer welfare, increase consumer choices, and help lower inflation. However, some economists contend that the benefits of trade are not equally spread. Some sectors can be negatively impacted, affecting employment and wages, and such negative effects can be concentrated in certain regions or industries, and adjusting to such shocks can be challenging. A 2014 study by the National Bureau of Economic Research (NBER) concluded that increased import penetration from China from 1999 to 2011 directly and indirectly resulted in net U.S. job losses of 2.0 million to 2.4 million U.S. jobs, and accounted for 10% of the decline in U.S. manufacturing jobs during this period.⁵⁰

Another NBER study asserted that China’s rise as an economic power has “induced an epochal shift in patterns of world trade” and has “challenged much of the received empirical wisdom about how labor markets adjust to trade shocks.” The study said that for workers in import-competing firms, “adjustment in local labor markets is remarkably slow, with wages and labor-force participation rates remaining depressed and unemployment rates remaining elevated for at least a full decade after the China trade shock commences. Exposed workers experience greater job churning and reduced lifetime income,” in part because workers that may lose their jobs due to imports often remain in highly exposed industries or regions, which are subject to further trade shocks.⁵¹ The study claimed that there is little evidence for substantial off-setting employment gains in local industries not exposed to the trade shock.

Critics of the two NBER studies contend that while trade may impact the composition of jobs in the U.S. economy, it has little long-term effect on the number of jobs, which they argue is largely a function of aggregate demand. They also point out that between 2010 and 2015, the number of U.S. manufacturing jobs rose by 6.8% even though U.S. imports from China increased by 32.4%. In addition, U.S. manufacturing output during this period rose by 15.3%. Some economists contend that U.S. productivity has been a major cause of job losses in manufacturing. A study by

⁴⁹ Federal Reserve Bank of San Francisco, *FRBSF Economic Letter*, August 11, 2016, available at <http://www.frbsf.org/economic-research/publications/economic-letter/2011/august/us-made-in-china/>.

⁵⁰ NBER, *Import Competition and the Great U.S. Employment Sag of the 2000s*, August 2014, available at <http://www.nber.org/papers/w20395.pdf>.

⁵¹ NBER, *The China Shock: Learning from Labor Market Adjustment to Large Changes in Trade*, January 2016, available at <http://nber.org/papers/w21906>.

Ball State University attributed 88% of U.S. manufacturing job losses from 2000 to 2010 to productivity gains, noting that had the United States “kept 2000-levels of productivity and applied them to 2010-levels of production, we would have required 20.9 million manufacturing workers. Instead, we employed only 12.1 million.”⁵²

Similarly, while China is the largest source of U.S. merchandise imports, the overall impact on the U.S. economy is relatively small. A Federal Reserve Bank of San Francisco study examined U.S. consumer spending and estimated that, in 2010, U.S. personal consumption expenditures (PCE) of domestically sourced goods and services was 88.5% of total U.S. PCE (total imports accounted for 11.5%). Imports from China accounted for 2.7% of U.S. PCE, but less than half of this amount was attributed to the actual cost (price) of Chinese imports—the rest went to U.S. businesses and workers transporting, selling, and marketing the Chinese-made products, which, the study estimated, would reduce China’s share of U.S. PCE to 1.9%.⁵³

U.S.-China Investment Ties: Overview

Investment plays a large and growing role in U.S.-China commercial ties.⁵⁴ China’s investment in U.S. assets can be broken down into several categories, including holdings of U.S. securities, foreign direct investment (FDI), and other nonbond investments. The Department of the Treasury defines foreign holdings of U.S. securities as “U.S. securities owned by foreign residents (including banks and other institutions), except where the owner has a direct investment relationship with the U.S. issuer of the securities.”⁵⁵ U.S. statutes define FDI as “the ownership or control, directly or indirectly, by one foreign resident of 10% or more of the voting securities of an incorporated U.S. business enterprise or the equivalent interest in an unincorporated U.S. business enterprise, including a branch.”⁵⁶ The Bureau of Economic Analysis (BEA) is the main U.S. government agency that collects and reports data on FDI flows to and from the United States, which is done on a balance of payment basis.⁵⁷ China has also invested in a number of U.S. companies, projects, and various ventures that do not meet the U.S. definition of FDI, and thus, are not reflected in BEA’s data.

For many years, the accumulation of foreign exchange reserves (FERs) has been a major driver of China’s overseas investment. China’s FERs result from: (1) large annual trade surpluses and FDI

⁵² Ball State University, *The Myth and the Reality of Manufacturing in America*, June 2015, available at <http://conexus.cberdata.org/files/MfgReality.pdf>.

⁵³ Federal Reserve Bank of San Francisco, *FRBSF Economic Letter*, August 11, 2016, available at <http://www.frbsf.org/economic-research/publications/economic-letter/2011/august/us-made-in-china/>.

⁵⁴ Investment is often a major factor behind trade flows. Firms that invest overseas often import machinery, parts, and other inputs from the parent company abroad to manufacture products for export or sale locally. Other such invested overseas firms may produce inputs and ship them to their parent company for final production.

⁵⁵ U.S. Department of the Treasury, Federal Reserve Bank of New York, and Board of Governors of the Federal Reserve System, *Foreign Portfolio Holdings of U.S. Securities as of June 30, 2016*, April 2017, available at <http://ticdata.treasury.gov/Publish/shla2016r.pdf>.

⁵⁶ 15 CFRS 806.15(a)(1). The 10% ownership share is the threshold considered to represent an effective voice or lasting influence in the management of an enterprise. See BEA, *International Economic Accounts, BEA Series Definitions*, available at <http://www.bea.gov/international>.

⁵⁷ BEA also reports FDI data according to broad industrial sections, including mining; utilities; wholesale trade; information; depository institutions; finance (excluding depository institutions); professional, scientific, and technical services; nonbank holding companies; manufacturing (including food, chemicals, primary and fabricated metals, machinery, computers and electronic products, electrical equipment, appliances and components, transportation equipment, and other manufacturing); and other industries.

inflows; (2) intervention by the Chinese government to halt or slow the value of its currency, the renminbi (RMB); and (3) restrictions on capital outflows by private Chinese citizens. Rather than holding foreign currencies, such as U.S. dollars which would earn no interest, the Chinese government has invested much of those reserves abroad. For many years, much of that investment has gone into U.S. Treasury securities. Although they generate low returns, such securities are generally viewed globally as a relatively safe investment because they are backed by the full faith and credit of the U.S. government and are liquid (e.g., easily sold), albeit generating relatively small rates of returns. More recently, the Chinese government has diversified its investments in order to obtain higher returns, such as by encouraging its firms (especially SOEs) to invest overseas to become more globally competitive, as well as to help China gain access to raw materials (such as oil), food, and technology. As a result, Chinese annual FDI outflows have grown significantly in recent years, rising from \$21 billion in 2006 to \$183 billion in 2016, making China the second-largest source of annual global FDI outflows.⁵⁸

U.S. investment in China has largely been in the form of FDI flows (due in part to Chinese restrictions on portfolio investment).⁵⁹ Initially, most U.S. FDI flows (especially after China began to open up its economy in 1979) likely went toward export-oriented manufacturing to take advantage of China's relatively low wages. In more recent years, as China's economy has rapidly grown, a larger share of U.S. FDI in China has gone to tap into the country's booming domestic demand for goods and services. However, many U.S. firms raise concerns that Chinese investment restrictions and requirements (such as technology sharing) often hamper their efforts.

China's Holdings of U.S. Public and Private Securities⁶⁰

China's holdings of U.S. public and private securities are significant and by far constitute the largest category of Chinese investment in the United States.⁶¹ These securities include U.S. Treasury securities, U.S. government agency (such as Freddie Mac and Fannie Mae) securities, corporate securities, and equities (such as stocks). China's investment in public and private U.S. securities totaled \$1.54 trillion as of June 2017, making it the fourth-largest holder after Japan, the Cayman Islands, and the United Kingdom.⁶² U.S. Treasury securities, which help the federal government finance its budget deficits, are the largest category of U.S. securities held by China.⁶³ As indicated in **Table 6** and **Figure 11** (which show end-year data), China's holdings of U.S. Treasury securities increased from \$118 billion in 2002 to \$1.24 trillion in 2014, but fell to \$1.06 trillion in 2016. They rose to nearly \$1.19 trillion in 2017, making China the largest foreign holder of U.S. Treasury securities.⁶⁴ China's holdings of U.S. Treasury securities as a share of total foreign holdings rose from 9.6% in 2002 to a historical high of 26.1% in 2010. That level

⁵⁸ United Nations Conference on Trade and Development, *World Investment Report 2016*, June 22, 2016, available at http://unctad.org/en/PublicationsLibrary/wir2016_Overview_en.pdf.

⁵⁹ U.S. portfolio investment in China through 2016 was \$101.4 billion, mostly in equities. Source: U.S. Department of Treasury, Federal Reserve Bank of New York, and Board of Governors of the Federal Reserve System, *U.S. Portfolio Holdings of Foreign Securities as of December 31, 2016*, October 2017.

⁶⁰ For additional information on this issue, see CRS Report RL34314, *China's Holdings of U.S. Securities: Implications for the U.S. Economy*, by (name redacted) and (name redacted).

⁶¹ About 70% of China's total holdings of U.S. government and private securities are in U.S. Treasury securities.

⁶² U.S. Department of the Treasury, Preliminary Report on *Foreign Portfolio Holdings of U.S. Securities as of June 2017*, February 2018, available at <https://home.treasury.gov/news/press-releases/sm0301>.

⁶³ Some describe foreign holdings of U.S. Treasury securities as "foreign ownership of U.S. government debt."

⁶⁴ China's holdings of U.S. Treasuries could be higher as Department of the Treasury data may not always capture Chinese purchases of U.S. Treasury securities that may occur in global financial centers.

fell to 17.6% in 2016, but rose to 18.8% in 2017.⁶⁵ China's holdings of U.S. Treasury securities as of April 2018 were \$1.18 trillion and constituted 19.2% of total foreign holdings.

Table 6. China's Holdings of U.S. Treasury Securities: 2002-2017

	2002	2004	2006	2008	2010	2012	2014	2016	2017
China's holdings (\$ billions)	118	223	397	727	1,160	1,203	1,244	1,058	1,185
China's holdings as a percentage of total foreign holdings	9.6%	12.1%	18.9%	23.6%	26.1%	23.0%	21.7%	17.6%	18.7%

Source: U.S. Department of the Treasury.

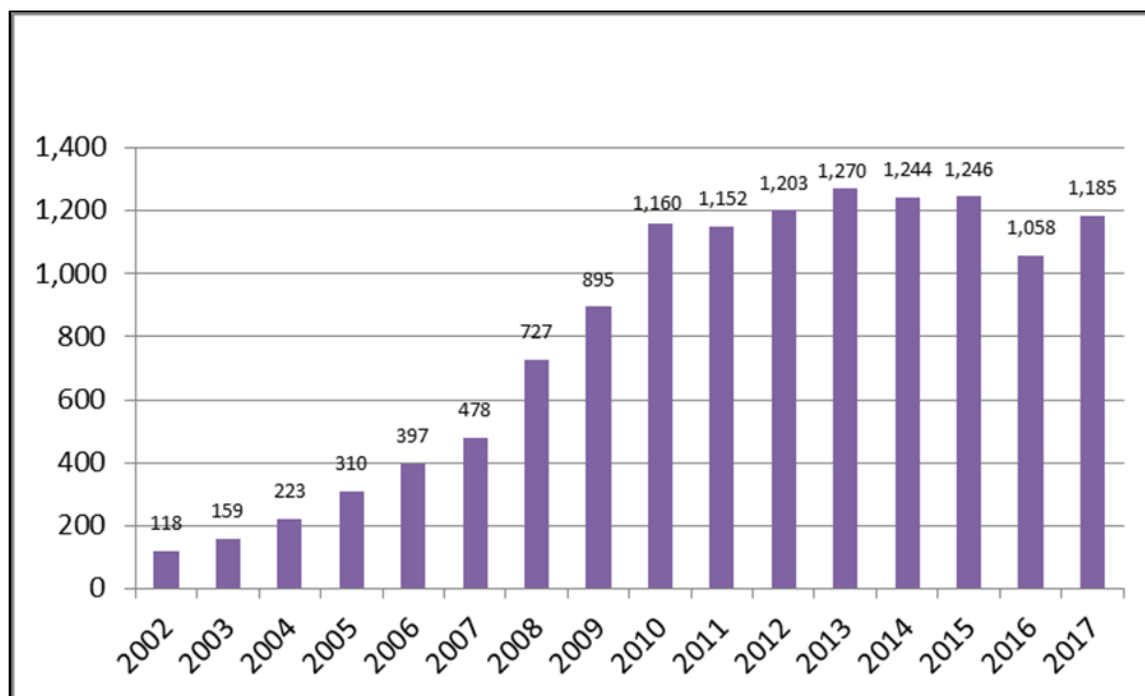
Note: Annual data are year-end. Data excludes Hong Kong and Macau which are treated separately.

Some analysts and Members of Congress have sometimes raised concerns that China's large holdings of U.S. debt securities could give it leverage over U.S. foreign policy, including trade policy. They argue, for example, that China might attempt to sell (or threaten to sell) a large share of its U.S. debt securities over a policy dispute, which could damage the U.S. economy. Others counter that China's holdings of U.S. debt give it very little practical leverage over the United States. They argue that, given China's economic dependency on a stable and growing U.S. economy, and its substantial holdings of U.S. securities, any attempt to try to sell a large share of those holdings would likely damage both the U.S. and Chinese economies. It could also cause the U.S. dollar to sharply depreciate against global currencies, which could reduce the value of China's remaining holdings of U.S. dollar assets.

⁶⁵ In addition to China's FDI in the United States and its holdings in U.S. Treasury securities, China (as of June 2016) held \$178 billion in U.S. equities (such as stocks), up from \$3 billion in June 2005. It also held \$196 billion in U.S. agency securities and \$15 billion in corporate debt.

Figure 11. China's Holdings of U.S. Treasury Securities: 2002-2017

(\$ in billions)



Source: U.S. Department of the Treasury.

Notes: Data are year-end and exclude Hong Kong and Macau, which are treated separately.

In the 112th Congress, the conference report accompanying the National Defense Authorization Act of FY2012 (H.R. 1540, P.L. 112-81) included a provision requiring the Secretary of Defense to conduct a national security risk assessment of U.S. federal debt held by China. The Secretary of Defense issued a report in July 2012, stating that “attempting to use U.S. Treasury securities as a coercive tool would have limited effect and likely would do more harm to China than to the United States. As the threat is not credible and the effect would be limited even if carried out, it does not offer China deterrence options, whether in the diplomatic, military, or economic realms, and this would remain true both in peacetime and in scenarios of crisis or war.”⁶⁶

U.S. Residential Real Estate

Over the past few years, Chinese purchases of U.S. residential real estate have risen sharply, from \$11.2 billion in 2010 to \$31.7 billion in 2017. Chinese investors were the largest foreign purchases of U.S. residential real estate buyers each year from 2015 to 2017. In 2017, Chinese investors purchased 40,572 properties.⁶⁷

⁶⁶ Office of the Secretary of Defense, *Report to Congress, Assessment of the National Security Risks Posed to the United States as a Result of the U.S. Federal Debt Owed to China as a Creditor of the U.S. Government*, July 2012.

⁶⁷ Values are for 12 months from April-March. Source: National Association of Realtors, *2017 Profile of International Activity in U.S. Residential Real Estate*, July 2017 available at <https://www.nar.realtor/sites/default/files/documents/2017-Profile-of-International-Activity-in-US-Residential-Real-Estate.pdf>.

Bilateral Foreign Direct Investment Flows⁶⁸

The level of foreign direct investment (FDI) flows between China and the United States is relatively small given the large volume of trade between the two countries. Many analysts contend that an expansion of bilateral FDI flows could greatly expand commercial ties.⁶⁹ BEA data on U.S.-China FDI (see **Table 7**) indicate that in 2016:

- U.S. FDI flows to China were \$9.5 billion (up 28.2% over 2015 flows), making China the ninth-largest destination of U.S. FDI outflows.
- The stock of U.S. FDI in China on a historical-cost basis (i.e., the book value) was \$92.5 billion (up 9.4% over the previous year), making China the 12th-largest overall destination of U.S. FDI through 2016.
- Chinese FDI flows to the United States were \$10.3 billion (up 74.7% over 2015 levels), making China the 11th-largest source of U.S. FDI inflows in 2016.

At the end of 2016, the stock of Chinese FDI in the United States on a historical-cost basis, was \$27.5 billion (up 63.7% over the previous year), making China the 16th-largest overall source of U.S. FDI through 2016.⁷⁰

Table 7. Summary of BEA Data on U.S.-China FDI Flows: 2016

FDI Data	Quantity (\$ millions)	Ranking of FDI Flows
U.S. FDI flows to China in 2016	9,474	9 th
China FDI flows to U.S. in 2016	10,337	11 th
Stock of U.S. FDI in China through 2016	92,481	12 th
Stock of Chinese FDI in U.S. through 2016	58,154	16 th

Source: Bureau of Economic Analysis.

Notes: FDI stock data are on a historical-cost basis. Rankings were made using only countries and exclude broad groupings of territories or islands. Data for China exclude Hong Kong and Macau which are counted separately.

BEA also collects various financial data of foreign-invested multilateral firms. Data for 2015 (the most recent year available) indicate that sales by foreign affiliates of U.S. firms in China totaled \$481 billion,⁷¹ which was the third-largest market for U.S.-affiliated firms overseas, after the United Kingdom (\$697 billion) and Canada (\$625 billion) (see **Figure 12**). In addition, U.S. affiliates in China employed 2.1 million workers, paid \$35 billion in employment compensation, and spent \$3.4 billion on R&D.⁷²

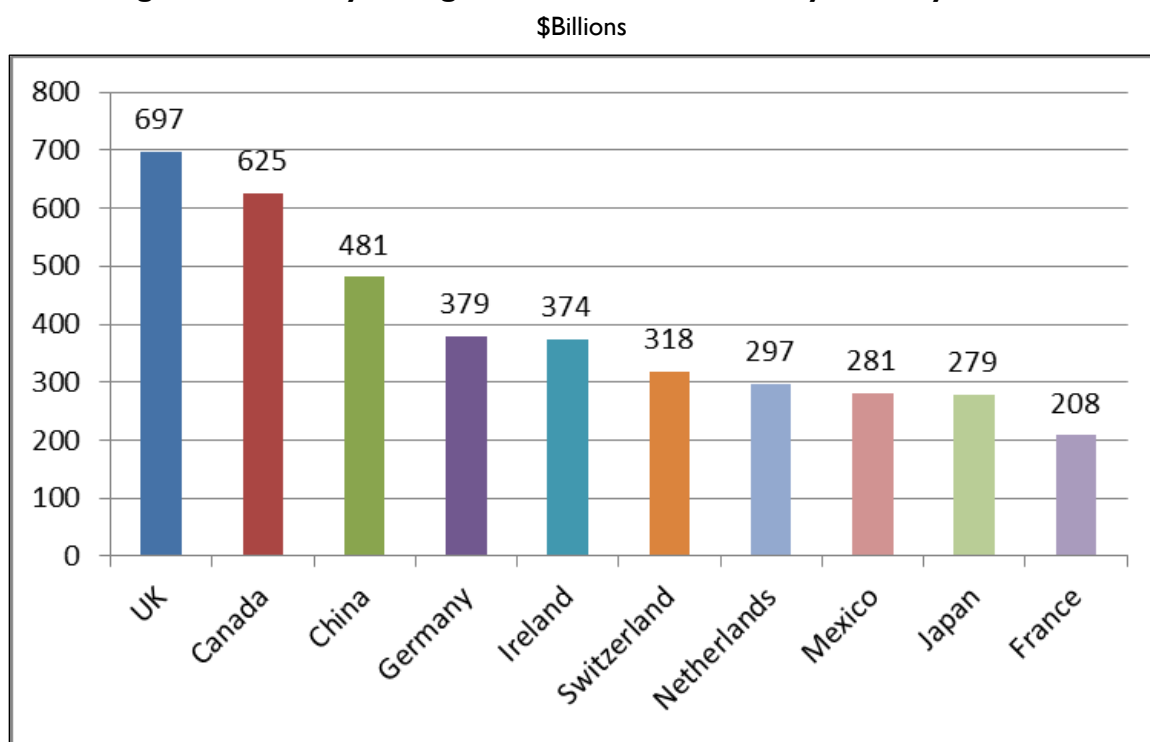
⁶⁸ For a general discussion of U.S. FDI data and issues, see CRS In Focus IF10636, *Foreign Direct Investment: Overview and Issues*, by (name redacted) and (name redacted).

⁶⁹ According to the BEA, direct investment implies that a person in one country has a lasting interest in, and a degree of influence over, the management of, a business enterprise in another country. As such, it defines FDI as ownership or control of 10% or more of an enterprise's voting securities, or the equivalent, is considered evidence of such a lasting interest or degree of influence over management.

⁷⁰ Data on country sources of U.S. FDI inflows should be interpreted with caution as they may not fully reflect the ultimate beneficiary of that investment owner (UBO). For example, a foreign company located in one country that invests in the United States may be owned by a multinational corporation headquartered in another country.

⁷¹ That level rises to \$630 billion when sales by U.S. affiliates in Hong Kong are included.

⁷² BEA, at https://www.bea.gov/international/direct_investment_multinational_companies_comprehensive_data.htm.

Figure 12. Sales by Foreign Affiliates of U.S. Firms by Country in 2015

Source: BEA.

Alternative Measurements of Bilateral FDI Flows

The Rhodium Group (RG), a private consulting firm, estimates that Chinese FDI in the United States is significantly higher than BEA estimates. RG notes that “official data often exhibit a 1-2 year time lag and do not capture major trends, due to problems such as significant round tripping and trans-shipping of investments.”⁷³ The Rhodium Group’s approach is to calculate the full value of a Chinese acquisition in the year it was made, attributing it to China if a Chinese entity is the investor, regardless of where the financing of the deal originated (such as through oft-used Hong Kong and Caribbean offshore centers). RG’s data on U.S.-China FDI are significantly higher than BEA’s data (see **Figure 13**, **Figure 14**, and **Figure 15**).⁷⁴ To illustrate:

- RG’s data on the stock of Chinese FDI in the United States through 2016 (\$110.1 billion), is 300.4% higher than BEA’s data (at \$27.5 billion).
- RG’s estimate of the stock of U.S. FDI in China, at \$242.6 billion, is 162.3% higher than BEA’s estimate (at \$92.5 billion).
- RG puts Chinese FDI flows to the United States in 2016 at \$46.2 billion, which was 348.5% higher than BEA’s data (\$10.3 billion).
- RG’s estimate of U.S. FDI flows to China in 2016, at \$13.8 billion, was 45.3% higher than BEA’s data (\$9.5 billion).

⁷³ The Rhodium Group, *China Investment Monitor: Methodology Update*, July 21, 2015, available at <http://rhg.com/notes/china-investment-monitor-methodology-update>.

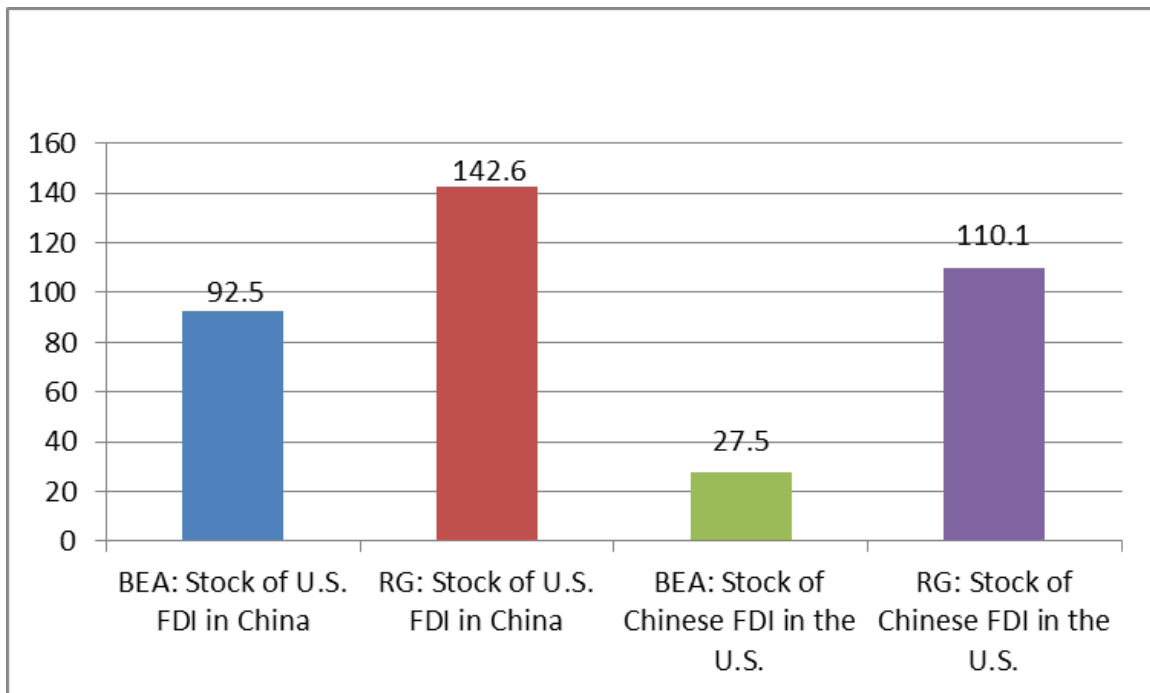
⁷⁴ The Rhodium Group, *China Investment Monitor*, available at <http://rhg.com/interactive/china-investment-monitor>.

Both BEA and RG data indicate a sharp increase in Chinese FDI flows to the United States in 2016 over the previous year. BEA's data show a 28.2% rise while RG's data indicate a 201.9% surge.

The Chinese government reports in 2017 that its global overseas nonfinancial FDI dropped by 29.4% over the same period in 2016.⁷⁵ The RG's data of 2017 indicate that Chinese FDI flows to the United States in 2017 were \$29.4 billion, a 36.4% decline over the previous year, RG estimates that during the first half of 2018, Chinese FDI in the United States totaled \$1.8 billion, a 90% drop over the first half of 2017 and the lowest level in seven years.⁷⁶ Some of the decline in China's overseas FDI appears to be largely driven by new Chinese policies to seek to increase scrutiny of proposed overseas investments to ensure that they are not "irrational or illegal." In February 2018, the Chinese government announced that it would take over Anbang Insurance Company (which owns the Waldorf Astoria in New York City and other U.S. properties) for a year because of illegal business practices that allegedly threatened the solvency of the company.⁷⁷ Falling Chinese FDI in the United States may also be the result of closer scrutiny to proposed Chinese acquisitions of U.S. assets by U.S. officials.

Figure 13. BEA and RG Estimates of the Stock of U.S.-China FDI through 2016

(\$ in billions)



Source: Bureau of Economic Analysis and the Rhodium Group.

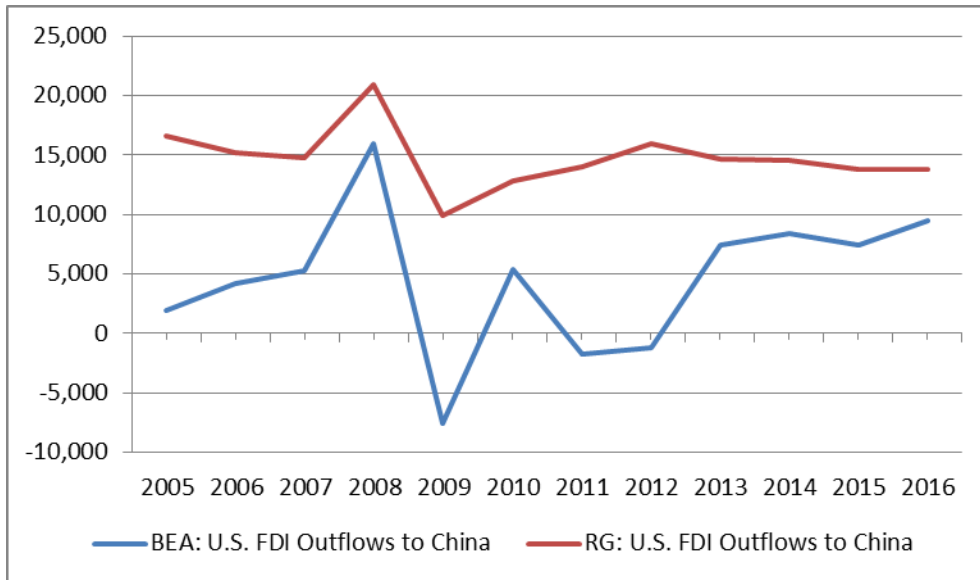
Note: BEA and the Rhodium Group use different methodologies to measure China's FDI in the United States.

⁷⁵ China Daily, "China outbound investment drops 29.4% in 2017," January 16, 2018, at <http://www.chinadaily.com.cn/a/201801/16/WS5a5dab1ea3102c394518f95c.html>.

⁷⁶ Rhodium Group, *Arrested Development: Chinese FDI in the US in 1H 2018*, June 19, 2018, available at <https://rhg.com/research/arrested-development-chinese-fdi-in-the-us-in-1h-2018/>.

⁷⁷ Xinhuanet, "Chinese insurance regulator takes control of Anbang Insurance Group," February 23, 2018, available at http://www.xinhuanet.com/english/2018-02/23/c_136993912.htm.

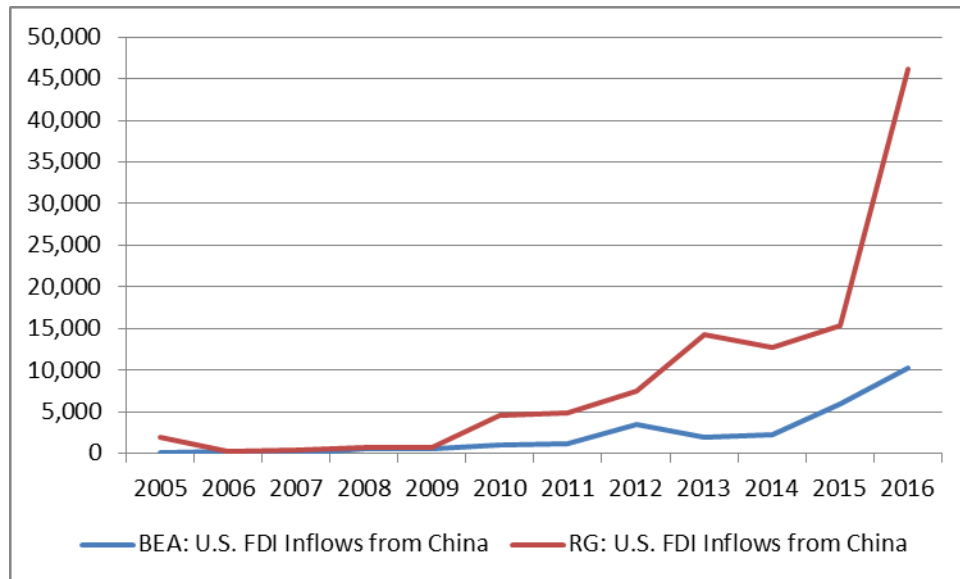
Figure 14. BEA and RG Data on Annual U.S. FDI Flows to China: 2005-2016
(\$ in millions)



Source: Bureau of Economic Analysis and the Rhodium Group.

Note: BEA and RG methodologies for measuring FDI differ significantly.

Figure 15. BEA and RG Data on Chinese FDI Flows to the United States: 2005-2016
(\$ in millions)



Source: Bureau of Economic Analysis and the Rhodium Group.

Note: BEA and RG methodologies for measuring FDI differ significantly.

The American Enterprise Institute (AEI) and the Heritage Foundation jointly maintain the China Global Investment Tracker database, which lists Chinese global investments of \$100 million or more since 2005. **Table 8** lists the 10 largest Chinese investments in the United States through 2017, which include HNA's purchase of CIT Group's aircraft leasing business for \$10.4 billion; Shuanghui's (now called WH Group) purchase of Smithfield Foods for \$7.1 billion; HNA's \$6.5

billion investment in Hilton from Blackstone; HNA's purchase of Ingram Micro for \$6 billion; and Anbang's \$5.7 billion acquisition of hotel properties from Blackstone.

Table 8. Top 10 Chinese Investments in the United States: 2005-2017

Year	Investor	Transaction Value (\$Millions)	Share Size	Transaction Party	Sector
2017	HNA	10,380		CIT Group	Transport
2013	Shuanghui	7,100	100%	Smithfield Foods	Agriculture
2016	HNA	6,500	25%	Blackstone	Tourism
2016	HNA	6,000	100%	Ingram Micro	Technology
2016	Anbang	5,720		Blackstone	Tourism
2016	Haier	5,400		General Electric	Other
2007	CIC	5,000	10%	Morgan Stanley	Finance
2016	Dalian Wanda	3,500	100%	Legendary Entertainment	Entertainment
	Zhuhai Seine Technology and Legend	3,400		Lexmark	Technology
2007	CIC	3,030	9%	Blackstone	Finance

Source: American Enterprise Institute and Heritage Foundation, China Global Investment Tracker.

Chinese Restrictions on U.S. FDI in China

U.S. trade officials have urged China to liberalize its FDI regime in order to boost U.S. business opportunities in, and expand U.S. exports to, China. Although China is one of the world's top recipients of FDI, the Chinese central government imposes numerous restrictions on the level and types of FDI allowed in China. According to the U.S.-China Business Council (USCBC), China imposes ownership barriers on nearly 100 industries.⁷⁸ The OECD's 2016 FDI Regulatory Restrictiveness Index, which measures statutory restrictions on FDI in 62 countries, ranked China's FDI regime as the fourth most restrictive.⁷⁹

Some recent surveys by U.S. and European business groups suggest that foreign firms in China may be less optimistic about the Chinese market than in the past, due in part to perceived growing protectionism. To illustrate:

- A 2017 American Chamber of Commerce in China (AmCham China) business climate survey of 500 member companies found that while a majority of respondents felt optimistic about their investments in China, 81% said that foreign businesses in China were less welcome in China than before, compared to 41% who asserted that in 2013. The survey found that 55% of respondents said that foreign firms are treated less favorably by the Chinese government than domestic Chinese firms.⁸⁰

⁷⁸ U.S.-China Business Council, *China's WTO Compliance*, September 20, 2013.

⁷⁹ OECD, *FDI Regulatory Restrictiveness Index*, at <http://www.oecd.org/investment/fdiindex.htm>.

⁸⁰ AmCham China, *2017 China Business Climate Survey Report*, January 2017.

- A 2016 European Union Chamber of Commerce in China business confidence survey stated that the business environment in China was becoming “increasingly hostile” and “perpetually tilted in favor of domestic enterprises.” For example, among respondents, 56% said doing business in China was becoming more difficult and 57% claimed foreign companies tend to receive unfavorable treatment in China compared to domestic Chinese firms.⁸¹

Negotiations for a Bilateral Investment Treaty (BIT)⁸²

The United States and China initiated negotiations on reaching a bilateral investment treaty (BIT) in 2008, with the goal of expanding bilateral investment opportunities. U.S. negotiators hoped such a treaty, if implemented, would improve the investment climate for U.S. firms in China by enhancing legal protections and dispute resolution procedures, and by obtaining a commitment from the Chinese government that it would treat U.S. investors no less favorably than Chinese investors.

In April 2012, the Obama Administration released a “Model Bilateral Investment Treaty” that was developed to enhance U.S. objectives in the negotiation of new BITs.⁸³ The new model BIT addressed six core principles or issues for investors, including national treatment and most-favored nation (MFN) treatment at all stages of investment, rules on expropriations and compensation if this occurs, ability to transfer funds in and out of the country, limits on performance requirements (such as domestic content targets or mandated technology transfer), neutral arbitration of disputes, and freedom by investors to appoint their own senior officials.⁸⁴

During the July 10-11, 2013 session of the U.S.-China Strategic and Economic Dialogue (S&ED), China indicated its intention to negotiate a high-standard BIT with the United States that would include all stages of investment and all sectors, a commitment a U.S. official described as “a significant breakthrough, and the first time China has agreed to do so with another country.”⁸⁵ A press release by the Chinese Ministry of Commerce stated that China was willing to negotiate a BIT on the basis of nondiscrimination and a negative list, meaning the agreement would identify only those sectors not open to foreign investment on a nondiscriminatory basis (as opposed to a BIT with a positive list which would only list sectors open to foreign investment).

During the July 9-10, 2014 S&ED session, the two sides agreed to a broad timetable for reaching agreement on core issues and major articles of the treaty text, and committed to initiate the “negative list” negotiation early in 2015.⁸⁶ During BIT negotiations held in June 2015, each side submitted their first negative list proposals, and later agreed to submit a revised list in September 2015 right before President Xi’s summit visit to the United States, which they did, but a

⁸¹ European Chamber, *European Business in China, Business Confidence Survey, 2016*, available at <http://www.eurochamber.com.cn/en/publications-business-confidence-survey>.

⁸² For additional information, see CRS In Focus IF10307, *A U.S.-China Bilateral Investment Treaty (BIT): Issues and Implications*, by (name redacted).

⁸³ The Administration began efforts to review and revise the U.S. BIT model in 2009. The previous model BIT dated to 2004. The Administration’s review process likely meant that negotiations with China for a BIT were limited. Model BIT can be found at <https://ustr.gov/sites/default/files/BIT%20text%20for%20ACIEP%20Meeting.pdf>.

⁸⁴ See, CRS In Focus IF10052, *U.S. International Investment Agreements (IIAs)*, by (name redacted) and (name redacted).

⁸⁵ U.S. Department of the Treasury, *Remarks of Treasury Secretary Jacob J. Lew at the Close of the Fifth U.S.-China Strategic and Economic Dialogue*, July 13, 2013.

⁸⁶ U.S. Department of the Treasury, *U.S.-China Joint Fact Sheet Sixth Meeting of the Strategic and Economic Dialogue*, July 11, 2014.

breakthrough was not achieved. New negative lists were submitted in June 2016 and August 2016,⁸⁷ and the BIT was discussed at the September 2016 G-20 Summit held in Hangzhou, China, but no breakthrough was announced.

Many analysts contend that a U.S.-China BIT could have significant implications for bilateral commercial relations and the Chinese economy. According to then-USTR Michael Froman, such an agreement “offers a major opportunity to engage on China’s domestic economic reforms and to pursue greater market access, a more level playing field, and a substantially improved investment environment for U.S. firms in China.”⁸⁸ For China, a high-standard BIT could help facilitate greater competition in China and result in a more efficient use of resources, factors which economists contend could boost economic growth. Some observers contend that China’s pursuit of a BIT with the United States represents a strategy that is being used by reformers in China to jumpstart widespread economic reforms (which appear to have stalled in recent years). This strategy, it is argued, is similar to that used by Chinese reformers in their efforts to get China into the WTO in 2001. Such international agreements may give political cover to economic reformers because they can argue that the agreements build on China’s efforts to become a leader in global affairs. This may make it harder for vested interests in China who benefit from the status quo to resist change. Some critics raise concerns that even if a high standard BIT is reached, ensuring China’s full compliance may prove difficult, given China’s extensive use of industrial policies. Others have raised questions as to the effect of such an agreement in boosting FDI flows and how that might impact U.S. jobs in affected industries.⁸⁹ A BIT would have to be approved in the U.S. Senate by a two-thirds majority.

The BIT was not concluded by the end of the Obama Administration’s term (the original goal of completion). While the Chinese government has indicated that it supports continuing BIT negotiations, the Trump Administration has been less clear on its position. U.S. Secretary of Treasury Steven Mnuchin was quoted by *Inside Trade* in June 2017 as saying:

It’s on our agenda; I wouldn’t say it’s at the very top of our agenda. I think what we’re looking for is, opposed to just negotiating a large agreement, we’re looking to negotiate very specific issues that deal with market issues today, deal with market fairness today, deal with opening their markets to the same extent that our markets are open, and that’s really our focus.... Once we can make progress in that we can turn to the bilateral investment treaty.⁹⁰

The U.S.-China Economic and Security Review Commission’s (USCC’s) November 2015 annual report recommended that the Administration provide a comprehensive, publicly available assessment of Chinese FDI in the United States prior to completion of BIT negotiations that includes an identification of the nature of investments, whether investments received support of any kind from the Chinese government and at any level, and the sector in which the investment was made.⁹¹ The USCC’s 2016 annual report recommended that Congress should “amend the

⁸⁷ The White House, *Fact Sheet: U.S.-China Economic Relations*, September 4, 2016, available at <https://www.whitehouse.gov/the-press-office/2016/09/04/fact-sheet-us-china-economic-relations>.

⁸⁸ USTR, *Remarks by Ambassador Michael Froman to AmCham China and the U.S. Chamber of Commerce*, April 27, 2015, available at <https://ustr.gov/about-us/policy-offices/press-office/speechestranscripts/2015/april/remarks-ambassador-michael>.

⁸⁹ See, for example, the U.S.-China Economic and Security Commission, *Policy Considerations for Negotiating a U.S.-China Bilateral Investment Treaty*, August 1, 2016, available at <http://www.uscc.gov/Research/policy-considerations-negotiating-us-china-bilateral-investment-treaty>.

⁹⁰ <https://insidetrade.com/daily-news/mnuchin-china-bit-agenda-only-if-quicker-specific-deals-can-be-reached>.

⁹¹ U.S.-China Economic and Security Review Commission, *2015 Report to Congress*, November 2015, p. 33.

statute authorizing the Committee on Foreign Investment in the United States to bar Chinese state-owned enterprises from acquiring or otherwise gaining effective control of U.S. companies.”⁹²

Concerns About Chinese FDI in the United States

Chinese FDI in the United States has come under increasing scrutiny by U.S. policymakers. Some have expressed concerns over Chinese investments (especially by SOEs or government-backed entities) that appear to target industries and technologies that the Chinese government has identified as critical to China’s future economic development. Some have called for reforms to the process in which the Federal government evaluates certain FDI, such as the Committee on Foreign Investment in the United States (CFIUS), an interagency committee that reviews the national security aspects of certain foreign acquisitions, seek to modify the terms of the proposed acquisition, and makes recommendations to the President, who can block the transaction.⁹³

The USCC’s 2017 Annual Report identified three trends that may impact the ability of CFIUS to review Chinese investment in the United States, including China’s targeting investments in industries it deems as strategic, the use of private entities as fronts by the Chinese government SOEs to obtain assets in strategic sectors; and attempting to bypass U.S. regulatory procedures (such as investing through shell companies outside China) and using cyber-espionage to financially undermine the targeted firm before acquiring it.⁹⁴ The commission made a number of recommendations to Congress on Chinese investment in the United States, including a ban on acquisition of U.S. assets by Chinese state-owned or state-controlled entities, including sovereign wealth funds.

In September 2017, President Trump, citing national security concerns, blocked the acquisition of the U.S. firm Lattice Semiconductor by China Venture Capital Fund Corporation Limited⁹⁵ for \$1.3 billion.⁹⁶ In March 2018, national security concerns were also used by President Trump when he blocked a bid to purchase Qualcomm Incorporated (a U.S. high-technology firm) to Broadcom Limited (a semiconductor firm headquartered in Singapore). The decision to block the sale appears to have been motivated in part by concerns it would weaken Qualcomm’s position and enable China to, according to CFIUS, dominate 5G technology and the standards setting process.⁹⁷

Some Members of Congress argue that the structure and scope of CFIUS needs to be modernized and strengthened in order to close loopholes that may exist in the current system for certain types of foreign investments. Several CFIUS bills have been introduced in Congress, many of which appear to be largely aimed at Chinese FDI activities. For example, a press release by

⁹² Ibid, p. 126.

⁹³ For additional information on CFIUS, see CRS Report RL33388, *The Committee on Foreign Investment in the United States (CFIUS)*, by (name redacted) .

⁹⁴ U.S.-China Economic and Security Review Commission, *2017 Annual Review*, November 15, 2017, pp. 2-3, at https://www.uscc.gov/Annual_Reports/2017-annual-report.

⁹⁵ Bloomberg describes the Chinese firm as “a private-equity firm backed by a Chinese state-owned asset manager.” See <https://www.bloomberg.com/news/articles/2017-09-13/trump-blocks-china-backed-bid-for-chipmaker-over-security-risk>.

⁹⁶ The White House, Press Release, September 13, 2017, at <https://www.whitehouse.gov/the-press-office/2017/09/13/order-regarding-proposed-acquisition-lattice-semiconductor-corporation>.

⁹⁷ The letter can be found at <https://www.wsj.com/articles/a-deal-with-broadcom-may-weaken-qualcomms-innovation-cfius-says-1520353879>.

Representative Pittenger for his introduction of H.R. 4311 (the Foreign Investment Risk Review Modernization Act of 2017) stated:

China is buying American companies at a breathtaking pace. While some are legitimate business investments, many others are part of a backdoor effort to compromise U.S. national security.... For example, China recently attempted to purchase a U.S. missile defense supplier using a shell company to evade detection. The global economy presents new security risks, and so our bipartisan legislation provides Washington the necessary tools to better track and evaluate Chinese investment.⁹⁸

Some CFIUS reform bills have been taken up by Congress, including H.R. 5841 (the Foreign Investment Risk Review Modernization Act of 2018, introduced by Representative Pittenger), which passed the House on June 26, 2018); and S. 2098 (the Foreign Investment Risk Review Modernization Act of 2018, introduced by Senator Cornyn), which was added as an amendment by the Senate to H.R. 5515 (the National Defense Authorization Act for Fiscal Year 2019) and passed by the Senate on June 18.⁹⁹ There is also support by some in Congress to modernize and reform U.S. export control laws, such as H.R. 5040 (the Export Control Reform Act of 2018).¹⁰⁰ The Trump Administration had indicated under its Section 301 investigation of China's IPR policies that it would to impose new FDI restrictions and tighter export controls against China. However, on June 27, President Trump announced that legislation currently under consideration in Congress to reform CFIUS and export control laws would, if enacted, meet the Administration's goals on these issues.¹⁰¹

Major U.S.-China Trade Issues

China's economic reforms and rapid economic growth, along with the effects of globalization, have caused the economies of the United States and China to become increasingly integrated.¹⁰² Although growing U.S.-China economic ties are considered by most analysts to be mutually beneficial overall, tensions have risen over a number of Chinese economic and trade policies that many U.S. critics charge are protectionist, economically distortive, and damaging to U.S. economic interests. According to the USTR, most U.S. trade disputes with China stem from the consequences of its incomplete transition to a free market economy. Major areas of concern for U.S. stakeholders include China's

- Extensive network of industrial policies (including widespread use of trade and investment barriers, financial support, and indigenous innovation policies) that

⁹⁸ Representative Robert Pittenger, *Press Release*, November 7, 2017, at <https://pittenger.house.gov/media-center/press-releases/pittenger-takes-aim-at-china>.

⁹⁹ For more information on CFIUS legislation, see CRS Insight IN10924, *Foreign Investment Risk Review Modernization Act (FIRRMA)*, by (name redacted) and (name redacted).

¹⁰⁰ See CRS Report R41916, *The U.S. Export Control System and the Export Control Reform Initiative*, by (name redacted) and (name redacted).

¹⁰¹ See <https://www.whitehouse.gov/briefings-statements/statement-president-regarding-investment-restrictions/>.

¹⁰² The impact of globalization has been a somewhat controversial topic in the United States. Some argue that it has made it easier for U.S. firms to shift production overseas, resulting in lost jobs in the United States (especially in manufacturing) and lower wages for U.S. workers. Others contend that globalization has induced U.S. firms to become more efficient and to focus a greater share of their domestic manufacturing on higher-end or more technologically advanced production (while sourcing lower-end production abroad), making such firms more globally competitive. The result has been that the United States continues to be a major global manufacturer in terms of value-added, but there are fewer U.S. workers in manufacturing.

- seek to promote and protect domestic sectors and firms, especially SOEs, deemed by the government to be critical to the country's future economic growth;
- Failure to provide adequate protection of U.S. intellectual property rights (IPR) and (alleged) widespread government-directed cyber-theft of U.S. trade secrets security to help Chinese firms;
 - Mixed record on implementing its WTO obligations; and
 - Government-directed financial policies that promote high savings (but reduce private consumption), encourage high fixed investment levels (but may contribute to overcapacity in many industries), and a managed exchange rate policy that may distort trade flows.

Chinese “State Capitalism”

Currently, a significant share of China's economy is thought to be driven by market forces. A 2010 WTO report estimated that the private sector now accounted for more than 60% of China's gross domestic product (GDP).¹⁰³ A 2016 WTO study estimated that the private sector accounted for 41.8% of China's exports.¹⁰⁴

However, the Chinese government continues to play a major role in economic decision-making. For example, at the macroeconomic level, the Chinese government maintains policies that induce households to save a high level of their income, much of which is deposited in state-controlled Chinese banks. This enables the government to provide low-cost financing to Chinese firms, especially SOEs. At the microeconomic level, the Chinese government (at the central and local government level) seeks to promote the development of industries deemed critical to the country's future economic development by using various policies, such as subsidies, tax breaks, preferential loans, trade barriers, FDI restrictions, discriminatory regulations and standards, export restrictions on raw materials (including rare earths), technology transfer requirements imposed on foreign firms, public procurement rules that give preferences to domestic firms, and weak enforcement of IPR laws.

Many analysts argue that the Chinese government's intervention in various sectors through industrial policies has intensified in recent years. The December 2013 USTR report on China's WTO trade compliance stated

During most of the past decade, the Chinese government emphasized the state's role in the economy, diverging from the path of economic reform that had driven China's accession to the WTO. With the state leading China's economic development, the Chinese government pursued new and more expansive industrial policies, often designed to limit market access for imported goods, foreign manufacturers and foreign service suppliers, while offering substantial government guidance, resources and regulatory support to Chinese industries, particularly ones dominated by state-owned enterprises. This heavy state role in the economy, reinforced by unchecked discretionary actions of Chinese government regulators, generated serious trade frictions with China's many trade partners, including the United States.¹⁰⁵

¹⁰³ World Trade Organization, *Trade Policy Review Body, Trade Policy Review, Report by the Secretariat, China*, Revision, 2010, Part 2, p. 1.

¹⁰⁴ WTO, *Trade Policy Review, China*, June 15, 2016, p. 20, available at https://www.wto.org/english/tratop_e/tpr_e/s342_e.pdf.

¹⁰⁵ U.S. Trade Representative, *2013 USTR Report to Congress on China's WTO Compliance*, December 2013, p. 2.

The extent of SOE involvement in the Chinese economy is difficult to measure, due to the opaque nature of the corporate sector in China and the relative lack of transparency regarding the relationship between state actors (including those at the central and non-central government levels) and Chinese firms. According to one study by the USCC

The state sector in China consists of three main components. First, there are enterprises fully owned by the state through the State-owned Assets and Supervision and Administration Commission (SASAC) of the State Council and by SASACs of provincial, municipal, and county governments. Second, there are SOEs that are majority owners of enterprises that are not officially considered SOEs but are effectively controlled by their SOE owners. Finally, there is a group of entities, owned and controlled indirectly through SOE subsidiaries based inside and outside of China. The actual size of this third group is unknown. Urban collective enterprises and Government-owned Township and village enterprises (TVEs) also belong to the state sector but are not considered SOEs. The state-owned and controlled portion of the Chinese economy is large. Based on reasonable assumptions, it appears that the visible state sector—SOEs and entities directly controlled by SOEs, accounted for more than 40 percent of China’s nonagricultural GDP. If the contributions of indirectly controlled entities, urban collectives, and public TVEs are considered, the share of GDP owned and controlled by the state is approximately 50 percent.¹⁰⁶

According to the Chinese government, there are 150,000 state-owned or state-controlled enterprises at the central and local government excluding financial institutions, with total assets worth \$15.2 trillion, and 30 million workers.¹⁰⁷ Chinese SOEs have undergone significant restructuring over the years. The government contends that 68% of all SOE-funded firms in 2016 were mixed-ownership. The Chinese government has identified a number of industries where the state should have full control or where the state should dominate. These include autos, aviation, banking, coal, construction, environmental technology, information technology, insurance, media, metals (such as steel), oil and gas, power, railways, shipping, telecommunications, and tobacco.¹⁰⁸

Many SOEs are owned or controlled by local governments. According to one analyst

The typical large industrial Chinese company is ...wholly or majority-owned by a local government which appoints senior management and provides free or low-cost land and utilities, tax breaks, and where possible, guarantees that locally made products will be favored by local governments, consumers, and other businesses. In return, the enterprise provides the local state with a source of jobs for local workers, tax revenues, and dividends.¹⁰⁹

China’s banking system is largely dominated by state-owned or state-controlled banks. In 2011, the top five largest banks in China, all of which were shareholding companies with significant state ownership, accounted for 57.5% of Chinese banking assets. The Chinese government also has four banks that are 100% state-owned and holds shares in a number of joint stock commercial banks.¹¹⁰ SOEs are believed to receive preferential credit treatment by government banks, while

¹⁰⁶ U.S.-China Economic and Security Review Commission, *An Analysis of State-owned Enterprises and State Capitalism in China*, by Andrew Szamosszegi and Cole Kyle, October 26, 2011, p. 1.

¹⁰⁷ China Daily, “China eyes breakthroughs in SOE reform,” December 23, 2016, at http://www.chinadaily.com.cn/business/2016-12/23/content_27753459.htm.

¹⁰⁸ Testimony for the U.S.-China Economic and Security Review Commission by Derek Scissors, Ph.D, *Chinese State Owned Enterprises and the US Policy on China*, February 12, 2012.

¹⁰⁹ Anderson, G.E., PhD, *Designated Drivers, How China Plans to Dominate the Global Auto Industry*, 2012, p. 2.

¹¹⁰ Lund University, *Lending for Growth? An Analysis of State-Owned Banks in China*, by Fredrik N.G. Anderson, Katarzyna Burzynska, and Sonja Oppen, June 2013, p. 41.

private firms must often pay higher interest rates or obtain credit elsewhere. According to one estimate, SOEs accounted for 85% (\$1.4 trillion) of all bank loans in 2009.¹¹¹

Not only are SOEs dominant players in China's economy, many are quite large by global standards. Fortune's 2017 list of the world's 500 largest companies includes 109 Chinese firms (compared to 29 listed firms in 2007), the top 20 of which are listed in **Table 9**.¹¹²

Table 9. Top 20 Chinese Companies on Fortune's Global 500 in 2017

Company	Global 500 Rank	State or Non-state	Industry	Revenue (\$billions)
State Grid	2	State	Utility	315
Sinopec Group	3	State	Energy	268
China National Petroleum	4	State	Energy	263
Industrial & Commercial Bank of China	22	State	Banking	148
China State Construction Engineering	24	State	Engineering & Construction	144
China Construction Bank	24	State	Banking	145
Agricultural Bank of China	38	State	Banking	117
Ping An Insurance	39	Nonstate	Insurance	117
SAIC Motor	41	State	Motor Vehicles & Parts	114
Bank of China	42	State	Banking	114
China Mobile Communications	47	State	Telecommunications	107
China Life Insurance	51	State	Insurance	104
China Railway Engineering	55	State	Engineering & Construction	97
China Railway Construction	58	State	Engineering & Construction	95
Dongfeng Motor Group	68	State	Motor Vehicles & Parts	86
Huawei Investment & Holding	83	Nonstate	Telecommunications	79
China Resources National	86	State	General Merchandisers	76
Pacific Construction Group	89	Nonstate	Engineering & Construction	75
China Southern Power Grid	100	State	Utilities	71
China South Industries Group	101	State	Aerospace & Defense	71

Source: Fortune 2017 Global 500.

¹¹¹ *The Economist*, "State Capitalism's Global Reach, New Masters of the Universe, How State Enterprise is Spreading," January 21, 2012.

¹¹² The listing can be found at <http://beta.fortune.com/global500/>.

Out of the top 20 Chinese firms listed in the Fortune Global 500, 17 (85%) are majority-owned (50% or more) by Chinese government. Some of the 109 Chinese firms on the Fortune 500 list, while not majority-owned by the government, may be partially state-controlled or favored by the government. For example

- Several of the listed firms are banks where the Chinese government owns a large or controlling share, including 26.5% of the Bank of Communications, 15.7% of China Minsheng Banking Corp., 21% of China Industrial Bank, 17.9% of China Merchant Bank, and 20% of Shanghai Pudong Development Bank.¹¹³
- Lenovo, a major global computer producer, was started by the Chinese National Academy of Social Sciences, which started Legend Holdings in 1984. Lenovo was spun off from Legend in 2001, but Legend still owns 31% of Lenovo's shares.¹¹⁴
- Huawei (a major telecommunications company) describes itself as an employee-owned firm. However, many U.S. analysts contend that Huawei has strong links with the Chinese government, including the Chinese People's Liberation Army (PLA), and has not published a full breakdown of its ownership structure. In addition, in the past, the Chinese government reportedly ordered state banks to extend loans to the company early in its development so that it could compete against foreign firms in the domestic telecommunications market.¹¹⁵
- Ping An Insurance is the largest nonstate company on the 2017 Global 500 list. In 2012, *The New York Times* published an article that reported that in 2004 a network of family and friends of then-Chinese Premier Wen Jiabao owned 135 million shares of Ping An Insurance through a series of investment companies.¹¹⁶ A March 2016 *Times* article described Ping An as a "labyrinthine shareholding structure made up of 37 interlocking holding companies."¹¹⁷

China's Plan to Modernize the Economy and Promote Indigenous Innovation

Many of the industrial policies China has implemented or formulated since 2006 appear to stem largely from a comprehensive document issued by China's State Council (the highest executive organ of state power) in 2006 titled the *National Medium-and Long-Term Program for Science and Technology Development (2006-2020)*, often referred to as the MLP.¹¹⁸ The MLP appears to represent an ambitious plan to modernize the structure of China's economy by transforming it from a global center of low-tech manufacturing to a major center of innovation (by the year 2020) and a global innovation leader by 2050.¹¹⁹ It also seeks to sharply reduce the country's dependence on foreign technology. The MLP includes the stated goals of "indigenous innovation,

¹¹³ Lund University, *Lending for Growth? An Analysis of State-Owned Banks in China*, by Fredrik N.G. Anderson, Katarzyna Burzynska, and Sonja Oppen, June 2013, p. 41.

¹¹⁴ Lenovo, Investor Relations, Stock Information, Shareholding.

¹¹⁵ McGregor, Richard, *The Party, the Secret World of China's Communist Rulers*, 2010, p. 204.

¹¹⁶ The New York Times, *Ping An's Hidden Shareholders: Friends and Family of Wen Jiabao*, November 23, 2012.

¹¹⁷ The New York Times, *Starwood Bidder Is a Reclusive Chinese Insurer With Opaque Backing*, March 29, 2016.

¹¹⁸ An English translation of the MLP can be found at http://sydney.edu.au/global-health/international-networks/National_Outline_for_Medium_and_Long_Term_ST_Development1.doc.

¹¹⁹ As some observers describe it, China wants to go from a model of "made in China" to "innovated in China."

leapfrogging in priority fields, enabling development, and leading the future.”¹²⁰ Some of the broad goals of the MLP state that by 2020

- The progress of science and technology will contribute 60% or above to China’s development.
- The country’s reliance on foreign technology will decline to 30% or below (from an estimated current level of 50%).
- Gross expenditures for research and development (R&D) would rise to 2.5% of gross domestic product (from 1.3% in 2005). Priority areas for increased R&D include space programs, aerospace development and manufacturing, renewable energy, computer science, and life sciences.¹²¹

The document states that “China must place the strengthening of indigenous innovative capability at the core of economic restructuring, growth model change, and national competitiveness enhancement. Building an innovation-oriented country is therefore a major strategic choice for China’s future development.” This goal, according to the document, is to be achieved by formulating and implementing regulations in the country’s government procurement law to “encourage and protect indigenous innovation,” establishing a coordination mechanism for government procurement of indigenous innovative products, requiring a first-buy policy for major domestically made high-tech equipment and products that possess proprietary intellectual property rights, providing policy support to enterprises in procuring domestic high-tech equipment, and developing “relevant technology standards” through government procurement.

Reaction by U.S. Stakeholders

Beginning in 2009, several U.S. companies began to raise concerns over a number of Chinese government circulars that would establish an “Indigenous Innovation Product Accreditation” system. For example, in November 2009, the Chinese government released a “Circular on Launching the 2009 National Indigenous Innovation Product Accreditation Work,” requiring companies to file applications by December 2009 for their products to be considered for accreditation as “indigenous innovation products.” Similar proposed circulars were issued at the provincial and local government levels. U.S. business representatives expressed deep concern over the circulars, arguing that they were protectionist in nature because they extended preferential treatment for Chinese government procurement to domestic Chinese firms that developed and owned intellectual property (IP), and thus, largely excluded foreign firms.¹²² AmCham China described China’s attempt to link IP ownership with market access as “unprecedented worldwide.”¹²³ A letter written by the U.S. Chamber of Commerce and 33 business associations to the Chinese government on December 10, 2009, stated that the indigenous innovations circulars would “make it virtually impossible for any non-Chinese company to participate in China’s government procurement market—even those that have made

¹²⁰ The MLP identifies main areas and priority topics, including energy, water and mineral resources, the environment, agriculture, manufacturing, communications and transport, information industry and modern service industries, population and health, urbanization and urban development, public security, and national defense. The report also identifies 16 major special projects and 8 “pioneer technologies.”

¹²¹ *R&D Magazine*, December 22, 2009.

¹²² U.S. business representatives also claim that the Chinese government is using tax incentives, standards setting and requirements, security regulations, subsidies, technology transfer requirements, and other measures to promote the goals of indigenous innovation.

¹²³ AmCham China, *2011 White Paper*, April 26, 2011, p. 66.

substantial and long-term investments in China, employ Chinese citizens, and pay taxes to the Chinese government.” Such groups contend that a large share of their technology is developed globally, and thus, it would be difficult to attribute the share of technology developed in China needed to obtain accreditation.¹²⁴

A 2011 AmCham China survey found that 40% of respondents believed that China’s indigenous innovation policies would hurt their businesses and 26% said their businesses were already being hurt by such policies. At a November 2011 WTO review of China’s IPR policies, the U.S. WTO representative stated that China’s policies of adopting indigenous innovation had “created a troubling trend toward increased discriminatory policies which were aimed at coercing technology transfer.” He stated that “Chinese regulations, rules and other regulatory measures frequently called for technology transfer, and in certain cases, conditioned, or proposed to condition, the eligibility for government benefits or preferences on intellectual property being owned or developed in China, or being licensed, in some cases exclusively, to a Chinese party.”¹²⁵

China’s Response to U.S. Concerns

The Chinese government responded to U.S. concerns over its indigenous innovation policies by arguing that they did not discriminate against foreign firms or violate global trade rules.¹²⁶ However, during the visit of (then) Chinese President Hu Jintao to the United States in January 2011, the Chinese government stated that it would not link its innovation policies to the provision of government procurement preferences.¹²⁷ During the May 2011 session of the U.S.-China Strategic and Economic Dialogue (S&ED), China pledged that it would eliminate all of its indigenous innovation products catalogs.¹²⁸ During the November 2011 talks held under the U.S.-China Joint Commission on Commerce and Trade (JCCT), the Chinese government announced that the State Council had issued a measure requiring governments of provinces, municipalities, and autonomous regions to eliminate by December 1, 2011, any catalogues or other measures linking innovation policies to government procurement preferences.¹²⁹ This occurred after foreign business groups raised concerns that discriminatory indigenous innovation policies might continue to be implemented at the local level even after Hu Jintao’s commitment. For example, the USCBC reported in February 2011 that it had identified 22 municipal and provincial governments that had issued at least 61 indigenous innovation catalogues. U.S. business representatives sought to ensure that Beijing’s pledge on indigenous innovation would apply at all levels of government in China.

¹²⁴ Some U.S. business representatives argue that one of the main goals of China’s indigenous innovation regulations is to induce foreign firms to boost their R&D activities in China in order to qualify for government contracts.

¹²⁵ WTO, *Transitional Review Under Section 18 of the Protocol on the Accession of the People’s Republic of China, Report to the General Council by the Chair*, November 17, 2011, p. 4.

¹²⁶ Wall Street Journal, *China Defends Rule on ‘Indigenous’ Tech*, December 15, 2009.

¹²⁷ The White House, *U.S.-China Joint Statement*, January 19, 2011.

¹²⁸ According to a U.S. fact sheet on the meeting “China pledged to eliminate all of its government procurement indigenous innovation products catalogues and revise Article 9 of the draft Government Procurement Law Implementing Regulations (which have preferences in government procurement to national indigenous innovation products), in fulfillment of President Hu’s January 2011 commitment not to link Chinese innovation policies to government procurement preferences. See U.S. Department of the Treasury, *The 2011 U.S.-China Strategic and Economic Dialogue U.S. Fact Sheet – Economic Track*, May 10, 2011.

¹²⁹ U.S. Department of Commerce, *22nd U.S.-China Joint Commission on Commerce and Trade Fact Sheet*, November 21, 2011.

In May 2013, the USCBC reported that, although the central government had largely been successful in ensuring that sub-national governments complied with Hu Jintao's January 2011 commitments, 13 provinces had not yet issued any measures to comply.¹³⁰ In addition, an October 2012 USCBC survey found that 85% of respondents said they had seen little impact on their businesses resulting from China's commitments delinking indigenous innovation with government procurement.¹³¹

Remaining U.S. Concerns

While many U.S. business leaders have applauded China's pledge to delink indigenous innovation from government procurement, some remain wary that China will implement new policies that attempt to provide preferences to local Chinese firms over foreign firms. According to Adam Segal with the Council on Foreign Relations: "Even if China reverses certain policies under U.S. pressure, it will remain dedicated to those goals. U.S. policy is likely to become a game of Whac-a-Mole, beating down one Chinese initiative on indigenous innovation only to see another pop up."¹³² U.S. business groups are also concerned with how the MLP blueprint will affect China's commitment to enforcing foreign IPR. They note, for example, that the MLP states: "Indigenous innovation refers to enhancing original innovation, integrated innovation, and re-innovation based on assimilation and absorption of imported technology, in order to improve our national innovation capability." To some, this seems to indicate that China intends to take existing technology, make some changes and improvements on it, and then claim it as its own without acknowledging or compensating the original IPR holders. A 2011 report by the U.S. Chamber of Commerce stated that China's indigenous innovation policies led many international technology companies to conclude that the MLP is a "blueprint for technology theft on a scale the world has never seen before."¹³³

U.S. officials have attempted to convince Beijing that, while its desire to increase innovation in China is a commendable goal, its efforts to limit the participation of foreign firms in such efforts, or attempting to condition market access in China to the development of IPR by foreign firms in China will hinder, not promote, the advancement of innovation in China. The direction China takes on this issue could have a significant impact on U.S. economic interests, as noted by USITC:

To the extent that China's policies succeed in accelerating technological progress, productivity, and innovation in the Chinese economy, they could provide spillover benefits for other countries. But if indigenous innovation policies act as a form of technological import substitution, systematically favoring Chinese domestic firms over foreign firms in relevant industries, they would be expected to have a negative effect on foreign firms and economies roughly analogous to what would occur if China simply

¹³⁰ U.S.-China Business Council, *Status Report: China's Innovation and Government Procurement Policies*, May 1, 2013, at <https://www.uschina.org/sites/default/files/innovation-status-report.pdf>.

¹³¹ U.S.-China Business Council, USCBC 2012 China Business Environment Survey Results: Continued Growth and Profitability; Tempered Optimism Due to Rising Costs, Competition, and Market Barriers, October 2012, p. 6, available at <https://www.uschina.org/advocacy/press/uscbsc-2012-china-business-environment-survey-results-us-companies-report-continued>.

¹³² Foreign Affairs, *China's Innovation Wall: Beijing's Push for Homegrown Technology*, September 28, 2010.

¹³³ U.S. Chamber of Commerce, *China's Drive for 'Indigenous Innovation' - A Web of Industrial Policies*, February 2011, p. 4.

imposed a protective tariff on imports of goods in the relevant sectors or levied a discriminatory excise tax on the sales of FIEs in the Chinese market.¹³⁴

New Restrictions on Information and Communications Technology

According to the USTR's 2015 report on China's WTO accession, while progress has been made to delink China's efforts to link indigenous innovation goals with procurement at the central and local efforts, such policies have continued in other areas. Many foreign business groups have expressed increasing concerns over a number of recently proposed or enacted laws and regulations on information and communications technology (ICT) products and services that could limit foreign access to ICT markets in China on so-called national security grounds. Several proposals include language stating that critical information infrastructure should be "secure and controllable," an ambiguous term that has not been precisely defined by Chinese authorities. Other proposals lay out policies to promote indigenous ICT industries or would require foreign firms to hand over proprietary information. According to the U.S. Department of Commerce

The policies set forth in these measures could cause long-term damage to U.S. businesses trying to sell ICT products into China, a market estimated to be worth about \$465 billion this year. They also could add significant costs to foreign ICT companies operating in China and could prevent them from supplying the China market with the most technologically advanced and reliable products.

Such restrictions could have a significant impact on U.S. ICT firms. According to BEA, U.S. exports of ICT services and potentially ICT-enabled services (i.e., services that are delivered remotely over ICT networks) to China totaled \$12.8 billion in 2015.¹³⁵ Examples of recently passed or proposed measures of concern to foreign ICT firms include the following:

- In 2014, the China Banking Regulatory Commission issued guidelines for IT security equipment used in banks (such as cash machines and smartcard chips), which included provisions on encryption and the disclosure of source code. It emphasized the importance of developing local technology and stated that the need for "secure and controllable technologies" in the banking sector, with the goal of 15% in 2015, growing to no less than 75% in 2019. China suspended some of the guidelines in April 2015. At the June 2015 S&ED session, China agreed to ensure that bank ICT regulations "will be nondiscriminatory, are not to impose nationality-based requirements, and are to be developed in a transparent manner."¹³⁶
- China's national security law (enacted in July 2015) includes a provision (Article 24) that says "the State strengthens the establishment of capacity for independent innovation, accelerating the development of autonomously controlled strategic advanced technologies and key technologies in core fields, strengthens the use of intellectual property rights, protects capacity building in protection of

¹³⁴ USITC, China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy (Investigation No. 332-514, USITC Publication 4199, November 2010, pp. 6-7.

¹³⁵ China was the fourth-largest U.S. export market for such services for countries where data is available. See, BEA, *International Trade Data, U.S. Trade in Services*, available at <http://www.bea.gov/iTable/iTable.cfm?ReqID=62&step=1#reqid=62&step=1&isuri=1&6210=4>.

¹³⁶ U.S. Department of Commerce, *U.S. Fact Sheet: 26th U.S.-China Joint Commission on Commerce and Trade*, November 23, 2016, available at <https://www.commerce.gov/news/fact-sheets/2015/11/us-fact-sheet-26th-us-china-joint-commission-commerce-and-trade>.

technological secrets, and ensures security in technology and engineering.”¹³⁷ Article 59 says that “the State establishes national security review and oversight management systems and mechanisms, conducting national security review of foreign commercial investment, special items and technologies, internet information technology products and services, projects involving national security matters, as well as other major matters and activities, that impact or might impact national security.”

- In October 2015, the China Insurance Regulatory Commission issued new draft rules on cyber-security in the insurance industry. The draft rules called for the adoption of “secure and controllable” technology by insurance companies, data localization requirements, and the use of products and systems employing domestic encryption methods. On June 1, 2016, 28 business groups sent a letter to the chairman of the China Insurance Regulatory Commission, arguing that the draft rules “would create unnecessary obstacles to international trade and likely to constitute a means of arbitrary or unjustifiable discrimination against providers in countries where the same conditions prevail.”¹³⁸ On June 2, 2016, the United States raised concerns about the draft regulations with the WTO Committee on Trade-Related Measures, arguing that such language appears to require that Chinese insurance firms give preferences to Chinese domestic providers of hardware equipment and software over foreign firms.¹³⁹
- In December 2015, China enacted a new counterterrorism law.¹⁴⁰ It requires telecommunications operators and internet service providers to “provide technical interfaces, decryption and other technical support assistance to public security organs and state security organs conducting prevention and investigation of terrorist activities.”¹⁴¹ Originally, the Chinese government sought to require providers to provide it encryption codes (i.e., security back-door access) and to store local user data on servers within China, but these provisions were later dropped from the final draft of the law, in part because of sharp criticism by President Obama, who contended that such rules “would essentially force all foreign companies, including U.S. companies, to turn over to the Chinese government mechanisms where they can snoop and keep track of all the users of those services.”
- China passed a new cyber-security law on November 7, 2016,¹⁴² which appears to promote the development of indigenous technologies and impose restrictions on foreign firms. Article 15 directs government entities to “support key network security technology industries and programs; support network security technology research and development, application and popularization; spread

¹³⁷ Translation from the Council on Foreign Relations, *National Security Law of the People’s Republic of China*, July 1, 2015, available at <http://www.cfr.org/homeland-security/national-security-law-peoples-republic-china/p36775>.

¹³⁸ The letter can be found at [https://www.uschina.org/sites/default/files/Industry%20letter%20on%20TBT%20notification%20of%20CIRC%20Tech%20Regulations%20\(ENG\).pdf](https://www.uschina.org/sites/default/files/Industry%20letter%20on%20TBT%20notification%20of%20CIRC%20Tech%20Regulations%20(ENG).pdf).

¹³⁹ Inside U.S. Trade’s, China Trade Extra, “U.S. Signals It Wants China To Slow Implementation Of Draft Insurance Regs,” June 3, 2016.

¹⁴⁰ A translated copy of the law can be found at the China Law Translate at <http://chinalawtranslate.com/?lang=en>.

¹⁴¹ Translation from China Law Translate, available at <http://chinalawtranslate.com/?lang=en>.

¹⁴² The law follows China’s assertion of its right to “cyber-sovereignty, which it describes as “an individual country’s right to choose its own Internet regulation model.” See Xinhuanet, “China Voice: Why does cyber-sovereignty matter?,” December 12, 2016, available at http://news.xinhuanet.com/english/2015-12/16/c_134923687.htm.

safe and trustworthy network products and services; protect the intellectual property rights for network technologies; and support research and development institutions, schools of higher learning, and so forth to participate in State network security technology innovation programs.” Article 23 states that “Critical network equipment and specialized network security products shall follow the national standards and mandatory requirements, and be safety certified by a qualified establishment or meet the requirements of a safety inspection, before being sold or provided. The state network information departments, together with the relevant departments of the State Council, formulate and release a catalog of critical network equipment and specialized network security products, and promote reciprocal recognition of safety certifications and security inspection results to avoid duplicative certifications and inspections.”¹⁴³ Article 37 states that personal information and other important data gathered or produced by critical information infrastructure operators during operations within China must store it in China.¹⁴⁴ A statement issued by Amcham on November 7 said the new law would not “do much to improve security,” but rather would “create barriers to trade and investment.” Other critics contend that provisions of the law are too broad or vague as to the level of cooperation internet firms are required to give to government authorities and would impose new internet restrictions.¹⁴⁵

- China’s 13th five-year plans and other government policy pronouncements have laid out a number of plans to boost innovation and promote the development of indigenous ICT and other high tech sectors, including semiconductors (see **Appendix**).

A U.S. Chamber of Commerce report estimated that a decision by China to “purge foreign ICTs” would reduce China’s annual GDP by 1.77% up to 3.44%, or at least \$200 billion (based on 2015 GDP), and would cost the Chinese economy at a minimum nearly \$3 trillion overall by 2025.¹⁴⁶

Intellectual Property Rights (IPR) Issues¹⁴⁷

U.S. business and government representatives voice growing concern over economic losses suffered by U.S. firms as a result of IPR infringement in China (and elsewhere), including those from cyber-attacks. U.S. innovation and the intellectual property (IP) that it generates have been cited by various economists as a critical source of U.S. economic growth and global competitiveness.¹⁴⁸ For example, according to the Department of Commerce, in 2014, U.S. IP-intensive industries, either directly or indirectly, supported 45.5 million jobs and contributed \$6.6 trillion in value added to the economy (up 30% from 2010), equal to 48.2% of U.S. GDP. In addition, total merchandise exports of IP-intensive industries totaled \$842 billion.¹⁴⁹ According to

¹⁴³ See translation of the law at <http://chinalawtranslate.com/cybersecuritylaw/?lang=en#LBQMwbmaWhGozeMj.99>.

¹⁴⁴ For additional information on digital trade issues, see CRS Report R44565, *Digital Trade and U.S. Trade Policy*, coordinated by (name redacted)

¹⁴⁵ Lawfare, *Understanding China’s Cybersecurity Law*, November 8, 2016, available at <https://www.lawfareblog.com/understanding-chinas-cybersecurity-law>.

¹⁴⁶ U.S. Chamber of Commerce, *Preventing Deglobalization*, March 17, 2016, p. 8, available at https://www.uschamber.com/sites/default/files/documents/files/preventing_degloabalization_1.pdf.

¹⁴⁷ China’s IPR policies subject to the Section 301 investigation are discussed later in the report.

¹⁴⁸ See CRS Report RL34292, *Intellectual Property Rights and International Trade*, by (name redacted) and (name redacted) .

¹⁴⁹ U.S. Department of Commerce, *Intellectual Property and the U.S. Economy: 2016 Update*, March 2012, available at (continued...)

the U.S. Bureau of Economic Analysis, in 2017, foreign entities paid U.S. IP holders \$128.4 billion (\$8.8 billion was paid by Chinese entities) for use of their IPR and \$42.2 billion for telecommunications, computer, and information services.¹⁵⁰

A study by NDP Consulting estimated that in 2008, U.S. workers in IP-intensive production earned 60% more than workers at similar levels in non-IP industries.¹⁵¹ A study on the Apple iPod concluded that Apple's innovation in developing and engineering the iPod and its ability to source most of its production to low-cost countries, such as China, have enabled it to become a highly competitive and profitable firm, as well as a creator of high-paying jobs (such as engineers engaged in the design of Apple products) in the United States.¹⁵²

IPR piracy and infringement is a significant global problem. Lack of effective and consistent protection of IPR has been cited by U.S. firms as one of the most significant problems they face in doing business in China. Other U.S. firms have expressed concern over pressures they often face from Chinese government entities to share technology and IPR with a Chinese partner. Although China has significantly improved its IPR protection regime over the past few years, U.S. IP industries complain that piracy rates in China remain unacceptably high and economic losses are significant, as illustrated by studies and estimates made by several stakeholders.

- An April 3, 2018 USTR press release estimated annual U.S. economic losses from China's "unfair" IPR policies at \$50 billion.¹⁵³
- A May 2013 study by the Commission on the Theft of American Intellectual Property estimated that global IPR theft costs the U.S. economy \$300 billion, of which China accounted for 50% (\$150 billion) to 80% (\$240 billion) of those losses.¹⁵⁴
- The U.S. Department of Homeland Security reported that in FY2017, goods from China and Hong Kong together accounted for 78% of seized counterfeit goods with a total value of \$941 million (based on their estimated manufacturer's retail price).¹⁵⁵
- Business surveys reveal mixed reactions to China's IPR enforcement efforts. For example, a majority of respondents in a 2016 AmCham China survey said IPR enforcement was effective for patents (54%) and trademarks or brand protection (51%), but less than a majority found copyrights (48%) and trade secrets (40%) enforcement to be effective. At the same time, 91% of respondents agreed that IPR enforcement over the last five years had improved.¹⁵⁶ The European

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<https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf>.

¹⁵⁰ U.S. Bureau of Economic Affairs, International Data, International Services, at <http://www.bea.gov/index.htm>.

¹⁵¹ Nam Pham, *The Impact of Innovation and the Role of Intellectual Property Rights on U.S. Productivity, Competitiveness, Jobs, Wages and Exports*, 2010, NDP Consulting.

¹⁵² Communications of the ACM, *Who Captures Value in a Global Innovation Network? The Case of Apple's iPod*, March 2009.

¹⁵³ USTR, Press Release, April 3, 2018, available at <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/april/under-section-301-action-ustr>.

¹⁵⁴ The Commission on the Theft of American Intellectual Property, *the Report of the Commission on the Theft of Intellectual Property*, May 2013.

¹⁵⁵ U.S. Department of Homeland Security, *Intellectual Property Rights Seizure Statistics Fiscal Year 2017*, April 2018, available at <https://www.cbp.gov/sites/default/files/assets/documents/2018-Apr/ipr-seizure-stats-fy2017.pdf>.

¹⁵⁶ AmCham China, *China Business Climate Survey Report*, 2016, January 2016, available at (continued...)

- Chamber's 2016 China business survey found that although 59% of its members said China's IPR enforcement was "inadequate," this was an improvement from the 95% rate reported for 2009.¹⁵⁷
- The USCBC's 2017 member survey found that IPR enforcement and cyber-security ranked as the fifth and sixth, respectively, biggest challenges among its member firms. Among respondents, 94% stated they concerned about IPR enforcement in China and 82% expressed concerns about data flow restrictions and cyber-security. Major cyber-related areas of greatest concern include restrictions on cross-border data flows in Chinese regulations (cited by 65% of respondents), inability to use global IT solutions or non-Chinese cloud-based applications in China (55%), consumer or company data theft (53%), Internet access and performance issues (53%), and IPR theft (51%).¹⁵⁸
 - The USTR's 2016 report on foreign trade barriers stated that over the past decade, China's internet restrictions have "posed a significant burden to foreign suppliers," and that 8 out of the top 25 most globally visited sites (such as Yahoo, Facebook, YouTube, eBay, Twitter, and Amazon) are blocked in China.¹⁵⁹ Freedom House's 2015 Freedom on the Net report ranked China's internet regime as the most restrictive out of 65 countries surveyed.¹⁶⁰
 - The U.S. International Trade Commission (USITC) in 2001 estimated that U.S. intellectual property-intensive firms that conducted business in China lost \$48.2 billion in sales, royalties, and license fees in 2009 because of IPR violations. It also estimated that an effective IPR enforcement regime in China that was comparable to U.S. levels could increase employment by IP-intensive firms in the United States by 923,000 jobs.¹⁶¹
 - The Business Software Alliance (BSA) estimated the commercial value of illegally used software in China at \$8.7 billion in 2015 (up from \$7.6 billion in 2009), and that the software piracy rate in China was 70% (down from 79% in 2007).¹⁶² BSA further estimated that legitimate software sales in China were only \$3.7 billion, compared to legal sales of \$41.0 billion in the United States.

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<http://www.amchamchina.org/about/press-center/amcham-statement/amcham-china-releases-2016-business-climate-survey>.

¹⁵⁷ European Chamber, *European Business in China, Business Confidence Survey: 2016*, July 7, 2016, available at <http://www.europeanchamber.com.cn/en/publications-business-confidence-survey>.

¹⁵⁸ USCBC, 2017 Membership Survey, available at https://www.uschina.org/sites/default/files/2017_uscbc_member_survey.pdf.

¹⁵⁹ USTR, *the 2016 National Trade Estimate Report*, March 23, 2016, p. 91, available at <https://ustr.gov/sites/default/files/2016-NTE-Report-FINAL.pdf>.

¹⁶⁰ Freedom House, *Freedom on the Net 2015*, available at https://freedomhouse.org/sites/default/files/FH_FOTN_2015Report.pdf.

¹⁶¹ The United States International Trade Commission, *China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy*, USITC Publication 4226, May 2011, p. xiv.

¹⁶² BSA, *Shadow Market, 2011 BSA Global Software Piracy Study, Ninth Edition*, May 2012, at http://portal.bsa.org/globalpiracy2011/downloads/study_pdf/2011_BSA_Piracy_Study-Standard.pdf.

- The Organization for Economic Development and Cooperation (OECD) estimates that counterfeit products accounted for 2.5% of global trade in 2013 (or \$461 billion).¹⁶³

Chinese officials contend that they have significantly improved their IPR protection regime, but argue that the country lacks the resources and a sophisticated legal system to effectively deal with IPR violations. They also contend that IPR infringement is a serious problem for domestic Chinese firms as well. A survey by the Chinese State Administration for Industry and Commerce found that 58.7% of products sold online in China were genuine in 2014.¹⁶⁴ Many analysts contend that China's goals of becoming a global leader in innovation will induce the government to strengthen IPR laws and enforcement. However, some analysts contend that China's relatively poor record on IPR enforcement can be partially explained by the fact that Chinese leaders want to make China a major producer of capital-intensive and high-technology products, and thus, they are tolerant of IPR piracy if it helps Chinese firms become more technologically advanced. According to an official at the U.S. Chamber of Commerce

The newer and emerging challenge to U.S. IPR is not a function of China's lack of political will to crackdown on infringers. Rather, it is a manifestation of a coherent, and government-directed, or at least government-motivated, strategy to lessen China's perceived reliance on foreign innovations and IP. China is actively working to create a legal environment that enables it to intervene in the market for IP, help its own companies to "re-innovate" competing IPR as a substitute to American and other foreign technologies, and potentially misappropriate U.S. and other foreign IP as components of its industrial policies and internal market regulation.... The common themes throughout these policies are: 1) undermine and displace foreign IP; 2) leverage China's large domestic market to develop national champions and promote its own IP, displacing foreign competitors in China; and 3) building on China's domestic successes by displacing competitors in foreign markets.¹⁶⁵

An illustration of alleged IPR theft in China involves American Superconductor Corporation (AMSC). On September 14, 2011, AMSC announced that it was filing criminal and civil complaints in China against Sinovel Wind Group Co., Ltd. (Sinovel), China's largest wind turbine producer, and other parties, alleging the illegal use of AMSC's intellectual property. According to AMSC, Sinovel illegally (by bribing an AMSC employee) obtained and used AMSC's wind turbine control software code to upgrade its 1.5 megawatt wind turbines in the field to meet proposed Chinese grid codes and to potentially allow for the use of core electrical components from other manufacturers.¹⁶⁶ In addition, AMSC claimed that Sinovel refused to pay for past shipments from AMSC as well as honoring for future shipments of components and spare parts as well.¹⁶⁷ AMSC has brought several civil cases against Sinovel, seeking to recover more than \$1.2 billion for contracted shipments and damages caused by Sinovel's contract breaches.¹⁶⁸ In 2013,

¹⁶³ OECD, *Trade in Counterfeit and Pirated Goods, Mapping the Economic Impact*, 2016, p. 5.

¹⁶⁴ Quartz, "Chinese government study based on shoddy data claims 40% of China's online products are shoddy," November 3, 2015, available at <http://qz.com/539824/chinese-government-study-based-on-shoddy-data-claims-40-of-chinas-online-products-are-shoddy/>.

¹⁶⁵ Testimony of Jeremie Waterman, Senior Director, Greater China, U.S. Chamber of Commerce, before the U.S. International Trade Commission, *Hearing on China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy*, June 15, 2010.

¹⁶⁶ AMSC claims Sinovel had obtained the intellectual property from a former AMSC employee who was then under arrest in Austria for economic espionage and fraudulent manipulation of data.

¹⁶⁷ AMSC Press Release, "AMSC Filing Criminal and Civil Complaints Against Sinovel," September 14, 2011.

¹⁶⁸ AMSC, *Press Release*, April 10, 2012, at <http://files.shareholder.com/downloads/AMSC/2346100399x0x558743/> (continued...)

the U.S. Justice Department issued indictments against Sinovel and two of its employees, along with a former AMSC employee, with trade secrets theft, describing the action as “nothing short of attempted corporate homicide.”¹⁶⁹ According to AMSC, it lost about half of its market capitalization after Sinovel refused to honor its contracts, and that as of 2017 AMSC’s stock valued had dropped by 96% and its workforce by 70%. One AMSC official said that it possessed emails that “include the actual transfer and Skype messages indicating that senior level Sinovel officials ordered the theft of AMSC IP and understood the devastating impact it would have on AMSC,” and it estimated that 8,000 windmills in China (20% of the country’s total) were operating on AMSC’s stolen technology.¹⁷⁰

According to a specialist in intellectual property at Tufts University, “Chinese companies, once they acquire the needed technology, will often abandon their Western partners on the pretext that the technology or product failed to meet Chinese governmental regulations. This is yet another example of a Chinese industrial policy aimed at procuring, by virtually any means, technology in order to provide Chinese domestic industries with a competitive advantage.”¹⁷¹ to pursue trade secret and copyright infringement litigation in China and the United States.¹⁷² Market access in China remains a significant problem for many U.S. IP industries (such as music and films), and is considered a significant cause of high IPR piracy rates. For example, China’s growing middle class has resulted in a surge in movie box office sales in recent years, which hit \$6.8 billion in 2015 (up 49% over the previous year), making China the largest market outside the United States and Canada.¹⁷³ When China joined the WTO in 2001 it agreed to allow 20 imported foreign films per year.¹⁷⁴ During the visit to the United States by then-Chinese Vice President Xi Jinping in February 2012, China agreed that it would allow in more American exports of 3D, IMAX, and similarly enhanced format movies on favorable commercial terms; strengthen the opportunities to distribute films through private enterprises rather than the state film monopoly; and ensure fairer compensation levels for U.S. blockbuster films distributed by Chinese SOEs.¹⁷⁵ This extended China’s foreign movie quota to 34, based on a revenue-sharing agreement (foreign studios receive 25% of the box office receipts) with a Chinese SOE.¹⁷⁶ Some business groups complain that China has failed to allow competition in the distribution of movies, noting that no private firms have been given a license to distribute movies nationally. Two Chinese government entities determine which foreign films will enter the market, set opening dates, and determine the number

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f01e0c5a-a526-4102-a818-f61f2d71ef79/AMSC_News_2012_4_10_Commercial.pdf.

¹⁶⁹ Department of Justice, *Press Release*, June 27, 2013, at <https://www.justice.gov/opa/pr/sinovel-corporation-and-three-individuals-charged-wisconsin-theft-amsc-trade-secrets>.

¹⁷⁰ USTR, *Section 301 Investigation: China’s Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation*, October 10, 2017, at <https://ustr.gov/sites/default/files/03142013%20Update%20Org%20Chart.pdf>.

¹⁷¹ “Data Theft Case May Test U.S. China Ties,” *Boston Globe*, September 19, 2011.

¹⁷² AMSC, *Press Release*, April 23, 2015, available at <http://ir.amsc.com/releasedetail.cfm?ReleaseID=908308>.

¹⁷³ Motion Picture Association of America, *2015 Theatrical Statistics*, April 2016, available at http://www.mppaa.org/wp-content/uploads/2016/04/MPAA-Theatrical-Market-Statistics-2015_Final.pdf.

¹⁷⁴ Such restrictions are mainly imposed to protect China’s domestic film industry from foreign competition.

¹⁷⁵ The White House, *Press Release*, February 17, 2012, at <http://www.whitehouse.gov/the-press-office/2012/02/17/united-states-achieves-breakthrough-movies-dispute-china>.

¹⁷⁶ China also allows 30-40 imported foreign movies into the country on a flat fee basis and foreign firms can co-produce movies in China or provide films for TV or online viewing. See, China Briefing, *Navigating Restrictions in China’s Film Industry*, December 2015, available at <http://www.hollywoodreporter.com/news/china-box-office-grows-astonishing-851629>.

of screens on which films can be shown, which some argue, is mainly based on the goal of protecting and promoting Chinese films.¹⁷⁷ The share of Hollywood movies in box office sales in China dropped from 45.5% in 2014 to 38.4% in 2015.¹⁷⁸

Technology Transfer Issues

When China entered the WTO in 2001, it agreed that foreign firms would not be pressured by government entities to transfer technology to a Chinese partner as part of the cost of doing business in China. However, many U.S. firms argue that this is a common Chinese practice, although this is difficult to quantify because, oftentimes, U.S. business representatives appear to try to avoid negative publicity regarding the difficulties they encounter doing business in China out of concern over retaliation by the Chinese government.¹⁷⁹ In addition, Chinese officials reportedly pressure foreign firms through oral communications to transfer technology (for example as a condition to invest in China), so as to avoid putting such requirements in writing in order to evade accusations of violating WTO rules.

A 2010 study by the U.S. Chamber of Commerce stated that growing pressure on foreign firms to share technology in exchange for market access in China was forcing such firms to “anguish over balancing today’s profits with tomorrow’s survival.”¹⁸⁰ In 2011, then-U.S. Treasury Secretary Timothy Geithner charged that “we’re seeing China continue to be very, very aggressive in a strategy they started several decades ago, which goes like this: you want to sell to our country, we want you to come produce here. If you want to come produce here, you need to transfer your technology to us.” A 2012 AmCham China survey reported that 33% of its respondents stated that technology transfer requirements were negatively affecting their businesses.¹⁸¹

U.S. officials continue to press China on this issue. A U.S. Commerce Department fact sheet from the December 2014 U.S.-China Joint Commission on Commerce and Trade (JCCT) meeting stated

China clarified and underscored that it will treat IPR owned or developed in other countries the same as domestically owned or developed IPR, and it further agreed that enterprises are free to base technology transfer decisions on business and market considerations, and are free to independently negotiate and decide whether and under what circumstances to assign or license intellectual property rights to affiliated or unaffiliated enterprises.¹⁸²

Following President Obama’s meeting with President Xi in September 2016, the White House issued a fact sheet that said that the two sides committed “not to advance generally applicable policies or practices that require the transfer of intellectual property rights or technology as a

¹⁷⁷ Bloomberg, *China Could Beat Hollywood by 2017*, February 25, 2016.

¹⁷⁸ The Hollywood Reporter, *China Box Office Grows Astonishing 48.7 Percent in 2015, Hits \$6.78 Billion*, December 31, 2015, available at <http://www.hollywoodreporter.com/news/china-box-office-grows-astonishing-851629>.

¹⁷⁹ China denies that public officials exert such pressure and that any technology transfers that do occur in China are the result of commercial agreements between companies.

¹⁸⁰ U.S. Chamber of Commerce, *China’s Drive for ‘Indigenous Innovation’ - A Web of Industrial Policies*, July 29, 2010.

¹⁸¹ AmCham China, *2012 China Business Climate Survey Report*, March 2012, available at <http://www.amchamchina.org/businessclimate2012>.

¹⁸² U.S. Department of Commerce, *U.S.-China Joint Fact Sheet on 25th Joint Commission on Commerce and Trade*, December 29, 2014, available at <https://www.commerce.gov/news/fact-sheets/2014/12/us-china-joint-fact-sheet-25th-joint-commission-commerce-and-trade>.

condition of doing business in their respective markets.”¹⁸³ Technology transfer issues have also been raised over a number of new Chinese laws and regulations that advance “secure and controllable technology” (discussed below).

Cyber-security Issues

Cyber-attacks against U.S. firms have raised concerns over the potential large-scale theft of U.S. IPR and its economic implications for the United States. A 2011 report by McAfee (a U.S. global security technology company) stated that its investigation had identified targeted intrusions into more than 70 global companies and warned that “every conceivable industry with significant size and valuable intellectual property has been compromised (or will be shortly), with the great majority of the victims rarely discovering the intrusion or its impact.”¹⁸⁴ Many U.S. analysts and policymakers contend that the Chinese government is a major source of cyber economic espionage against U.S. firms. For example, Representative Mike Rogers, chairman of the House Permanent Select Committee on Intelligence, stated at an October 4, 2011, hearing that

Attributing this espionage isn’t easy, but talk to any private sector cyber analyst, and they will tell you there is little doubt that this is a massive campaign being conducted by the Chinese government. I don’t believe that there is a precedent in history for such a massive and sustained intelligence effort by a government to blatantly steal commercial data and intellectual property. China’s economic espionage has reached an intolerable level and I believe that the United States and our allies in Europe and Asia have an obligation to confront Beijing and demand that they put a stop to this piracy.¹⁸⁵

A 2011 report by the U.S. Office of the Director of National Intelligence (DNI) stated, “Chinese actors are the world’s most active and persistent perpetrators of economic espionage. U.S. private sector firms and cyber-security specialists have reported an onslaught of computer network intrusions that have originated in China, but the IC (Intelligence Community) cannot confirm who was responsible.” The report goes on to warn that

China will continue to be driven by its longstanding policy of “catching up fast and surpassing” Western powers. The growing interrelationships between Chinese and U.S. companies—such as the employment of Chinese-national technical experts at U.S. facilities and the off-shoring of U.S. production and R&D to facilities in China—will offer Chinese government agencies and businesses increasing opportunities to collect sensitive US economic information.¹⁸⁶

On February 19, 2013, Mandiant, a U.S. information security company, issued a report documenting extensive economic cyber-espionage by a Chinese unit (which it designated as APT1) with alleged links to the Chinese People’s Liberation Army (PLA) against 141 firms, covering 20 industries, since 2006. The report stated

Our analysis has led us to conclude that APT1 is likely government-sponsored and one of the most persistent of China’s cyber threat actors. We believe that APT1 is able to wage

¹⁸³ The White House, *Fact Sheet: U.S.-China Economic Relations*, September 4, 2016, available at <https://www.whitehouse.gov/the-press-office/2016/09/04/fact-sheet-us-china-economic-relations>.

¹⁸⁴ The report did not identify China (or any country) as the source of the intrusions. McAfee, *Revealed: Operation Shady Rat, An Investigation of Targeted Intrusions Into More Than 70 Global Companies, Governments, and Nonprofit Organizations During the Last Five Years*, 2011.

¹⁸⁵ House Permanent Select Committee on Intelligence, *Chairman Mike Rogers Opening Statement at the Hearing on Cyber Threats and Ongoing Efforts to Protect the Nation*, October 4, 2011.

¹⁸⁶ DNI, Office of the National Counterintelligence Executive, *Foreign Spies Stealing U.S. Economic Secrets in Cyberspace, Report to Congress on Foreign Economic Collection and Industrial Espionage: 2009-2011*, October 2011.

such a long-running and extensive cyber espionage campaign in large part because it receives direct government support. In seeking to identify the organization behind this activity, our research found that People's Liberation Army (PLA's) Unit 61398 is similar to APT1 in its mission, capabilities, and resources. PLA Unit 61398 is also located in precisely the same area from which APT1 activity appears to originate.¹⁸⁷

On March 11, 2013, Tom Donilon, then-National Security Advisor to President Obama, stated in a speech that the United States and China should engage in a constructive dialogue to establish acceptable norms of behavior in cyberspace; that China should recognize the urgency and scope of the problem and the risks it poses to U.S. trade relations and the reputation to Chinese industry; and that China should take serious steps to investigate and stop cyber-espionage.¹⁸⁸ Following a meeting with Chinese President Xi Jinping in June 2013, President Obama warned that if cyber-security issues are not addressed, and if there continues to be direct theft of United States property, then "this was going to be a very difficult problem in the economic relationship and was going to be an inhibitor to the relationship really reaching its full potential."¹⁸⁹

On May 19, 2014, the U.S. Department of Justice issued a 31-count indictment against five members of the Chinese People's Liberation Army (PLA) for cyber-espionage and other offenses that allegedly targeted five U.S. firms and a labor union for commercial advantage, the first time the Federal government has initiated such action against state actors. The named U.S. victims were Westinghouse Electric Co. (Westinghouse); U.S. subsidiaries of SolarWorld AG (SolarWorld); United States Steel Corp. (U.S. Steel); Allegheny Technologies Inc. (ATI); the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (USW); and Alcoa Inc. The indictment appears to indicate a high level of U.S. government concern about the extent of Chinese state-sponsored cyber commercial theft against U.S. firms.¹⁹⁰

China strongly condemned the U.S. indictment and announced that it would suspend its participation in the U.S.-China Cyber Working Group, established in 2013. Some Members of Congress have called on the USTR to initiate a case against China in the World Trade Organization (WTO). Others have called for new measures to identify foreign governments that engage in cyber-espionage and to impose sanctions against entities that benefit from that theft. For example, in the 114th Congress H.R. 3039 would have authorized the President to impose certain penalties on state-sponsors of cyber-attacks. Some analysts warn that growing U.S.-China disputes over cyber-theft could significantly impact commercial ties. The Obama Administration sought ways to enhance U.S. commercial cyber-security at home, develop bilateral and global rules governing cyber-theft of commercial trade secrets, strengthen U.S. trade policy tools, and promote greater cooperation with trading partners that share U.S. concerns.

On April 1, 2015, President Obama issued Executive Order 13964, authorizing certain sanctions against "persons engaging in significant malicious cyber-enabled activities."¹⁹¹ Shortly before Chinese President Xi's state visit to the United States in September 2015, some press reports indicated that the Obama Administration was considering the imposition of sanctions against

¹⁸⁷ Mandiant, *APT1: Exposing One of China's Cyber, Espionage Units*, February 19, 2013, p. 2.

¹⁸⁸ U.S. Asia Society, Complete Transcript: Thomas Donilon at Asia Society, New York March 11, 2013.

¹⁸⁹ National Public Radio, *Chinese Cyber-Hacking Discussed At Obama-Xi Summit*, June 9, 2013, available at <http://www.npr.org/sections/thetwo-way/2013/06/09/190058558/chinese-cyber-hacking-discussed-at-obama-xi-summit>.

¹⁹⁰ U.S. Department of Justice, at <http://www.justice.gov/iso/opa/resources/5122014519132358461949.pdf>.

¹⁹¹ A copy can be found at http://www.treasury.gov/resource-center/sanctions/Programs/Documents/cyber_eo.pdf. The EO was extended for an additional year by President Obama on March 29, 2016.

Chinese entities over cyber-theft, even possibly before the arrival of President Xi, which some analysts speculated might have caused Xi to cancel his visit. This appears to have prompted China to send a high-level delegation (headed by Meng Jianzhu, Secretary of the Central Political and Legal Affairs Commission of the Chinese Communist Party) to Washington, DC, to hold four days of talks (September 9-12) with U.S. officials over cyber issues.¹⁹²

On September 25, 2015, Chinese President Xi and President Obama announced that they had reached an agreement on cyber-security. The agreement stated that neither country's government will conduct or knowingly support cyber-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors.¹⁹³ They also agreed to set up a high-level dialogue mechanism (which would meet twice a year) to address cybercrime and to improve two-way communication when cyber-related concerns arise (including the creation of a hotline). The first meeting of the U.S.-China High-Level Joint Dialogue on Cybercrime and Related Issues was held in December 2015 in Washington, DC. The two sides reached agreement on a document establishing guidelines for requesting assistance on cybercrime or other malicious cyber-activities and for responding to such requests. They decided to conduct a tabletop exercise in the spring of 2016 (held in April 2016) on agreed-upon cybercrime, malicious cyber-activity and network protection scenarios; pledged to develop the scope, goals, and procedures for use of the hotline for the next dialogue; and agreed to further develop case cooperation on combatting cyber-enabled crimes (including child exploitation, theft of trade secrets, fraud and misuse of technology, and communications for terrorist activities).¹⁹⁴ The second Cyber Dialogue was held in Beijing in June 2016. The two sides agreed to begin implementation of a cyber-hotline mechanism (which reportedly became operational in August 2016);¹⁹⁵ continue to strengthen cooperation in network protection; enhance case investigations and information exchanges; prioritize cooperation on combatting cyber-enabled IP theft for commercial gain and cooperate in law enforcement operations; and agreed to create an action plan to address the threat posed from business email compromise scams.¹⁹⁶

The first session of the U.S.-China Law Enforcement and Cybersecurity Dialogue (established by President Trump and President Xi in April 2017 as part of the U.S.-China Comprehensive Economic Dialogue) was held in October 2017. On cyber issues, the two sides pledged to continue cooperation based on the 2015 agreement, including based on five main commitments to

- Give timely responses should be provided to requests for information and assistance concerning malicious cyber activities;

¹⁹² The White House, Press Release, September 12, 2015, available <https://www.whitehouse.gov/the-press-office/2015/09/12/readout-senior-administration-officials-meeting-secretary-central>.

¹⁹³ The November 2015 meeting of the G-20 countries (which includes China) included language in its communiqué: "In the ICT environment, just as elsewhere, states have a special responsibility to promote security, stability, and economic ties with other nations. In support of that objective, we affirm that no country should conduct or support ICT-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors."

¹⁹⁴ U.S. Department of Justice, First U.S.-China High-Level Joint Dialogue on Cybercrime and Related Issues Summary of Outcomes, December 2, 2015, available at <https://www.justice.gov/opa/pr/first-us-china-high-level-joint-dialogue-cybercrime-and-related-issues-summary-outcomes-0>.

¹⁹⁵ Cyber Administration of China, Sino-US High-level Joint Dialogue Hotline on Combating Cybercrime and Related Matters, August 28, 2016, available (in Chinese) at http://www.cac.gov.cn/2016-08/28/c_1119466923.htm.

¹⁹⁶ U.S. Department of Justice, Second U.S.-China Cybercrime and Related Issues High Level Joint Dialogue, June 14, 2016, available at <https://www.justice.gov/opa/pr/second-us-china-cybercrime-and-related-issues-high-level-joint-dialogue>.

- Ensure that neither country’s government will conduct or knowingly support cyber-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors;
 - Make efforts to further identify and promote appropriate norms of state behavior in cyberspace within the international community;
 - Maintain a high-level joint dialogue mechanism on fighting cybercrime and related issues; and
- Enhance law enforcement communication on cyber security incidents and to mutually provide timely responses.¹⁹⁷

Agreement on Cyber-security Issues at the September 2015 U.S-China Summit

- Neither country’s government will conduct or knowingly support cyber-enabled theft of IP, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors.
- They will establish a high-level joint dialogue mechanism on fighting cybercrime and related issues.
- They will seek to work together to identify and promote appropriate norms of state behavior in cyberspace internationally; and
- Each side will provide timely responses to requests for information and assistance concerning malicious cyber-activities.

Source: The White House.

On April 27, 2016, the United States Steel Corporation (USS) filed a Section 337¹⁹⁸ case with the USITC against several major Chinese steel producers and their distributors in regard to certain carbon and alloy steel products.¹⁹⁹ USS contends that in January 2011, the Chinese government hacked U.S. Steel’s research computers and equipment, stealing proprietary methods for manufacturing these products, and that soon thereafter, Baosteel (a Chinese SOE and largest Chinese steel firm), and possibly other Chinese steel firms, began producing and exporting “the very highest grades of advanced high-strength steel, even though they had previously been unable to do so.” USS charged that imports of such products into the United States using USS’s stolen trade secrets competed against and undercut USS’s own products. This is the first Section 337 case that has involved alleged cyber-theft of U.S. trade secrets.

Analysts differ on how the U.S.-China cyber agreement will address bilateral cyber-theft issues. Some have called it a good first start to developing rules governing cyber-theft of commercial IPR. Others are more skeptical; noting that the Chinese government denies engaging in cyber-theft of trade secrets for gaining a competitive advantage, and instead, claims China is the “biggest victim” of such activity. In addition, critics contend, it is often extremely difficult to identify hackers, let alone trace it back to a government entity. According to CrowdStrike (a U.S. cyber-security firm), cyber-attacks against U.S. firms continued shortly after the agreement was

¹⁹⁷ U.S. Department of Justice, *First U.S.-China Law Enforcement and Cybersecurity Dialogue, Summary of Outcomes*, October 4, 2017, available at <https://www.justice.gov/opa/pr/first-us-china-law-enforcement-and-cybersecurity-dialogue>.

¹⁹⁸ Section 337 of the Tariff Act of 1930 tasks the USITC to investigate certain unfair practices in import trade.

¹⁹⁹ Section 337 of the Tariff Act of 1930 (19 U.S.C. §1337) enables U.S. firms to seek relief from imports that infringe on U.S. IPR (such as patent or registered trademark infringement and misappropriation of trade secrets), and other forms of unfair competition (such as violations of U.S. antitrust laws). Relief under Section 337 cases can result in a U.S. ban on certain products from entering the United States.

reached. It detected 11 breaches of its customers from September 26, 2015 to October 16, 2016.²⁰⁰ A report by cyber-security firm Fireeye stated that while Chinese cyber-attacks against U.S., European, and Japanese firms continued after the U.S.-China cyber agreement was reached, the overall level of cyber-intrusions have declined since mid-2014. Fireeye attributed the decline to military reforms in China, widespread exposure of Chinese cyber-activity, and actions by the U.S. government.²⁰¹ However, CrowdStrike contends that the economic slowdown in China and the innovation goals of the 13th Five-Year Plan would likely continue to drive China's state-sponsored cyber-espionage activities.²⁰²

China's Obligations in the World Trade Organization

Negotiations for China's accession to the General Agreement on Tariffs and Trade (GATT) and its successor organization, the WTO, began in 1986 and took over 15 years to complete. During the WTO negotiations, Chinese officials insisted that China was a developing country and should be allowed to enter under fairly lenient terms. The United States insisted that China could enter the WTO only if it substantially liberalized its trade regime. In the end, a compromise was reached that required China to make immediate and extensive reductions in various trade and investment barriers, while allowing it to maintain some level of protection (or a transitional period of protection) for certain sensitive sectors. China's WTO membership was formally approved at the WTO Ministerial Conference in Doha, Qatar, on November 10, 2001. On November 11, 2001, China notified the WTO that it had formally ratified the WTO agreements, and on December 11, 2001, it formally joined the WTO.²⁰³ Under the WTO accession agreement, China agreed to do the following:

- Reduce the average tariff for industrial goods from 17% to 8.9%, and average tariffs on U.S. priority agricultural products from 31% to 14%.
- Limit subsidies for agricultural production to 8.5% of the value of farm output, eliminate export subsidies on agricultural exports, and notify the WTO of all government subsidies on a regular basis.
- Within three years of accession, grant full trade and distribution rights to foreign enterprises (with some exceptions, such as for certain agricultural products, minerals, and fuels).
- Provide nondiscriminatory treatment to all WTO members, such as treating foreign firms in China no less favorably than Chinese firms for trade purposes.
- End discriminatory trade policies against foreign invested firms in China, such as domestic content rules and technology transfer requirements.
- Implement the WTO's Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement (which sets basic standards on IPR protection and rules for enforcement) upon accession.

²⁰⁰ CrowdStrike Blog, *The Latest on Chinese-affiliated Intrusions into Commercial Companies*, October 19, 2015, available at <https://www.crowdstrike.com/blog/the-latest-on-chinese-affiliated-intrusions-into-commercial-companies/>.

²⁰¹ Fireeye, *Redline Drawn, China Recalculates its Use of Cyber Espionage*, June 2016, p. 3, available at <https://www.fireeye.com/content/dam/fireeye-www/current-threats/pdfs/rpt-china-espionage.pdf>.

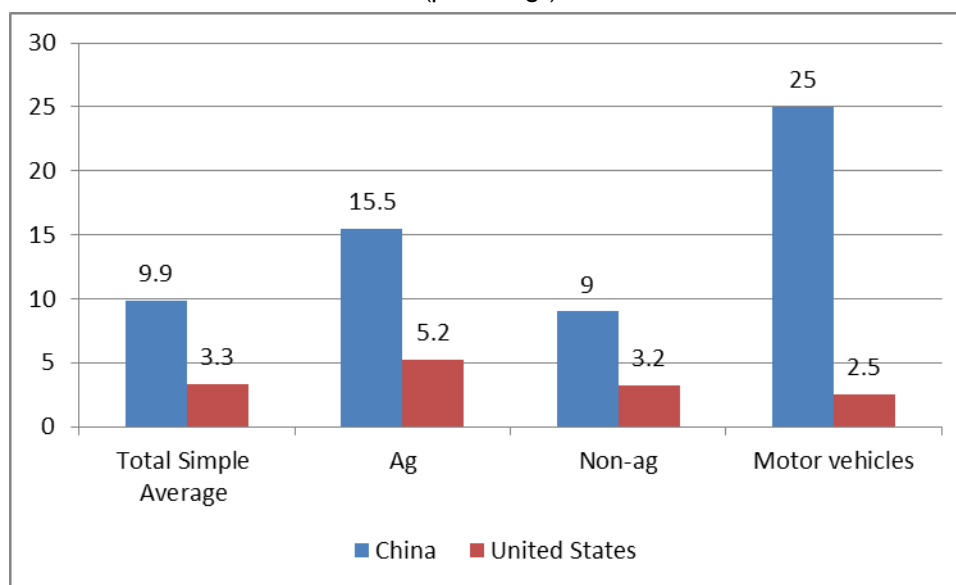
²⁰² CrowdStrike, *2015 Global Threat Report*, September 5, 2015, available at <https://www.crowdstrike.com/global-threat-report-2015/>.

²⁰³ Following China's WTO accession, the United States, in January 2002, granted China permanent normal trade relations (PNTR) status (prior to that time, that status was on a conditional basis) to ensure that the United States and China had a formal trade relationship under the rules of the WTO.

- Fully open the banking system to foreign financial institutions within five years (by the end of 2006).
- Allow joint ventures in insurance and telecommunication (with various degrees of foreign ownership allowed).

China's implementation of its tariff concessions was largely on time. Its simple average tariff fell from 15.9% in 2001 to its current average level of 9.9%.²⁰⁴ Some tariff cuts were significant. China's 2001 tariff rates of 80-100% on autos were reduced to 25% by 2006. Despite these cuts, China's simple average tariff rate is three times the U.S. level (see **Figure 16**). China's tariff on autos is 10 times the U.S. level of 2.5%. China also levies a value-added tax on most imports.

Figure 16. China and U.S. Simple Average MFN Tariff Rates
(percentage)



Source: World Trade Organization.

Note: Simple average MFN rates reflect the average of all rates listed in the tariff schedule, and exclude tariff rates under bilateral or plurilateral FTAs. Data exclude China's consumption taxes on imports.

WTO Implementation Issues

Getting China into the WTO under a comprehensive trade liberalization agreement was a major U.S. trade objective during the late 1990s. Many U.S. policymakers at the time maintained that China's WTO membership would encourage the Chinese government to deepen market reforms, promote the rule of law, reduce the government's role in the economy, further integrate China into the world economy, and enable the United States to use the WTO's dispute resolution mechanism to address major trade issues. As a result, it was hoped, China would become a more reliable and stable U.S. trading partner. U.S. trade officials contend that in the first few years after it joined the WTO, China made noteworthy progress in adopting economic reforms that facilitated its

²⁰⁴ Another way to compare tariff burdens is to calculate the trade weighted average tariff, which is the sum of duties collected over the sum of import values. China's average tariff under this measurement is 4.5% (down from 14.1% in 2001) while the U.S. level is 2.4%. For agricultural and nonagricultural products, China's trade weighted tariffs were 9.7% and 4%, respectively.

transition toward a market economy and increased its openness to trade and FDI. However, beginning in 2006, progress toward further market liberalization appeared to slow. By 2008, U.S. government and business officials noted evidence of trends toward a more restrictive trade regime.²⁰⁵ The USTR's 2015 report on China's WTO compliance summarized U.S. concerns over China's trade regime as follows:

Many of the problems that arise in the U.S.-China trade and investment relationship can be traced to the Chinese government's interventionist policies and practices and the large role of state-owned enterprises and other national champions in China's economy, which continue to generate significant trade distortions that inevitably give rise to trade frictions.²⁰⁶

The 2016 report identified several priority areas of U.S. concern:

- **Intellectual property rights** and market access, including trade secrets, pharmaceutical patents, software piracy, online piracy, and counterfeit goods;
- **Industrial policies**, including “secure and controllable” ICT policies, indigenous innovation policies, technology transfer requirements, export restraints on raw materials, export subsidies, excess capacity in certain industries (e.g., steel and aluminum), value-added taxes on exports, support of “strategic emerging industries,”²⁰⁷ import bans on remanufactured products, discriminatory standards and technology policies, failure to join the WTO's GPA, investment restrictions, and use of trade remedy measures for retaliatory purposes;
- **Restrictions on services**, including electronic payments, theatrical films and audio-visual services, banking telecommunications, insurance, commercial internet activities, express delivery, and legal services;
- **Restriction on agricultural products**, including sanitary and phytosanitary (SPS) measures on beef, pork and poultry, biotechnology approvals, and domestic support subsidies;
- **Inadequate transparency**, including in regard to publication of trade-related laws, regulations, notice and comment procedures (e.g., publishing draft laws for comment), and translation of all trade-related laws, regulations and other measures at all levels of government in one or more of the WTO languages; and
- **Restrictive aspects of the legal framework**, especially in regard to administrative licenses and China's competition policy.

The United States has used the WTO dispute settlement mechanism on a number of occasions to address China's alleged noncompliance with its WTO commitments. To date, it has brought 22 dispute settlement cases against China (or 55% of the total number of cases brought by all WTO members against China through March June 2018).²⁰⁸ These are summarized in **Table 10**.²⁰⁹ China in turn has brought 13 dispute settlement cases against the United States, three of which

²⁰⁵ China generally implemented its tariff reductions on schedule.

²⁰⁶ USTR, *2016 Report to Congress on China's WTO Compliance*, January 2017, available at <https://ustr.gov/sites/default/files/2016-China-Report-to-Congress.pdf>.

²⁰⁷ These industries include energy and environmental protection, new generation information technology, biotechnology, high-end equipment manufacturing, new energy, new materials, and new-energy vehicles.

²⁰⁸ The United States has been the largest target of China's dispute settlement cases in the WTO as well.

²⁰⁹ These cases can be found on the WTO's Dispute Settlement website at https://www.wto.org/english/tratop_e/dispu_e/dispu_by_country_e.htm.

have been initiated over the past few months, including proposed U.S. trade measures against China under Section 301, Section 232 tariffs on imported steel and aluminum, and Section 201 safeguard measures on solar products and washing machines. Another significant WTO case China has brought involves the United States' continued treatment of China as a nonmarket economy for the purpose of calculating and imposing antidumping measures. China contends that the terms of its WTO accession agreement in 2001 required all WTO members to treat it as a market economy by December 2017, while the United States argues China must first demonstrate that it is a market economy before it can obtain that status.²¹⁰

Table 10. Summaries of WTO U.S. Dispute Settlement Cases Against China

Date Initiated	Issue	Status/Outcome
March 2018	Discriminatory technology licensing requirements (related to the U.S. Section 301 investigation)	Pending
January 2017	Subsidies to Chinese aluminum producers	Pending
December 2016	Administration of tariff-rate quotas for rice, wheat, and corn	Pending
September 2016	Use of excessive domestic subsidies for rice, wheat, and corn	Pending
July 2016	Export duties on nine (later expanded to 15) different raw materials	Pending
December 2015	Hidden and discriminatory tax exemptions for domestic Chinese aircraft producers	Pending
February 2015	Measures providing subsidies contingent upon export performance to enterprises in several industries	In April 2016, the two sides reached a Memorandum of Understanding. China agreed to remove WTO-inconsistent provisions.
September 2012	Export subsidies to auto and auto parts manufacturers in China	Pending
July 2012	WTO-inconsistent use of antidumping and countervailing measures (duties of up to 21.5%) against certain imported U.S.-made vehicles	In May 2014, WTO panel ruled several measures were inconsistent with China's WTO obligations.
May 2012	Improper use of antidumping and countervailing duties on broiler products	In August 2013, WTO panel found certain Chinese measures inconsistent with WTO obligations. In July 2014, China informed DSB that it had implemented the DSB rulings. U.S. disagreed with China's assertion and requested creation of WTO compliance panel, which was formed in July 2016.
March 2012	Export restrictions on rare earths and two other minerals (separate cases brought by EU and Japan)	Panel ruled several policies were inconsistent with WTO rules, which was largely upheld on appeal by China. In May 2015, China informed DSB it had implemented the ruling.

²¹⁰ See CRS In Focus IF10385, *China's Status as a Nonmarket Economy (NME)*, by (name redacted).

Date Initiated	Issue	Status/Outcome
December 2010	Government programs extending subsidies to Chinese wind power equipment manufacturers that use parts and components made in China rather than foreign-made parts and components	On June 7, 2011, USTR announced China had agreed to end these subsidies, but noted that China had failed to fully report all of its subsidy programs.
September 2010	Discrimination against U.S. suppliers of electronic payment services	In 2012, USTR announced that the U.S. had largely prevailed in the ruling by a WTO dispute panel. In July 2013, China announced it had implemented the WTO's ruling, but the U.S. disagreed with that assertion and said it would continue to monitor China's actions.
September 2010	Improper application of antidumping duties and countervailing duties on imports of grain oriented flat-rolled electrical steel from the United States	In June 2012, a panel ruled largely in favor of U.S. position and this was generally upheld on appeal in October 2012. In December 2013, USTR stated that China had failed to remove the duties and in February 2014 requested a WTO compliance panel. That panel called on China to implement the WTO findings. In August 2015, China said that the duties had expired.
June 2009	Export restraints on various raw materials	In July 2011, a panel found that China's export taxes and quotas on raw materials violated its WTO commitments and this ruling was largely upheld on appeal. In January 2013, China reported that it implemented the ruling.
December 2008	Export subsidies for Chinese "Famous Chinese" brands programs	In December 2009, the USTR announced that China had agreed to eliminate these programs.
March 2008	Discriminatory treatment of U.S. suppliers of financial information services in China	In November 2008, the USTR announced that China had agreed to eliminate discriminatory restrictions.
April 2007	Noncompliance with the WTO TRIPS agreement, namely in terms of its enforcement of IPR laws	In January 26, 2009, the WTO ruled that many of China's IPR enforcement policies failed to fulfill its WTO obligations. In June 2009, China announced that it would implement the WTO ruling by March 2010.
April 2007	Failure to provide sufficient market access to IPR-related products, namely in terms of trading rights and distribution services	In August 2009, a panel ruled that many of China's regulations on trading rights and distribution of films for theatrical release, DVDs, music, and books and journals were inconsistent with China's WTO obligation and this was largely upheld on appeal. In February 2010, China stated that it would implement the WTO's ruling.
February 2007	Government regulations giving WTO-inconsistent import and export subsidies to various industries in China	In November 2007, China agreed to eliminate the subsidies in question by January 1, 2008.
March 2006	Discriminatory regulations on imported auto parts, which often applied the high tariff rate on finished autos (25%) to certain auto parts (which normally averaged 10%)	In February 2008, a panel ruled that China's discriminatory tariffs were inconsistent with its WTO obligations. China appealed the decision, but a WTO Appellate Body largely upheld the WTO panel's decision. In August 2009, China said it had implemented the decision.

Date Initiated	Issue	Status/Outcome
March 2004	Discriminatory tax treatment of imported semiconductors	The USTR announced in July 2004 that China had agreed to end its preferential tax policy, and in October 2005, both sides announced that the issue had been resolved. However, the USTR expressed concerns over new forms of financial assistance given by the Chinese government to its domestic semiconductor industry.

Source: WTO and USTR press releases.

Note: Cases summarized by CRS.

China's Currency Policy

Unlike most advanced economies, China does not maintain a market-based floating exchange rate. For several years, China pegged its currency directly to the U.S. dollar. Each day China's central bank announced a central rate of exchange between the renminbi (RMB) and the dollar and would buy and sell as much currency as needed to reach a targeted exchange rate within a specific band. In order to maintain the targeted exchange rate with the dollar (and other currencies), the Chinese government imposed restrictions and controls over capital flows in and out of China.²¹¹ Currency intervention by the Chinese government in the past contributed to a sharp rise in Chinese foreign exchange reserves, some of which were invested in U.S. dollar assets, such as U.S. Treasury securities.

Starting around 1998, the Chinese government set the central target exchange rate at around 8.28 yuan (the base unit of the RMB) per dollar, and this rate was generally maintained consistently through June 2005.²¹² Many Members of Congress around this time argued that China's currency intervention constituted a de facto subsidy that contributed to a sharp rise in U.S. imports from China (hence spiking the U.S. trade deficit with China) and negatively affected some U.S. industrial sectors, and many Members called on the U.S. Department of the Treasury to designate China as a "currency manipulator" in its biannual report to Congress on exchange rates.

Due in part to pressure from its trading partners, including the United States, the Chinese government in July 2005 announced reforms to its currency policy. China immediately appreciated the RMB to the dollar by 2.1% and moved to a "managed float" exchange rate system, based on a basket of major foreign currencies that included the U.S. dollar and other major currencies (although the composition of that basket has not been made public).

From July 2005 to July 2008, the official exchange rate went from 8.27 to 6.83 yuan per dollar. However, once the effects of the global financial crisis became apparent, the Chinese government halted its appreciation of the RMB and subsequently kept the yuan/dollar exchange rate relatively constant at 6.83 from July 2008 to June 2010 in order to help limit the impact of the sharp decline in global demand for Chinese products. Currency appreciation resumed in June 2010, although at a slower pace than in previous years. From June 2005 through July 2015, the RMB appreciated by 35.3% on a nominal basis against the dollar.

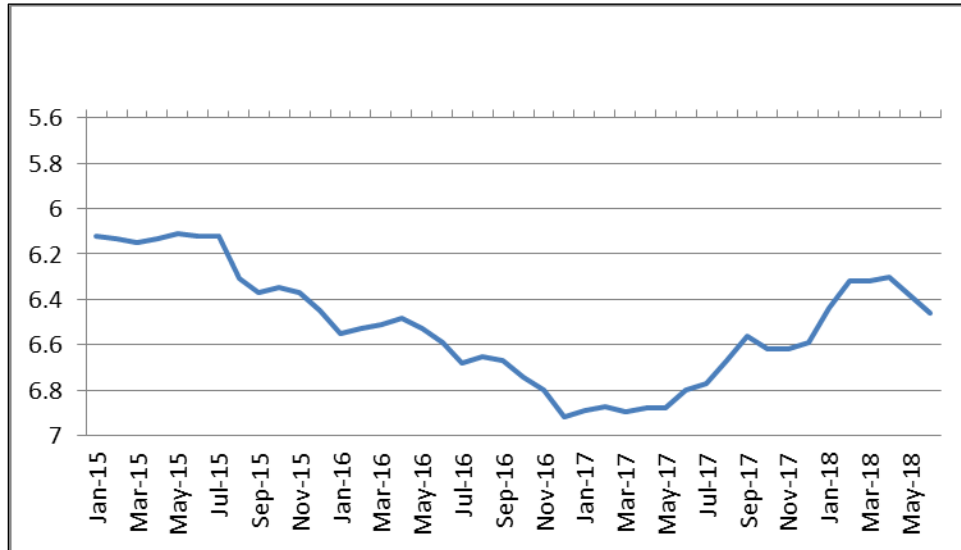
On August 11, 2015, China's central bank announced that it was taking new measures to improve the market-orientation of its daily central parity rate of the RMB. However, over the next three

²¹¹ Much of China's trade is believed to be in U.S. dollars (e.g., exporters are often paid in dollars). The central government requires firms to exchange most of their dollars for RMB.

²¹² The official name of China's currency is the renminbi, which is denominated in units of yuan.

days, the RMB depreciated against the dollar by 4.4% (it went from 6.12 yuan to 6.40 yuan). From July 2015 to mid-December 2016, the RMB depreciated by 13.6% against the U.S. dollar, and from 2015 to 2017 it depreciated by 7.6%. From January 2017 to December 2017, the RMB appreciated by 4.4% (see **Figure 17**).

Figure 17. RMB-Dollar Exchange Rates: January 2015 to June 2018
(Yuan per U.S. dollar)



Source: Bank of China “middle rate.”

Notes: Graph inverted for illustrative purposes. A falling line indicates the RMB is depreciating against the dollar while a rising line shows RMB appreciation.

In February 2016, the Trade Facilitation and Enforcement Act of 2015 (P.L. 114-125) went into effect. It included several new provisions on monitoring and addressing foreign exchange rates and listed new enhanced factors for the Department of the Treasury to consider when determining if any country should be listed as currency manipulators in its semi-annual report.²¹³ Treasury established certain benchmarks to determine which countries would be subject to enhanced analysis (and subject to a monitoring list), including those with a bilateral trade surplus larger than \$20 billion, a current account surplus of more than 3% of GDP, and engagement in persistent one-sided intervention in foreign exchange markets that resulted in net purchases equal to 2% or more of GDP over the past year. The law also established new remedies in regard to countries that do not adopt appropriate policies to correct the identified undervaluation and surpluses, prohibitions of financing by the Overseas Private Investment Corporation (OPIC) in that country,²¹⁴ restrictions on U.S. government procurement, additional efforts by U.S. officials to

²¹³ It requires Treasury to include in its report an enhanced analysis of countries that have a significant trade surplus with the United States, a material current account surplus, and engage in persistent one-sided intervention in the foreign exchange market. The enhanced analysis is to describe developments with respect to currency intervention, a description of the real effective exchange rate and estimate of undervaluation, analysis of changes in the capital controls and trade restrictions of that country, and patterns in the reserve accumulation of that country. Treasury must then assess whether a country has a significant bilateral trade surplus with the United States, has a material current account surplus, and has engaged in persistent one-sided intervention in the foreign exchange market.

²¹⁴ OPIC is already banned from operating in China under previous law.

urge IMF action, and taking into account such currency policies before initiating or entering into any bilateral or regional trade agreement negotiations.

China met two out of the three criteria (large trade surplus and current account surplus at over 3% of GDP) for enhanced analysis in Treasury's April 2016 report. The report urged China to continue to rebalance the economy by boosting private consumption and said that "the RMB should continue to experience real appreciation over the medium-term." Treasury's October 2016 report stated that China had met only one of the criteria (large trade surplus), but went on to say that "despite the recent downward pressure on the RMB, the Chinese currency is still 21 percent stronger than the dollar since December 2005, and 38 percent stronger on a real, trade-weighted basis."²¹⁵

The first Treasury report on exchange rates under the Trump Administration, issued on April 14, 2017, did not conclude that China (or any country) had manipulated its currency, noting that the Chinese government over the past year or so had intervened heavily to prevent rapid RMB depreciation (as opposed to trying to prevent RMB appreciation, which often occurred in the past). Although the report indicated that China had met only one of the criteria (trade surplus), Treasury stated that China's currency policy would be "closely monitored," noting that China's trade surplus "accounts for a disproportionate share of the overall U.S. trade deficit." Treasury said that it would also monitor the currency policies of Japan, Korea, Taiwan, Germany, and Switzerland. The October 2017 Department of the Treasury report noted that China had intervened in 2017 to prevent RMB depreciation and that its current account surplus in the first half of the year as a percent of GDP was 1.4%. However, Treasury complained that China's trade surplus with the United States remained high and urged China to deepen economic reforms. Treasury's April 2018 report on exchange rates emphasized China's commitments not to engage in competitive devaluations and to improve the transparency of its foreign exchange regime.²¹⁶

The Trump Administration's Approach to Commercial Relations with China

The Trump Administration has taken a number of steps in regard to U.S.-China commercial relations. At their first official meeting as heads of state in April 2017, President Trump and Chinese President Xi Jinping announced the establishment of a "100-day plan on trade" as well as a new high-level forum called the "U.S.-China Comprehensive Dialogue."²¹⁷ Following the meeting then-U.S. Secretary of State Rex Tillerson stated that "President Trump noted the challenges caused by Chinese government intervention in its economy and raised serious concerns about the impact of China's industrial, agricultural, technology, and cyber policies on U.S. jobs and exports. The President underscored the need for China to take concrete steps to level the playing field for American workers, stressing repeatedly the need for reciprocal market access."²¹⁸ The Trump Administration's December 2017 National Security Strategy Report took aim at a number of Chinese economic policies of concern to the United States (see **Text Box**).

²¹⁵ The October 2016 is available at <https://www.treasury.gov/resource-center/international/exchange-rate-policies/Documents/2016-10-14%20%28Fall%202016%20FX%20Report%29%20FINAL.PDF>.

²¹⁶ See <https://home.treasury.gov/sites/default/files/2018-04/2018-04-13-Spring-2018-FX-Report-FINAL.pdf>.

²¹⁷ The U.S.-China Comprehensive Dialogue has four pillars: the diplomatic and security dialogue; the comprehensive economic dialogue; the law enforcement and cybersecurity dialogue; and the social and cultures issues dialogue. The new dialogue is a continuation of high level forums under the previous two Administrations.

²¹⁸ The White House, *Briefing by Secretary Tillerson, Secretary Mnuchin, and Secretary Ross on President Trump's* (continued...)

Trump's 2017 National Security Strategy Report in Regard to China's Economy

The report highlighted a number of Chinese economic policies of concern to the United States. Below are a few excerpts:

—“Today, the United States must compete for positive relationships around the world. China and Russia target their investments in the developing world to expand influence and gain competitive advantages against the United States. China is investing billions of dollars in infrastructure across the globe.”

—“Although the United States seeks to continue to cooperate with China, China is using economic inducements and penalties, influence operations, and implied military threats to persuade other states to heed its political and security agenda.”

—“China is gaining a strategic foothold in Europe by expanding its unfair trade practices and investing in key industries, sensitive technologies, and infrastructure.”

—“China and Russia challenge American power, influence, and interests, attempting to erode American security and prosperity. They are determined to make economies less free and less fair, to grow their militaries, and to control information and data to repress their societies and expand their influence.”

—“Every year, competitors such as China steal U.S. intellectual property valued at hundreds of billions of dollars. Stealing proprietary technology and early-stage ideas allows competitors to unfairly tap into the innovation of free societies.”

—“China's infrastructure investments and trade strategies reinforce its geopolitical aspirations. Its efforts to build and militarize outposts in the South China Sea endanger the free flow of trade, threaten the sovereignty of other nations, and undermine regional stability.... China presents its ambitions as mutually beneficial, but Chinese dominance risks diminishing the sovereignty of many states in the Indo-Pacific.”

On May 11, 2017, the two sides announced that China would open its markets to U.S. beef, biotechnology products, credit rating services, electronic payment services, and bond underwriting and settlement. The United States agreed to open its markets to Chinese cooked poultry and welcomed Chinese purchases of U.S. liquefied gas. Chinese officials also indicated their support for continuing negotiations for continuing the BIT negotiations, although the Trump Administration did not indicate its position on this proposal. Following the meeting, President Trump in a series of tweets appeared to indicate that he would link U.S. trade policy toward China with China's willingness to pressure North Korea to curb its nuclear and missile programs.

On July 19, 2017, the two sides held the first session of the CED in Washington, DC, which sought to build on the 100-day action plan through a new one-year action plan on trade and investment, seeking to achieve “a more balanced economic relationship.” The outcome of the meeting is unclear as, unlike past high-level meetings, no joint fact sheet was released. The U.S. side issued a short statement that said that “China acknowledged our shared objective to reduce the trade deficit which both sides will work cooperatively to achieve.” This led some U.S. observers to claim that the CED was marred with high tensions and disagreements, and failed to produce any meaningful results. They noted, for example, that China's CED representative, Vice Premier Wang Yang, stated that “[d]ialogue cannot immediately address all differences, but confrontation will immediately damage the interests of both.” Politico reported that China's excess steel capacity was a contentious issue and may have stalemated the talks.²¹⁹ The United States and China have not indicated if and when the CED talks will resume.

(...continued)

Meetings with President Xi of China, April 7, 2017, at <https://www.whitehouse.gov/the-press-office/2017/04/07/briefing-secretary-tillerson-secretary-mnuchin-and-secretary-ross>.

²¹⁹ Politico, “Steel topples U.S.-China talks,” July 20, 2017, at <http://www.politico.com/tipsheets/morning-trade/2017/07/20/steel-topple-us-china-talks-221440>.

The Trump Administration has taken a number of trade actions that have raised tensions with China in recent months and could result in a series of tit-for-tat retaliation. These include using Section 301 trade action against China's IPR policies and Section 232 tariffs on U.S. steel and aluminum imports.

The Administration's Section 301 Case on China's IPR Policies

On August 14, 2017, President Trump issued a Presidential Memorandum directing the USTR to determine whether it should launch a Section 301 investigation into China's protection of U.S. intellectual property rights (IPR) and forced technology transfer policies to determine their impact on U.S. economic interests.²²⁰ On August 18, 2017, the USTR announced it had launched a Section 301 case against China, the first use of Section 301 since 2010.²²¹

On March 22, 2018, President Trump signed a Memorandum on Actions by the United States Related to the Section 301 Investigation.²²² Described by the White House as a targeting of China's "economic aggression," the memorandum identified four broad IPR-related policies that justified U.S. action under Section 301. It said China (1) uses joint venture requirements, foreign investment restrictions, and administrative review and licensing processes to force or pressure technology transfers from American companies; (2) uses discriminatory licensing processes to transfer technologies from U.S. companies to Chinese companies; (3) directs and facilitates investments and acquisitions which generate large-scale technology transfer; and (4) conducts and supports cyberintrusions into U.S. computer networks to gain access to valuable business information. The USTR, which released a 215-page study of China's IPR policies that negatively impact U.S. stakeholders, estimated losses to the U.S. economy of at least \$50 billion per year.²²³

Under the Section 301 action, the Administration proposed to (1) implement 25% ad valorem tariffs on certain Chinese imports (which in sum are comparable to U.S. trade losses), including color TVs, machinery parts, electrical parts, and motor vehicles, (2) initiate a WTO dispute settlement case against China's "discriminatory" technology licensing (which it did on March 23); and (3) propose new investment restrictions on Chinese efforts to acquire sensitive U.S. technology.

At his March 22 announcement on Section 301 and China, President Trump stated the following: "We have a tremendous intellectual property theft situation going on, which likewise is hundreds of billions of dollars. And that's on a yearly basis. I've spoken to the President. I've spoken to representatives of China. We've been dealing with it very seriously." However, he went on to mention other non-IPR issues. He said that the United States had a trade deficit with China of either \$504 billion or \$375 billion, which he called "the largest deficit of any country in the history of our world." He also stated that he had spoken to Chinese officials, including President Xi to "reduce the trade deficit immediately by \$100 billion." He further emphasized that trade should be "reciprocal," claiming that the United States assessed a 2% import tariff on Chinese

²²⁰ Sections 301 through 310 of the Trade Act of 1974, as amended, are commonly referred to as "Section 301." It is one of the principal statutory means by which the United States enforces U.S. rights under trade agreements and addresses "unfair" foreign barriers to U.S. exports.

²²¹ For additional information, see CRS In Focus IF10708, *Enforcing U.S. Trade Laws: Section 301 and China*, by (name redacted).

²²² The document is available at <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-actions-united-states-related-section-301-investigation/>.

²²³ USTR, *Press Release*, March 22, 2018, available at <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/march/president-trump-announces-strong>.

cars while China charged a 25% tariff. Finally, Trump noted that the two sides were “in the midst of a very large negotiation” on trade.²²⁴ China has sharply criticized the proposed U.S. Section 301 actions. On March 24, a spokesperson for China’s Ministry of Commerce (MOFCOM) stated the following:

The U.S acts in disregard of China’s efforts to strengthen the protection of intellectual property rights and the voices of the broad masses of the industry, ignoring WTO rules. It is a typical unilateralism and trade protectionism, to which China firmly opposes. This move by the U.S. is neither conducive to the interests of China, nor those of the United States. It also goes against the global interests, a very bad precedent. China will not sit idly in the event of damages to own legitimate rights and interests. We are fully prepared to defend our legitimate interests. With regard to the 301 investigation, China has clearly stated its position on many occasions. China does not want to fight a trade war, but it is absolutely not afraid of that. We are confident and capable of meeting any challenge. It is hoped that the U.S. will pull back before it is too late and not drag bilateral economic and trade relations into danger.²²⁵

According to a March 26 Reuters article, China’s WTO Ambassador Zhang Xiangchen said that the U.S. use of Section 301 sanctions violated its WTO commitments, and warned that “the WTO is under siege and all of us should lock arms to defend it.” He asserted that “WTO members should jointly ... lock this beast back into the cage of the WTO rules.”²²⁶

However, A U.S. representative at the WTO countered China’s contention by stating the following:

More broadly, the WTO system is not threatened -- as China claims -- where a Member takes steps to address harmful, trade distorting policies not directly covered by WTO rules. To the contrary, what does threaten the WTO is where a Member, such as China, asserts that the mere existence of the WTO prevents any action by any Member to address unfair, trade-distorting policies -- unless those policies are currently subject to WTO dispute settlement.... If the WTO is seen instead as protecting those Members that choose to adopt policies that can be shown to undermine the fairness and balance of the international trading system, then the WTO and the international trading system will lose all credibility and support among our citizens.²²⁷

On April 3, the USTR released a list of proposed 25% ad valorem tariffs on about \$50 billion worth of Chinese products. The USTR stated that the proposed tariffs targeted Chinese products in sectors related to China’s high technology industrial policies, such as “Made in China 2025.”²²⁸ The USTR identified aerospace, information and communication technology, robotics, and machinery as sectors targeted by the Section 301 list.

China responded on April 4 with a list targeting various U.S. products, including soybeans, aircraft, and motor vehicles and parts, that would be subject to 25% ad valorem tariffs if U.S.

²²⁴ The White House, *Remarks by President Trump at Signing of a Presidential Memorandum Targeting China’s Economic Aggression*, March 22, 2018, available at <https://www.whitehouse.gov/briefings-statements/remarks-president-trump-signing-presidential-memorandum-targeting-chinas-economic-aggression/>.

²²⁵ MOFCOM, *the MOFCOM Spokesman Comments on the U.S. 301 Investigation Decision*, March 24, 2018, available at <http://english.mofcom.gov.cn/article/newsrelease/policyreleasing/201803/20180302723374.shtml>.

²²⁶ Reuters, “China urges WTO members: Put U.S. tariff ‘beast back in the cage,’” March 26, 2018, available at <https://www.reuters.com/article/us-usa-china-trade-wto/china-urges-wto-members-put-u-s-tariff-beast-back-in-the-cage-idUSKBN1H2151>.

²²⁷ Inside U.S. Trade, “U.S., China tussle over Section 301’s compatibility with WTO rules at DSB,” March 29, 2018.

²²⁸ The Made in China 2025 initiative is discussed in more detail in the Appendix.

Section 301 tariffs went into effect. On the same day, China initiated a WTO dispute settlement case against the United States over the Section 301 action.²²⁹ On April 5, President Trump asked the USTR to propose additional tariffs on \$100 billion worth of Chinese products. On the same day USTR Robert Lighthizer issued a statement about President Trump's request, saying the following:

President Trump is proposing an appropriate response to China's recent threat of new tariffs. After a detailed investigation, USTR found overwhelming evidence that China's unreasonable actions are harming the U.S. economy. In the light of such evidence, the appropriate response from China should be to change its behavior, as China's government has pledged to do many times. Economies around the world – including China's own – would benefit if China would implement policies that truly reward hard work and innovation, rather than continuing its policies that distort the vital high-tech sector. Unfortunately, China has chosen to respond thus far with threats to impose unjustified tariffs on billions of dollars in U.S. exports, including our agricultural products. Such measures would undoubtedly cause further harm to American workers, farmers, and businesses. Under these circumstances, the President is right to ask for additional appropriate action to obtain the elimination of the unfair acts, policies, and practices identified in USTR's report.²³⁰

On May 3-4, the two sides held high-level talks in Beijing. The U.S. side released a draft Framework for Discussion. It included calls for China to reduce the bilateral trade imbalance by \$200 billion over two years; address each of the four IPR practices identified in the Section 301 findings; halt subsidies for the Made in China 2025 initiative; remove foreign investment restrictions, make China's tariff levels comparable to U.S. tariff rates and remove certain nontariff barriers; improve market access for U.S. service providers and agricultural products; and agree not to oppose, challenge, or take any other action against the United States' action, including in the WTO, if China failed to live up to a framework agreement.

On May 19, the United States and China released a joint statement outlining progress on a number of trade issues. China agreed that it would "significantly increase purchases of United States goods and services," including U.S. agricultural and energy products. China also said it would strengthen its IPR laws and regulations, including on patents. On May 21, U.S. Secretary of the Treasury Steven Mnuchin stated that a framework agreement had been reached with China and that both sides had suspended threatened trade sanctions. He estimated that U.S. exports of agricultural products to China could increase by 35-40% in 2018 and that U.S. energy exports to China could double.

However, on May 29, the White House announced that it planned to move ahead with the proposed Section 301 sanctions against China by imposing 25% ad valorem tariffs on \$50 billion worth of imports from China, including those related to the Made in China 2025 initiative (final list of imports to be issued by June 15); (2) implementing new investment restrictions and enhanced export controls on Chinese entities and persons in regards to the acquisition of "industrially significant technology" for national security purposes (details to be released by June 30); and (3) continuing to pursue the WTO case against China's licensing policies (initiated on March 23). The White House further stated that it would request China to remove "all of its many trade barriers" and make taxes and tariffs between the two countries "reciprocal in nature and value." A May 29 statement from the Chinese government said that the White House actions were

²²⁹ See China's request for WTO consultations at https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds543_e.htm.

²³⁰ USTR, *Press Release*, April 5, 2018, at <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/april/ustr-robert-lighthizer-statement>.

“clearly contrary to the recent agreement between the two sides.” Following a visit by a U.S. trade delegation to China on June 3, the Chinese government warned that “all economic and trade outcomes of the talks will not take effect if the U.S. side imposes any trade sanctions, including raising tariffs.”

On June 15, the USTR announced a two-stage plan to impose 25% ad valorem tariffs on \$50 billion worth of Chinese imports. Under the first stage, U.S. tariffs would be increased on 818 tariff lines on roughly \$34 billion worth of Chinese products on July 6. For the second stage, the USTR proposed increasing tariffs on 228 tariff lines on \$16 billion worth of Chinese imports, mainly targeting China’s industrial policies. When China on June 16 issued its own two-stage retaliation plan against the United States, President Trump directed the USTR on June 18 to come up with a new list of that would increase tariffs by 10% tariffs on \$200 billion worth of Chinese products, which would be imposed if China retaliated against U.S. tariffs, and he further warned that if China raised its tariffs yet again, the United States would pursue tariffs on another \$200 billion worth of Chinese products.

On July 6, the Trump Administration implemented the first round of tariff increases on \$34 billion worth of Chinese products.²³¹ China said it had taken measures to increase its import tariffs of U.S. products.²³² On the same day, the USTR announced procedures that it would use to consider requests for exclusions from the increased tariffs.²³³

Chinese and U.S. Commodities that could be Subject to Increased Tariffs

A breakdown of some of the commodities that could be the most impacted by U.S. and Chinese tariff increases related to U.S. action on Section 301 and Chinese reactions based on each country’s 2017 imports. **Table 11** lists the top 15 U.S. imports from China in 2017 that would be affected by the first round of U.S. 25% ad valorem tariffs that went into effect on July 6. Major commodities include certain motor vehicles, computer disk drives, pump parts, and printer parts. U.S. dependency on China as an import supplier for the covered products varies, but range from 1.4% for certain motor vehicles to 44.8% for light-emitting diodes.

Table 12 lists the top 15 commodities imported from China that would be covered by the USTR’s second proposed list (\$16 billion worth of products) that would be subject to additional 25% tariffs. Major commodities affected include certain electrical machinery; certain electronic integrated, circuits and micro-assemblies; certain iron and steel structures; and diodes for semiconductor devices.

Table 13 lists China’s top 15 commodities from the United States that would be impacted by Chinese retaliation against the United States’ first round of Section 301 25% tariff increases (covering \$34 billion worth of imports). Soybeans are by far the biggest import commodity that would be impacted, followed by certain motor vehicles, cotton, and sorghum. **Table 14** indicates China’s second stage retaliation list that could go into effect if the U.S. imposed 25% ad valorem tariffs on an additional \$16 billion worth of imported Chinese products. Major U.S. commodities that could be impacted include petroleum, liquefied propane, chemicals, and coal.

²³¹ See <https://www.cbp.gov/trade/programs-administration/entry-summary/section-301-trade-remedies-be-assessed-certain-products-china-effective-july-6-2018>.

²³² See <http://www.chinadaily.com.cn/a/201807/06/WS5b3eec6ca3103349141e1258.html>.

²³³ See <https://ustr.gov/sites/default/files/enforcement/301Investigations/FRN%20exclusion%20process.pdf>.

Table 11. U.S. Section 301 First Round 25% Tariffs Against China

Top 15 U.S. Imports from China Affected by Increased 25% Tariffs

HTS Number	HTS Description	2017 imports \$Millions	Percent of Total U.S. Imports (%)
87032301	Motor vehicles to transport persons, w/spark-ign. IC recip. piston engine, w/cyl capacity >1, 500cc but <=3, 000cc	1,420	1.4
84717040	ADP magnetic disk drive storage units, disk dia. n/ov 21 cm, not in cabinet, w/o attached external power supply, n/entered w/rest of a system	882	16.9
84139190	Parts of pumps, nesoi	814	30.2
84439920	Parts of printer units of subheading 8443.32.10 specified in additional U.S. note 2 to this chapter	691	29.4
84819090	Parts of taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, nesoi	672	27.6
85269100	Radio navigational aid apparatus, other than radar	671	23.9
84314990	Parts suitable for use solely or principally with the machinery of heading 8429 or 8430, nesoi	670	22.9
85414020	Light-emitting diodes (LED's)	638	44.8
85256020	Transmission apparatus incorporating reception apparatus, other than transceivers	619	42.8
85366940	Connectors: coaxial, cylindrical multi-contact, rack and panel, printed circuit, ribbon or flat cable, for a voltage not exceeding 1,000 V	533	26.3
85443000	Insulated ignition wiring sets and other wiring sets of a kind used in vehicles, aircraft or ships	498	4.8
85365090	Switches nesoi, for switching or making connections to or in electrical circuits, for a voltage not exceeding 1,000 V	483	20.3
88033000	Parts of airplanes and helicopters, nesoi	460	3.2
84186901	Refrigerating or freezing equipment nesoi	456	30.0
84807180	Molds for rubber or plastics, injection or compression types, other than for shoe machinery or for manufacture of semiconductor devices	426	22.1
	Total top 15	9,933	--

Source: USTR and Global Trade Atlas.**Notes:** Nesoi stands for not elsewhere specified or included.

Table 12. U.S. Section 301 Second (Proposed) List of 25% Tariffs Against China
 Top 15 U.S Imports in 2017 That Could be Covered by Increased 25% Tariffs

HTS number	HTS Description	U.S. 2017 Imports \$
85437099	Other machinery in this subheading (Electrical machinery and apparatus, having individual functions)	1,471
85423100	Processors and controllers, whether or not combined with memories, converters, logic circuits, amplifiers, clock and timing circuits, or other	1,116
85423200	Memories	754
73089095	Iron or steel, structures (excluding prefab structures of 9406) and parts of structures, nesoi	711
85423900	Electronic integrated circuits, nesoi	705
85414060	Diodes for semiconductor devices, other than light-emitting diodes, nesoi	562
85030095	Other parts, nesoi, suitable for use solely or principally with the machines in heading 8501 or 8502 (Electric motors and generators, and Electric generating sets and rotary converters)	485
84869000	Parts and accessories of the machines and apparatus for the manufacture of semiconductor devices, electronic integrated circuits and flat panels	480
85363080	Electrical apparatus for protecting electrical circuits, for a voltage not exceeding 1,000 V, nesoi	347
86090000	Containers (including containers for transport of fluids) specially designed and equipped for carriage by one or more modes of transport	335
84079090	Spark-ignition rotary or reciprocating internal-combustion piston engines, for machinery or equipment nesoi	310
84862000	Machines and apparatus for the manufacture of semiconductor devices or electronic integrated circuits	288
85411000	Diodes, other than photosensitive or light-emitting diodes	280
85013140	DC motors, nesoi, of an output exceeding 74.6 W but not exceeding 735 W	271
90251980	Thermometers, for direct reading, not combined with other instruments, other than liquid-filled thermometers	253
	Top 15	8,621

Source: USTR and Global Trade Atlas

Notes: Nesoi stands for not elsewhere specified or included.

Table 13. China's First Round of Retaliatory 25% Tariffs Against the United States:
Top 15 Chinese Imports from the United States Impacted by Increased Tariffs

HTS number	HTS Description	2017 Chinese imports \$millions	Percent of total Chinese imports (%)
12019010	Yellow Soya Beans, Not For Cultivation	13,959	35.1
87032362	Cross-Country Cars (4Wd) With Only Spark-Ignition Internal Combustion Reciprocating Piston Engine, 2500Cc< Cylinder Capacity≤3000Cc	5,428	36.6
87032342	Cross-Country Cars (4Wd) With Only Spark-Ignition Internal Combustion Reciprocating Piston Engine, 1500Cc< Cylinder Capacity≤2000Cc	2,363	50.3
87038000	Motor Vehicles Designed Mainly For Transport Of Persons, With Only Electric Motors For Propulsion	1,403	96.5
52010000	Cotton, Not Carded Or Combed	980	44.9
10079000	Grain Sorghum (Excl. For Sowing)	956	93.3
02064900	Edible Offal Of Swine, Frozen (Excl. Livers)	874	41.4
87032343	Station Wagons, Seats≤9, With Only Spark-Ignition Internal Combustion Reciprocating Piston Engine, 1500Cc< Cylinder Capacity≤2000Cc	861	18.7
87084099	Parts For Gear Boxes For Tractors, Motor Vehicles	660	12.7
87032363	Station Wagons, Seats≤9, With Only Spark-Ignition Internal Combustion Reciprocating Piston Engine, 2500Cc< Cylinder Capacity≤3000Cc	609	80.4
12149000	Other Forage Products, not elsewhere specified	399	77.5
87032413	Hearses	367	28.4
87032353	Station Wagons, Seats≤9, With Only Spark-Ignition Internal Combustion Reciprocating Piston Engine, 2000Cc< Cylinder Capacity≤2500Cc	366	85.5
03031200	Other Frozen Pacific Salmon	295	67.0
10011900	Durum Wheat (Excl. Seed For Sowing)	289	57.1
	Total Top 15	29,809	

Source: Global Trade Atlas and USTR

Notes: Calculations made by CRS.

Table 14. China's Second Proposed Retaliatory Tariffs on Section 301 Action:
Top 15 Chinese Imports from the United States that Could be Impacted by Increased Tariffs

HTS Number	HTS Description	2017 Imports (\$millions)
27090000	Petroleum Oils & Oils Obtained From Bituminous Minerals, Crude	3,149
27111200	Propane, Liquefied	1,761
38249999	Chemical Products and Preparations Of The Chemical Or Allied Industries, N.E.S.O.I.; Residual Products Of The Chemical Or Allied Industries	775
38220090	Prepared Diagnostic Or Laboratory Reagents, not elsewhere specified	557
27011210	Coking Coal, Whether Or Not Pulverized, Non-Agglomerated	427
39269090	Articles of plastics, not elsewhere specified	368
38151200	Supported Catalysts With Precious Metal Or Its Compounds	360
39074000	Polycarbonates, In Primary Forms	331
39199090	Plates, Sheets, Film, Foil, Tape And Other Flat Shapes Of Plastics, Self-Adhesive, not elsewhere specified	326
39209990	Plates, Sheets, Film, Foil And Strip Of Plastics, Not Self-Adhesive, Non-Cellular, Not Reinforced Or Laminated Etc., not elsewhere specified or included	304
39041090	Other Poly, Not Mixed With Any Other Substances	270
39079999	Polyesters, In Primary Forms, not elsewhere specified	241
90221400	Apparatus Based On The Use Of X-Rays, For Medical,	237
27131190	Other petroleum coke, not calcined	236
39072090	Other Polyethers In Primary Forms	230
	Total Top 15	9,572

Source: Global Trade Atlas and Chinese Ministry of Finance.1

Economic Effects of Section 301 Tariff Increases

It is difficult to measure the possible economic impact that increased tariffs could have on the U.S., Chinese, and global economy, in part because it is unclear how extensive such tariffs will be employed by both sides and whether other commercial restrictions will be used as well. For example, in addition to raising tariffs on imported U.S. products, China could:

- Encourage its citizens to boycott American products and services;²³⁴
- Impose new restrictions and regulations on the commercial activities of U.S. firms in China (such as limiting U.S. FDI in China);
- Selectively increase “enforcement” of its laws and regulations against U.S. entities (e.g., boosting health and safety inspections of imported U.S. commodities or delaying customs clearance);
- Reduce its holdings of U.S. Treasury securities; and

²³⁴ According to the U.S. Bureau of Economic Analysis, sales by foreign affiliates of U.S. firms in 2015 totaled \$481 billion in 2015.

- Urge Chinese firms to seek non-U.S. suppliers of goods as services, such as buying more planes from Airbus and fewer from Boeing.

Various studies have been released that attempt to quantify the impact that a set amount of increased tariffs would have on the U.S. economy. For example, an April 2018 report prepared by Trade Partnership Worldwide for the Consumer Technology Association and National Retail Federation estimated the economic and unemployment effects tariff increases (stemming from U.S. Section 301 action) could have based on three scenarios: (1) the United States increases tariffs on \$50 billion worth of Chinese imports and China does not respond; (2) the United States increases tariffs on \$50 worth of Chinese imports and China retaliates in kind; and (3): both the United States and China impose tariffs on \$150 billion worth of imports from each other.²³⁵ The report estimated that under the third scenario, the U.S. economy could be impacted as follows:

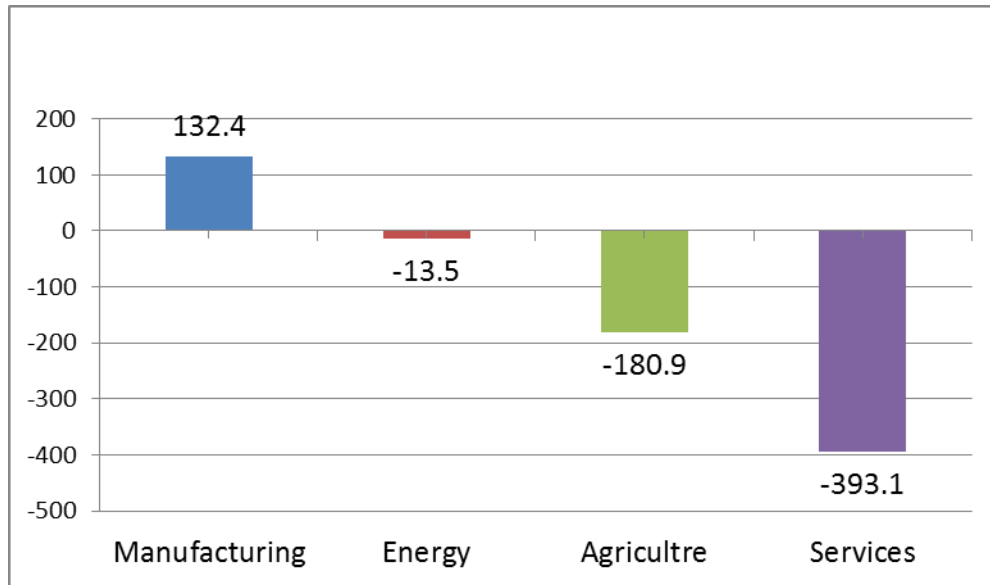
- U.S. GDP could fall by 0.26% or \$49.2 billion (2016 dollars);
- Farm property income could fall by 15.01%;
- U.S. exports and imports could drop by \$105.5 billion and \$341.2 billion, respectively (2016 dollars);
- U.S. net employment could fall by 457,796 jobs (including 123,362 higher skilled workers and 331,434 lower skilled workers); and
- In terms of the distribution of job gains and losses, the manufacturing sector would gain 132,475 jobs, but net losses would occur in other sectors, including energy (at -13,305 jobs), agriculture (-180,904 jobs), and services (-393,063 jobs) (see Figure 18).²³⁶

²³⁵ The third scenario reflects the original U.S. threat to increase tariffs on \$50 billion worth of Chinese products and President Trump's threat on April 5 to impose additional tariffs against China on \$100 billion worth of imports if China retaliated against the United States.

²³⁶ Trade Partnership Worldwide, LLC, *Tariffs on Imports from China: The Estimated Impacts on the U.S. Economy*, April 30, 2018, available at <http://tradepartnership.com/wp-content/uploads/2018/04/China-301-Tariffs-FINAL.pdf>.

Figure 18. Estimated Sector Effect on U.S. Employment if Both U.S. and China Increased Tariffs by 25% on \$150 Billion Worth of Imports from Each Other.

(thousands of net jobs gained or lost)



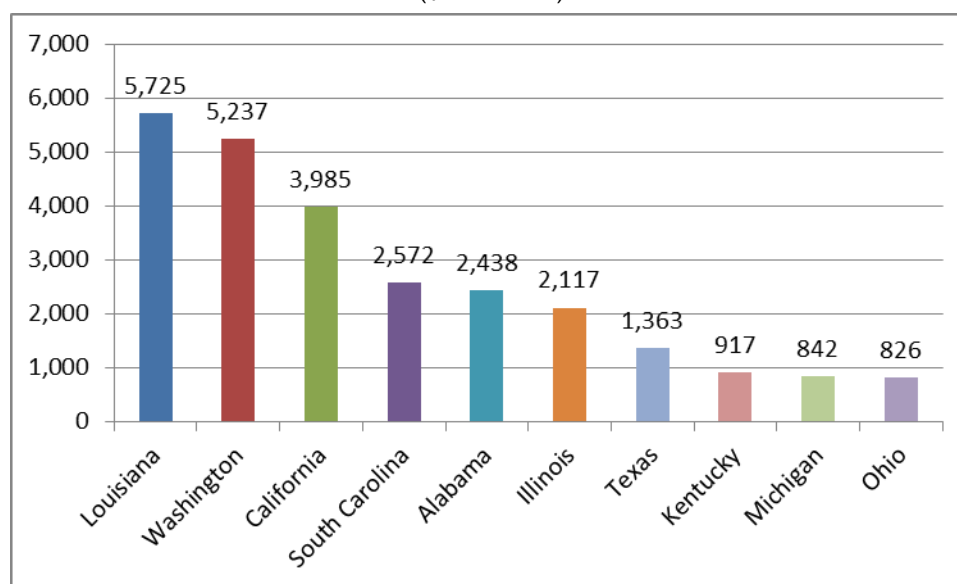
Source: Trade Partnership Worldwide, LLC.

An analysis by the U.S. Chamber of Commerce of the possible trade effects from Chinese retaliation of U.S. Section 301 action (based on the two lists China has issued) estimated that total U.S. exports could fall by \$30.6 billion. The states estimated to experience the largest export decline include Louisiana (at \$5.7 billion), Washington State (\$5.2 billion), California (\$4.0 billion), South Carolina (\$2.6 billion), and Alabama (\$2.4 billion) (see **Figure 19**).²³⁷

²³⁷ U.S. Chamber of Commerce, *New Analysis Outlines State-by-State Impact of Tariffs*, July 2, 2018, available at <https://www.uschamber.com/press-release/new-analysis-outlines-state-state-impact-of-tariffs>.

Figure 19. Estimate of the Top 10 States that Could be Impact by Lost Exports if China Retaliated Against U.S. Section 301-Related Tariffs

(\$ in Millions)



Source: U.S. Chamber of Commerce.

Notes: Total state export losses were estimated at \$30.6 billion.

Section 232 Tariffs on Steel and Aluminum

On March 8, 2018, the Trump Administration announced that it would impose additional imports tariffs on steel (by 25%) and aluminum (10%), based on national security justifications under the 1962 Trade Act, as amended. China appears to have been a major target of the action since it accounts for half of global production of both commodities. Yet, in terms of import quantity, China was the 10th-largest supplier of steel and 4th-largest for aluminum. On March 26, China requested consultations with the United States over the Section 232 action on steel and aluminum, arguing that they were safeguard measures and not justifiable on national security grounds. On April 1, 2018, China announced that it had raised duties (by 15% to 25%) on 128 tariff lines covering imports from the United States, including pork products, aluminum waste and scrap, and fruits and nuts, which together totaled about \$3 billion in 2017. On April 9, China initiated a WTO dispute settlement case against the U.S. use of Section 232 tariffs, arguing that the measure were in fact safeguards measures. **Table 15** lists the top 10 U.S. commodities impacted by the increased tariffs. These include pork, aluminum waste and scrap, and various fruits and nuts.

Table 15. China's Retaliatory Tariffs Against the U.S. for Steel and Aluminum

Top 10 Imports in 2017

HTS Commodity	HTS Description	2017 Imports from U.S. (\$millions)	Tariff increase
02064900	Edible Offal Of Swine, Frozen (Excl. Livers)	874	25%
76020000	Waste And Scrap, Aluminum	832	25%
08025100	Fresh Or Dried Pistachios, In Shell	175	15%

HTS Commodity	HTS Description	2017 Imports from U.S. (\$millions)	Tariff increase
08092900	Fresh Cherries (Excl. Sour Cherries)	170	15%
02032900	Other Frozen Swine Meat	168	25%
02032200	Hams, Shoulders And Cuts Thereof, Of Swine, Bone In, Frozen	118	25%
08051000	Oranges, Fresh Or Dried	87	15%
73045910	Tubes, Pipes And Hollow Profiles	76	25%
22042100	Other Wine & Grape Must With Fermentation Prvntd By Alcohol, Containers≤2L	76	15%
08021200	Almonds, Fresh Or Dried ,Shelled Or Peeled	68	15%
	Total top 10	2,644	

Source: Chinese Ministry of Commerce and Global Trade Atlas.

Implications of Recent Trade Action against China

China's economic rise has had both positive and negative effects on the United States. On the one hand, China's past economic and trade reforms have made China an increasingly significant market for U.S. exporters, a central factor in U.S. global supply chains, and a major source of low-cost goods for U.S. consumers. On the other hand, China has not fully transitioned to a free-market economy. The Chinese government continues to intervene in many parts of the economy (such as through the use of subsidies and trade and investment barriers), which often distort markets (prices) domestically and globally. China accounts for 37% of U.S. antidumping and countervailing orders currently in place as of June 2018. Many analysts argue that China has been the largest factor in global overcapacity in a number of industries, including steel and aluminum.

China has indicated a number of objectives and plans to boost innovation and the competitiveness of a number of Chinese industries in order to maintain relatively healthy economic growth. Yet, a number of those initiatives appear to include industrial policies that subsidize and protect domestic Chinese firms, aimed in part to reduce China's reliance of foreign technology, such as the Made in China 2025 initiative.

Some see China as a free rider in the global trading system. While China made significant concessions to enter the WTO in 2001, it was allowed to continue to maintain significant barriers on various sectors of the economy (especially in regard to FDI and services). Many U.S. policymakers charge that China's implementation of its WTO commitments has been fair at best and has failed to meet the expectations of significantly expanded market access in China. This has increasingly led U.S. policymakers to seek options to press China to move away from distortive economic policies and to liberalize its trade and investment regimes. The Obama Administration sought to negotiate a high standard BIT with China to address many of its concerns over China's FDI restrictions, although an agreement was not reached by the end of President Obama's term. The Trump Administration has not expressed interest in resuming the BIT talks even though China has.

President Trump's January 2017 decision to withdraw the United States from the Trans-Pacific Partnership (TPP) free trade agreement (FTA) has been viewed by many analysts as a blow to U.S. efforts to induce economic and trade liberalization in China.²³⁸ Prior to the U.S. pull-out of TPP, Chinese officials had expressed interest in eventually joining the agreement, in part to avoid being economically marginalized by an FTA of countries constituting 40% global GDP. The TPP agreement signed by the United States was described as a "high standard agreement." It included enhanced IPR protection, liberalized provisions on digital trade, and new rules governing SOEs. The remaining 11 TPP members on March 8, 2018, concluded the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).²³⁹ Many analysts contend that the U.S. withdrawal from TPP weakened U.S. economic leverage with China and damaged U.S. credibility in Asia.

The Trump Administration and some Members of Congress have advocated taking a harder line against China in regard to its economic and trade policies. A number of goals and justifications have been offered. Some argue that greater efforts should be made to require China to afford U.S. firms the same market access Chinese companies enjoy in the United States. Others contend that WTO agreements do not cover (or adequately cover) many of the policies and practices that China employs to protect and support its industries and therefore argue that the United States should act unilaterally (including the threat of sanctions) when U.S. economic interests are at stake. Others argue that U.S. trade remedy laws should be more aggressively used to stop imports of Chinese products that have been dumped in the United States or subsidized by the Chinese government, in order to afford greater protection to U.S. firms and workers from China's unfair trade practices. Finally, some policymakers have advocated for a more forceful response to Chinese industrial policies that seek to force foreign firms to transfer technology or lock U.S. technology firms out of China's markets through domestic content requirements. A number of congressional Members have expressed concerns over the efforts of Chinese to acquire U.S. high technology firms or assets, and many have called for reforms to the CFIUS review process to flag Chinese mergers that may impact the global competitiveness of U.S. economic sectors.

Others support a more balanced approach to dealing with China that seeks to use the multilateral process in the WTO to resolve major trade disputes, high-level forums to address complex and long-term economic and trade issues, and negotiated trade agreements to boost market access in China. Supporters of this view contend that the imposition of unilateral trade sanctions by the United States (outside the WTO process) against China could result in rounds of economically damaging retaliation and counter-retaliation. Some critics of the Trump Administration's approach to trade policy contend that focusing too much on bilateral trade imbalances to judge the benefits or fairness of U.S. trade relations with various countries contradicts basic economic theory that only the overall trade balance matters and is the result of macroeconomic forces, not unfair trade policies. In addition, U.S. trade data is a poor measurement of who benefits from trade because it fails to reflect the value that was added in each country before it was shipped to its final destination. Many U.S. products imported from China (such as iPhones) contain inputs from numerous countries, which are not reflected in U.S. trade data. Therefore, some contend, it makes little sense to make reducing trade imbalances the top priority in trade negotiations with China (and other countries). Rather, the central focus of trade negotiations, they argue, should be

²³⁸ Others saw the TPP as a "high standard" agreement that would be used as the framework for more comprehensive FTA's, such as the proposed Free Trade Area of the Asia-Pacific (FTAAP). Some analysts view the U.S. withdrawal from TPP as a blow to U.S. credibility in Asia-Pacific and an opportunity for China to advance its economic goals in the region, including the negotiation of regional FTAs where China is the chief architect.

²³⁹ For additional information on the CPTPP, see CRS Insight IN10822, *TPP Countries Sign New CPTPP Agreement without U.S. Participation*, by (name redacted) and (name redacted) .

the reduction of trade and investment barriers that are deemed by the United States as having the most significant impact in limiting U.S. trade flows, measuring the impact from a reduction of those barriers, but refraining from using trade balance data to measure the success or failure of such actions. President Trump's comments about his request to President Xi to reduce the U.S. trade deficit with China, while announcing Section 301 action against China's IPR policies, made it appear to some observers that deficit reduction, not improvements to China's IPR regime, was the Administration's real motive for using Section 301. The Trump Administration's focus on China's tariff levels and its demand that all tariff be reciprocal is also puzzling to some observers. While China's average tariff levels are higher than U.S. tariffs, they are largely what China agreed to when it joined the WTO in 2001 tariff levels.²⁴⁰ Observers contend that China implemented most of its scheduled WTO tariff reductions one time. China's tariff levels are rarely cited as a major trade barrier by U.S. firms doing business in China, especially compared to the numerous non-tariff barriers and FDI restrictions they face there.

Many analysts have raised concern that unilateral trade action by the United States against China (and other countries under Section 232) could undermine the multilateral trading system and negatively impact global economic growth. For example, on March 23, 2018, WTO Director-General Roberto Azevêdo stated the following:

I encourage members to continue working through the WTO's many forums and mechanisms to deal with their concerns and explore potential solutions. Actions taken outside these collective processes greatly increase the risk of escalation in a confrontation that will have no winners, and which could quickly lead to a less stable trading system. Disrupting trade flows will jeopardize the global economy at a time when economic recovery, though fragile, has been increasingly evident around the world. I again call for restraint and urgent dialogue as the best path forward to resolve these problems.²⁴¹

²⁴⁰ China has reduced or eliminated tariffs on various products under agreements with its FTA partners or through plurilateral agreements in the WTO, such as the Informational Technology Agreement.

²⁴¹ World Trade Organization, *Statement by Director-General Azevêdo in relation to the Council on Trade in Goods*, March 23, 2018, available at https://www.wto.org/english/news_e/news18_e/dgra_23mar18_e.htm.

Appendix. Chinese Policies to Boost Innovation²⁴²

Made in China 2025

On May 19, 2015, the Leading Group for Creating a Strong Manufacturing Country, a task force created by China's State Council, released the Made in China 2025 initiative. Made in China 2025 is a comprehensive plan to upgrade the Chinese manufacturing sector, focused largely on making intelligent information and communications technology (ICT)-based machines, systems, and networks manage the industrial process, otherwise known as "smart production."²⁴³ China's slowing economy and the unsustainability of its "growth at any costs" model have led the government to focus on new sources of growth, such as promoting innovation.

Although it is the largest manufacturing sector in the world, China is still a relatively weak manufacturer when it comes to core technology and innovation.²⁴⁴ The innovation gap, desire to avoid the middle-income trap,²⁴⁵ and the slowing economy have all reportedly pushed the Chinese government to pursue the Made in China 2025 plan to move the manufacturing sector up the value chain, shifting from "Made in China" to "Made by China."²⁴⁶

Priorities

The Made in China 2025 plan was the first of a "three step" strategy involving 10-year national plans to transform China into a leading high-value manufacturing economy by 2049, which will mark the 100th anniversary of the founding of the People's Republic of China (PRC). According to the Minister of Industry and Information Technology, Miao Wei, "By 2025, China will basically realize industrialization nearly equal to the manufacturing abilities of Germany and Japan at their early stages of industrialization."²⁴⁷

The goals of Made in China 2025 are split into four key categories: innovation, quality efficiency, smart manufacturing, and green development. There are 9 priority tasks, 10 sectors, and 5 definitive projects with timelines that can be sorted into those four categories. The nine priority tasks laid out in Made in China 2025 include improving manufacturing innovation, integrating technology and industry, strengthening green manufacturing, promoting breakthroughs in 10 key sectors, advancing restructuring of the manufacturing sector, promoting manufacturing-related service industries, and internationalizing manufacturing. The 10 key sectors identified include new information technology, numerical control tools and robotics, aerospace equipment, ocean engineering equipment and high-end vessels, high-end rail transportation equipment, energy

²⁴² Written by (name redacted), Research Associate, Foreign Affairs, Defense, and Trade Division.

²⁴³ Germany Trade & Invest, *Industrie 4.0: Smart Manufacturing for the Future*, Berlin, Germany, July 2014, http://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/Brochures/Industries/industrie4.0-smart-manufacturing-for-the-future-en.pdf.

²⁴⁴ Li Hui, "Made in China 2025: How Beijing is revamping its manufacturing sector," *South China Morning Post*, June 9, 2015.

²⁴⁵ The middle-income trap is a theoretical "trap" in which a country has attained a certain level of per capita income, but is unable to keep up with fully developed countries.

²⁴⁶ "Still made in China," *The Economist*, September 12, 2015, print edition.

²⁴⁷ Yamei Wang, "Made in China 2025" plan unveiled to boost manufacturing," *Xinhua*, May 19, 2015.

saving and new energy vehicles, electrical equipment, and agricultural machinery.²⁴⁸ Within Made in China 2025, there are also five projects with definitive goals and timelines:²⁴⁹

- Construction of 15 manufacturing innovation centers by 2020, with 40 by 2025.
- Creation of 1,000 green demonstration factories and 100 green demonstration zones by 2020 and reduced primary pollution emissions by 20%.
- Decreased operating costs for smart manufacturing pilot projects by 30%, shortened production timelines by 30%, and lower rates of defective products by 30%, with decreased costs, timelines, and defects by another 20% by 2025.
- Increased self-sufficiency in development infrastructure by 40% of infrastructure components and key infrastructure materials by Chinese sources by 2020, with an increase to 80% by 2025.
- New indigenous research and development (R&D) in key sectors by 2020 with the goal of achieving significant market share growth in indigenous IP for high-value equipment by 2025.

Made in China 2025 also references strengthened security reviews for investment, mergers and acquisitions, and procurement in manufacturing sectors that are related to national economy and national security; promoting indigenous or domestic innovation; enlarging tax policies for smart manufacturing, and enhancing cooperation with foreign companies in areas such as health care, aviation, and basic manufacturing.

The plan calls for Chinese firms to invest abroad, become familiar with overseas cultures and markets, and strengthen investment and operation risk management before investing. According to a report by CSIS, if China genuinely decides to embrace intelligent manufacturing, it could become easier for Chinese companies and multinational corporations (MNCs) to collaborate both in China and abroad and possibly “reduce the zero-sum elements of the business relationship.”²⁵⁰ In addition, if China successfully upgrades its manufacturing capacities, there is also a likely chance of improved overall economic governance, including financial and fiscal systems, a strengthened educational system, and increased access to varied sources of information.

The Made in China 2025 is one component of China’s plan to become a center and leader of innovation. Deputy Head of the Ministry of Industry and Information Technology Li Beiguang said that the key to a country becoming a manufacturing power is innovation, and “to promote manufacturing and national competitiveness, it is important to mobilize every conceivable element to stimulate innovation rather than simply support a single industry.”²⁵¹

Issues

Made in China 2025 has faced criticisms on its viability. Some analysts say that China will succeed with its more modest goals, such as the immediate aims to improve the quality, productivity, digitization, and expansion of numerically controlled machines, which are all

²⁴⁸ State Council of the People’s Republic of China, “‘Made in China 2025’ plan issued,” press release, May 19, 2015, http://english.gov.cn/policies/latest_releases/2015/05/19/content_281475110703534.htm.

²⁴⁹ Dan Markus and Nick Marro, “‘Made in China’ Now ‘Made by China’: Update,” *The U.S.-China Business Council*, May 27, 2015.

²⁵⁰ Scott Kennedy, *Made in China 2025*, Center for Strategic and International Studies, June 1, 2015, <https://www.csis.org/analysis/made-china-2025>.

²⁵¹ Yamei Wang, “‘Made in China 2025’ plan unveiled to boost manufacturing,” *Xinhua*, May 19, 2015.

already used by manufacturers in developed countries. However, they contend that other goals, such as encouraging companies to use 3D printing and adopting robotics are or may be unrealistic.

Trade Implications

The ambiguity surrounding the language of Made in China 2025 objectives may impact foreign MNCs that operate within China and interact with Chinese companies globally. Made in China 2025 mentions “strengthened security reviews” for investments, mergers and acquisitions, and procurement in manufacturing areas related to the national economy and national security, which are not clearly defined. Language in the Made in China 2025 plan also seeks to boost indigenous innovation. For example, it lists the goal of ensuring that domestic Chinese firms will handle the majority of local infrastructure development with specific timetables. For example, the plan states that 40% of core infrastructure components and key infrastructure materials should come from Chinese sources by 2020 and to increase further to 80% by 2025.²⁵² This has led to concerns that such goals will discriminate against foreign firms.

Internet Plus

The Internet Plus plan was announced to the National People’s Congress on March 5, 2015 by Premier Li Keqiang, as part of the Report on the Work of the Government (2015), with a follow-up implementation plan issued by the State Council on July 4, 2015.²⁵³ With 721 million users as of 2016, China has the largest absolute number of people in the world using the internet.²⁵⁴ The plan reportedly came out of an effort to push for more innovation, as many Chinese leaders view innovation as the key to avoiding the middle-income trap. Additionally, there is still the prevailing idea in China, especially in the rural regions, that enterprises in the traditional sectors do not know how to link their businesses to the internet.²⁵⁵ According to the United States Information Technology Office, launched in cooperation with the Department of Commerce’s International Trade Administration, China’s Internet Plus seeks to “drive economic growth by integration of internet technologies with manufacturing and business.”²⁵⁶

Goals

In his speech on the Internet Plus plan during the 2015 Report on the Work of the Government, Premier Li Keqiang described the plan as such: “We will develop the ‘Internet Plus’ action plan to integrate the mobile internet, cloud computing, big data, and the Internet of Things with modern manufacturing to encourage the healthy development of e-commerce, industrial networks, and internet banking, as well as guide internet-based companies to increase their presence in the international market. In addition to the 40 billion yuan government fund already in place for investment in China’s emerging industries, more funds need to be raised for promoting business

²⁵² Dan Markus and Nick Marro, “‘Made in China’ Now ‘Made by China’: Update,” *The U.S.-China Business Council*, May 27, 2015.

²⁵³ “国务院关于积极推进“互联网+”行动的指导意见” (“Guiding Opinions on Actively Promoting the “Internet Plus Action Plan”) (in Chinese), July 4, 2015, http://www.gov.cn/zhengce/content/2015-07/04/content_10002.htm.

²⁵⁴ “Internet Users by Country (2016),” *Internet Live Stats*, (2016).

²⁵⁵ Gao Yuan, “Internet Plus plan a real wake-up call for Chinese companies,” *China Daily*, March 10, 2016.

²⁵⁶ United States Information Technology Office, “China Pursues “Internet Plus” Strategy,” press release, 2015, <http://www.usito.org/news/china-pursues-internet-plus-strategy>.

development and innovation.”²⁵⁷ Premier Li reiterated these points in the 2016 Report on the Work of the Government, but also highlighted the need to improve the efficiency of communication between governmental departments to cut down on “red tape.”²⁵⁸

Internet Plus has four primary goals: (1) upgrade and strengthen the security of the internet infrastructure, (2) expand access to the internet and related technologies, (3) make social services more convenient and effective, and (4) increase both the quality and effectiveness of economic development.²⁵⁹ The plan also maps development targets and supportive measures for key sectors, such as mass entrepreneurship and innovation, manufacturing, agriculture, energy, finance, public services, logistics, e-commerce, traffic, biology, and artificial intelligence.²⁶⁰ In order to achieve these goals, the Chinese government will reportedly clear barriers and lower limits for the market entry of Internet Plus-related products, optimize the credit system, and draft a big data strategy and promote legal services for companies that pursue the Internet Plus system. The government has also expressed interest in training and making better use of local and foreign talent, providing financial support and tax preferences to key projects, launching more pilot zones as well as encouraging innovation demonstration zones and local governments to come up with their own plans aligned to Internet Plus. Chinese authorities have also promised that families in large cities will have access to 100 megabyte-per-second internet, and that broadband services will reach 98% of the population living in incorporated villages. According to the Seconded European Standardization Expert in China (SESEC), a project co-financed by the European Union, the Chinese government has created a new investment fund worth 40 billion RMB, or approximately \$6 billion, to further promote new industry innovation and entrepreneurship under Internet Plus.²⁶¹

Internet Plus is intertwined with other economic plans outlined by the Chinese government. For example, a goal of Internet Plus, which is restated in the 13th Five-Year Plan, is to increase the percentage of research and development spending as part of GDP from 2.1 to 2.5.²⁶² The Chinese government has also tied Internet Plus to the “One Belt One Road” Initiative, an effort to boost development and economic connectivity across three continents, encouraging Chinese internet companies to increase their efforts in the global market.

Issues

The release of Internet Plus and Made in China 2025, and the notable mention of both plans in the 13th Five-Year Plan, are all efforts by the Chinese government to increase the growth rate of the economy. Within Internet Plus, there is an emphasis on innovation that the government believes will result from the integration of the internet with economic and social sectors and that an

²⁵⁷ State Council of the People’s Republic of China, “Full Text: Report on the Work of the Government (2015),” press release, March 16, 2015, http://english.gov.cn/archive/publications/2015/03/05/content_281475066179954.htm.

²⁵⁸ State Council of the People’s Republic of China, “Full Text: Report on the Work of the Government (2016),” press release, March 17, 2016, http://english.gov.cn/premier/news/2016/03/17/content_281475309417987.htm.

²⁵⁹ Lincoln E. Davidson, “Internet Plus and the Salvation of China’s Rural Economy,” July 17, 2015.

²⁶⁰ State Council of the People’s Republic of China, “China unveils Internet Plus action plan to fuel growth,” press release, July 4, 2015, http://english.gov.cn/policies/latest_releases/2015/07/04/content_281475140165588.htm.

²⁶¹ Betty Xu, *China Internet Plus Strategy*, Seconded European Standardization Expert in China, February 5, 2015, http://sesec.eu/app/uploads/2015/06/2015_05_SESECIII_Newsletter_April_2015_Annex02_China_Internet_Plus_Strat....pdf.

²⁶² “中华人民共和国国民经济和社会发展第十三个五年规划纲要,第三章: 主要目标” (“People’s Republic of China 13th Five-Year Plan for National Economic and Social Development, Chapter 3: Main Targets”) (in Chinese), March 17, 2016, <http://www.sdpc.gov.cn/fzgggz/fzgh/ghwb/gjjh/201603/P020160318564052484043.pdf>.

increasing trend of innovation will benefit from government intervention. Some experts raise concerns about a “helping hand,” contending that government intervention could slow the beneficial effect start-ups have on the economy. Gordon Chang in a *Forbes Magazine* article, for example, contends that “perhaps the worst thing for tech companies is direct government support, which means meddling by central, provincial, and local officials.”²⁶³ Chang also pointed out that new e-commerce companies, like the ones that Internet Plus aims to create, may be net job-destroyers by contributing to the closing of “brick-and-mortar” shops, and that many of these new companies may be “zombie shops.” Press reports point out the lack of reference to “freedom of the Internet” in Internet Plus, leading them to question how strict internet censorship would be, especially with the trend of increased censorship since Xi Jinping became president in 2012.²⁶⁴ They also mention that if Beijing continues to censor access to information, Internet Plus may increase consumer shopping, instead of having any significant and long-term impact on the economy.

Analysts have also criticized the implementation of Internet Plus. Internet Plus places a large emphasis on modernizing the agricultural sector of the economy, but agencies tasked with overseeing the implementation of Internet Plus for agriculture include the Ministry of Agriculture; National Development and Reform Commission; Ministry of Science and Technology; Ministry of Commerce; General Administration of Quality Supervision, Inspection, and Quarantine; China Food and Drug Administration; and the State Forestry Administration. A lack of coordination could lead to problems with Internet Plus, including the misallocation of state resources, redundant or contradictory policies, and opportunities for local officials to exploit policy overlaps for their own profits.²⁶⁵

Implications

There are both positive and negative implications for the United States if Internet Plus is implemented as the Chinese government intends it. Seconded European Standardization Expert in China (SESEC) notes that transforming and upgrading key sectors could open up new sectors, highlighting the example of how mobile internet reforms promoted the development of taxi-hailing apps in a previously closed vehicle transportation and operation market. If Internet Plus is successful, an example of a possible sector that could open up is the agricultural industry, as there has been some emphasis on modernizing the sector, specifically moving from network sale sectors like e-commerce to the production sector.²⁶⁶

Some analysts speculate that Internet Plus could increase censorship, further closing off high-tech sectors from China and halting innovation. During the announcement of Internet Plus, Premier Li Keqiang mentioned more precise web management to “clean up illegal and bad information” to “strengthen the struggle against enemies in online sovereign space and increase control of online public sentiment.”²⁶⁷ In its 2016 U.S.-China Business Council (USCBC) Recommendations for the U.S.-Joint Commission on Commerce and Trade (JCCT), USCBC recommended ensuring

²⁶³ Gordon G. Chang, “China’s ‘Internet Plus’ Strategy, A Net Minus,” *Forbes*, April 19, 2015.

²⁶⁴ George Chen, “Can Li Keqiang’s Internet Plus strategy really save China?,” *South China Morning Post*, March 8, 2015.

²⁶⁵ Lincoln E. Davidson, “‘Internet Plus’ and the Salvation of China’s Rural Economy,” *The Diplomat*, July 17, 2015.

²⁶⁶ Betty Xu, *China Internet Plus Strategy*, Seconded European Standardization Expert in China, February 5, 2015, http://sesec.eu/app/uploads/2015/06/2015_05_SESECIII_Newsletter_April_2015_Annex02_China_Internet_Plus_Strat....pdf.

²⁶⁷ Lulu Chang, “China Outlines its Latest Five Year Plan, Called Internet Plus,” *Digital Trends*, March 6, 2016.

“that regulations calling for ‘secure and controllable,’ ‘secure and reliable,’ and similarly worded standards included in existing policy documents do not discriminate against foreign companies or procurement of foreign IT equipment and do not create unnecessary requirements that will not enhance the security of networks.”²⁶⁸

National Informatization Development Strategy

On August 31, 2015, China released its “National Informatization Development Strategy,”²⁶⁹ or big data development plan.²⁷⁰ In July 2016, China released its Outline of the National Informatization Development Strategy, a guiding document that explains the regulations and direction of information-based development in China over the next 10 years.²⁷¹

According to the United States Information Technology Office, the outline calls for core information technology, such as integrated circuits and basic software to create a core technology system; strengthened IPR and standards; improved protection regulations for IPR; implementation of a multi-level classification information management system; accelerated lawmaking process for relevant policies; emphasis on the importance of international cyberspace development and administration cooperation; implementation of network identity administration regulations; and tightened control over all internet news services and platforms.²⁷² The outline also emphasizes the leadership of the Central Network Security and Informatization Leading Group, led by President Xi Jinping.

The outline sets targeted goals for the next 10 years that will be reached by both 2020 and 2025. By 2020, China wants to strengthen its domestic industry by specifically focusing on certain core technologies,²⁷³ providing internet access to an additional 350 million people by expanding 3G and 4G services, and achieving breakthroughs in 5G technology. By 2025, China wants to further improve household fixed-broadband connectivity rates, build a leading mobile telecommunications network, and increase information consumption values to 12 trillion RMB (U.S. \$1.79 trillion) and e-commerce trading values to 67 trillion RMB (U.S. \$10 trillion).²⁷⁴

Implications

The National Informatization Development Strategy builds upon the ICT and big data goals set in the 13th Five-Year Plan, Internet Plus, and Made in China 2025. However, as some have noted, the outline differentiates itself from the other goals set in these other plans in that it is bolder with

²⁶⁸ The US-China Business Council, *2016 US-China Business Council Recommendations for the US-China Joint Commission on Commerce and Trade (JCCT)*, 2016, <https://www.uschina.org/sites/default/files/2016%20USCBC%20JCCT%20Recommendations.pdf>.

²⁶⁹ “促进大数据发展行动纲要” (“National Informatization Development Strategy”) (in Chinese), http://www.gov.cn/zhengce/content/2015-09/05/content_10137.htm.

²⁷⁰ Office of the United States Trade Representative, *2015 USTR Report to Congress on China’s WTO Compliance*, December 2015, <https://ustr.gov/sites/default/files/2015-Report-to-Congress-China-WTO-Compliance.pdf>.

²⁷¹ United States Information Technology Office, “State Council Released an Outline of the National Informatization Development Strategy,” press release, 2016, <http://www.usito.org/news/state-council-released-outline-national-informatization-development-strategy>.

²⁷² Ibid.

²⁷³ Core technologies include products such as integrated circuits and broadband networks.

²⁷⁴ “Outline of the National Informatization Development Strategy,” *China Copyright and Media*, July 27, 2016.

a nationalistic frame.²⁷⁵ The strategy further emphasizes the need for China to strengthen its domestic industry, easing its dependence off of foreign sectors.

Efforts to Promote an Indigenous Semiconductor Industry

In June 2014, the Chinese government released a plan called “Guidelines to Promote National Integrated Circuit Industry Development.” A year later, the government announced an investment of 1 trillion RMB, or 161 billion USD, in the domestic semiconductor industry to be developed over the next 10 years.²⁷⁶ The guidelines to improve the semiconductor industry are split into three main strategies: mergers and acquisitions (M&A), market power, and regulation. According to the U.S. International Trade Administration, “the Chinese government appears to be driven by a desire to acquire know-how in all segments of the semiconductor supply chain,” resulting in heavy recruitment of foreign talent by the Chinese government.²⁷⁷ China wants to “catch up technologically” with other leading semiconductor firms by 2030 and produce 70% of the chips consumed by the Chinese industry.²⁷⁸

China purchases over half of all semiconductors produced each year globally, but lacks the capabilities in its domestic semiconductor industry to back up its consumption. In 2014, China accounted for 56.6% of the global consumption of semiconductors, and its demand grew at an 18.8% compounded annual growth rate between 2003 and 2014.²⁷⁹ In order to build up domestic industries and promote indigenous innovation, China wants to lessen its dependency on U.S. technology, especially in the semiconductor industry. Chinese consumption of semiconductors in 2015 was 9% domestically produced and 91% foreign, of which 56.2% was made in the United States, while domestic Chinese chips accounted for less than one-tenth of local demand.²⁸⁰ Globally, China makes up 4% of global semiconductor sales, and views its reliance on foreign companies as a national security concern.

Issues

Analysts have compared the Chinese ambitions to the rise of the Taiwanese semiconductor industry, but point out differences between the two situations. According to *The Economist*, Taiwan was able to succeed because they entered the market during an industry shift to a model that separated the design and fabrication of the chip. However, when Taiwan tried to enter the market for memory chips, it failed due to the lack of a transitional period in the industry. Currently, the global semiconductor industry is facing a period of relatively slow growth. This, in combination with the maturing of the global semiconductor industry, or the increased complexity of semiconductor chips and their associated software, could, some argue, make it more difficult for Chinese firms to succeed.²⁸¹

²⁷⁵ Frank Zhao and Jesse Heatley, “China’s Master Plan for IT Dominance,” *The Diplomat*, August 11, 2016.

²⁷⁶ Ma Xiaochun and Zhang Qian, “The chips are up,” *People’s Daily*, August 5, 2015.

²⁷⁷ International Trade Administration, *China, 2016 Top Markets Report Semiconductors and Semiconductor Manufacturing Equipment Country Case Study*, 2016, http://trade.gov/topmarkets/pdf/Semiconductors_China.pdf.

²⁷⁸ “Chips on their shoulders,” *The Economist*, January 23, 2016, Print edition.

²⁷⁹ Dezan Shira & Associates, *Chips All In: Investing in China’s Semiconductor Industry*, March 2, 2016, <http://www.china-briefing.com/news/2016/03/02/chips-all-in-investing-in-chinas-semiconductor-industry.html>.

²⁸⁰ Ian King, “China Has Big Plans for Homegrown Chips,” *Bloomberg Businessweek*, June 25, 2015.

²⁸¹ “Chips on their shoulders,” *The Economist*, January 23, 2016, Print edition.

Other criticisms include the methods and goals that China has undertaken to develop its semiconductor industry. As of March 2016, China, through its Integrated Circuit (IC) Industry Investment Fund, has invested 43 billion RMB (6.61 billion USD) to expand its semiconductor industry, with much of the money going toward mergers and acquisitions.²⁸² Analysts note that simply acquiring the technology will not help improve China's competitiveness in the long run, but will only increase the profit margin for China temporarily. Intel alone spends four times as much on research and development on its semiconductors as the entire Chinese chip industry.²⁸³

The emphasis on increasing domestic demand for domestically made chips is also a concern. Some analysts note that the emphasis on domestically made chips assumes that Chinese firms will buy Chinese-produced microchips because they are made in China, disregarding the idea that the same firms might buy foreign microchips because they are of better quality.²⁸⁴ If Chinese-produced microchips are of lesser quality, but the Chinese government guides companies toward buying domestically made products, China could end up with a domestic industry that lacks global competitiveness. A government mandate for Chinese high tech firms to use Chinese-made chips could also undermine their global competitiveness as well.

Implications

The United States is a leading actor in the global semiconductor industry, and has great interest in Asia, with U.S. semiconductor exports to the broader Asia-Pacific region representing 85% of total U.S. semiconductor goods exported in 2014 at \$36.5 billion. Between 2014 and 2015, semiconductor exports grew from \$8.03 billion to \$8.45 billion, a growth of 5.2%; 82% of all semiconductor products produced in the United States are sold to customers overseas, supporting 250,000 U.S. jobs and an additional 1 million jobs in related sectors. In 2015, U.S. companies accounted for 50% of total semiconductor sales.²⁸⁵ The Department of Commerce's International Trade Administration views policies promoting Chinese domestic industries as "potentially discriminatory" and posing "real long-term threats to not only U.S. firms, but the entire semiconductor ecosystem."²⁸⁶

In the short term, some note that there will be larger investment in both U.S. and foreign companies that develop semiconductors, but in the long term, it is possible that once Chinese companies have the intellectual property, there could be less reliance on U.S. companies. In January 2016, the Chinese provincial government of Guizhou and U.S. firm Qualcomm signed an agreement to form a new joint venture (with an initial registered capital of \$280 million), focusing on the "design, development and sale of advanced server chipset technology in China." The Guizhou provincial government investment arm will have a 55% controlling share.²⁸⁷ Qualcomm will provide investment capital, license its server technology to the joint venture, and assist with R&D process and implementation expertise.

²⁸² Bien Perez, "China's chip industry bolstered by acquisitions worth US\$6.61 billion by government-backed fund," *South China Morning Post*, March 30, 2016.

²⁸³ "Chips on their shoulders," *The Economist*, January 23, 2016, Print edition.

²⁸⁴ *Ibid.*

²⁸⁵ Semiconductor Industry Association, *U.S. Semiconductor Industry Supports the Trans-Pacific Partnership*, <http://www.semiconductors.org/clientuploads/directory/DocumentSIA/International%20Trade%20and%20IP/TPP%20Benefits%20to%20the%20Semiconductor%20Industry-%20March%202016.pdf>.

²⁸⁶ International Trade Administration, *China, 2016 Top Markets Report Semiconductors and Semiconductor Manufacturing Equipment Country Case Study*, 2016, http://trade.gov/topmarkets/pdf/Semiconductors_China.pdf.

²⁸⁷ Qualcomm, Press Release, January 17, 2016, available at <https://www.qualcomm.com/news/releases/2016/01/16/qualcomm-and-guizhou-province-sign-strategic-cooperation-agreement-and-form>.

If China successfully develops its semiconductor industry, it may enjoy a bigger share of the global electronics industry's profits, as profit margins for successful semiconductor firms are around 40% or more. Analysts say that there will be a continuation of strong, but slowing growth in demand for semiconductors by China and a large increase in their demand for semiconductor manufacturing equipment in the short term as China continues to develop their industry.²⁸⁸

On January 2017, the President's Council of Advisors on Science and Technology issued a report on U.S. semiconductor innovation, competitiveness, and security, which warned that a "concerted push by China to reshape the market in its favor, using industrial policies backed by over one hundred billion dollars in government-directed funds, threatens the competitiveness of U.S. industry and the national and global benefits it brings," and that such policies "put U.S. national security at risk."²⁸⁹

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²⁸⁸ *The Economist*, "Chips on their shoulders," January 23, 2016.

²⁸⁹ The White House, Office of Science and Technology Policy, Report on Ensuring Long-Term U.S. Leadership in Semiconductors, January 6, 2017, available at https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_ensuring_long-term_us_leadership_in_semiconductors.pdf.

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