

USCC 2015 ANNUAL REPORT



2015
REPORT TO CONGRESS
of the
**U.S.-CHINA ECONOMIC AND
SECURITY REVIEW COMMISSION**

ONE HUNDRED FOURTEENTH CONGRESS
FIRST SESSION

NOVEMBER 2015

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



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U.S. GOVERNMENT PUBLISHING OFFICE
WASHINGTON : 2015



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The Commission was created on October 30, 2000, by the Floyd D. Spence National Defense Authorization Act for 2001 §1238, Pub. L. No. 106-398, (Oct. 30, 2000) (codified at 22 U.S.C. §7002 (2001)); as amended by the Treasury and General Government Appropriations Act for 2002 §645 (regarding employment status of staff) & §648 (regarding changing annual report due date from March to June), Pub. L. No. 107-67, (Nov. 12, 2001); as amended by Division P of the “Consolidated Appropriations Resolution, 2003,” Pub. L. No. 108-7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of Commission); as amended by the Science, State, Justice, Commerce, and related agencies Appropriations Act of 2006, Pub. L. No. 109-108 (Nov. 22, 2005) (regarding responsibilities of Commission and applicability of FACA); as amended by Pub. L. No. 110-161 (Dec. 26, 2007) (regarding changes in annual report due date, submission of financial reports, printing and binding of Congressional reports, employee compensation and performance reviews, and applicability of House rules for travel by members and staff); as amended by the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015 §1259b, Pub. L. No. 113-291 (Dec. 19, 2014) (regarding changes to matters for discussion in the annual reports of the Commission).

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

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

NOVEMBER 18, 2015
The Honorable Orrin Hatch,
President Pro Tempore of the U.S. Senate, Washington, DC 20510
The Honorable Paul D. Ryan,
Speaker of the U.S. House of Representatives, Washington, DC 20510

DEAR SENATOR HATCH AND SPEAKER RYAN:

On behalf of the U.S.-China Economic and Security Review Commission, we are pleased to transmit the Commission's 2015 Annual Report to the Congress—the thirteenth major Report presented to Congress by the Commission—pursuant to Public Law 106-398 (October 30, 2000), as amended by Public Law No. 109-108 (November 22, 2005), as amended by Public Law No. 110-161 (December 26, 2007), as amended by Public Law No. 113-291 (December 19, 2014). This Report responds to the mandate for the Commission “to monitor, investigate, and report to Congress on the national security implications of the bilateral trade and economic relationship between the United States and the People’s Republic of China.” The Commission reached a broad and bipartisan consensus, approving the Report by a vote of 11 ayes to 1 nay.

In accordance with our mandate, this Report, which is current as of October 27, includes detailed treatment of many of the areas identified by Congress for our examination and recommendation. These areas are:

- The qualitative and quantitative nature of the transfer of United States production activities to the People’s Republic of China, including the relocation of manufacturing, advanced technology and intellectual property, and research and development facilities, the impact of such transfers on the national security of the United States (including the dependence of the national security industrial base of the United States on imports from China), the economic security of the United States, and employment in the United States, and the adequacy of United States export control laws in relation to the People’s Republic of China;
- The effects of the need for energy and natural resources in the People’s Republic of China on the foreign and military policies of the People’s Republic of China, the impact of the large and growing economy of the People’s Republic of China on world energy and natural resource supplies, prices, and the environment, and the role the United States can play (including through joint research and development efforts and technological assistance) in influencing the energy and natural resource policies of the People’s Republic of China;
- Foreign investment by the United States in the People’s Republic of China and by the People’s Republic of China in the

United States, including an assessment of its economic and security implications, the challenges to market access confronting potential United States investment in the People's Republic of China, and foreign activities by financial institutions in the People's Republic of China;

- The military plans, strategy and doctrine of the People's Republic of China, the structure and organization of the People's Republic of China military, the decision-making process of the People's Republic of China military, the interaction between the civilian and military leadership in the People's Republic of China, the development and promotion process for leaders in the People's Republic of China military, deployments of the People's Republic of China military, resources available to the People's Republic of China military (including the development and execution of budgets and the allocation of funds), force modernization objectives and trends for the People's Republic of China military, and the implications of such objectives and trends for the national security of the United States;
- The strategic economic and security implications of the cyber capabilities and operations of the People's Republic of China;
- The national budget, fiscal policy, monetary policy, capital controls, and currency management practices of the People's Republic of China, their impact on internal stability in the People's Republic of China, and their implications for the United States;
- The drivers, nature, and implications of the growing economic, technological, political, cultural, people-to-people, and security relations of the People's Republic of China's with other countries, regions, and international and regional entities (including multilateral organizations), including the relationship among the United States, Taiwan, and the People's Republic of China;
- The compliance of the People's Republic of China with its commitments to the World Trade Organization, other multilateral commitments, bilateral agreements signed with the United States, commitments made to bilateral science and technology programs, and any other commitments and agreements strategic to the United States (including agreements on intellectual property rights and prison labor imports), and United States enforcement policies with respect to such agreements; and
- The implications of restrictions on speech and access to information in the People's Republic of China for its relations with the United States in economic and security policy, as well as any potential impact of media control by the People's Republic of China on United States economic interests.

The Commission conducted seven public hearings, taking testimony from 62 witnesses from the executive branch, industry, academia, think tanks and research institutions, and other organizations. For each of these hearings, the Commission produced a transcript (posted on its website at www.uscc.gov). The Commission

received a number of briefs by executive branch agencies, the Intelligence Community, and the Department of Defense, including classified briefings on China's naval modernization, China's offensive missile forces, China's activities in the South China Sea and Indian Ocean, and cyber counterintelligence issues related to China. The Commission is preparing a classified report to Congress on these and other topics. The Commission also received briefs by foreign diplomatic and military officials as well as U.S. and foreign non-governmental experts.

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

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

The Report includes 37 recommendations for Congressional action. Our ten most important recommendations appear on page 32 at the conclusion of the Executive Summary.

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

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

Yours truly,



William A. Reinsch
Chairman



Dennis C. Shea
Vice Chairman

Commissioners Approving the 2015 Report


Dennis C. Shea, Vice Chairman


Carolyn Bartholomew, Commissioner


Peter Brookes, Commissioner


Robin Cleveland, Commissioner


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Commissioner Dissenting from the 2015 Report


William A. Reinsch, Chairman

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EXECUTIVE SUMMARY

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

Section 1: Year in Review: Economics and Trade

Although China's gross domestic product (GDP) reportedly grew at 7 percent in the first half of 2015, the year was marked by record-setting downturns and mismanaged government interventions in the workings of China's economy. China has acknowledged that its economy, which over the past three decades has been driven by high levels of investment in export-oriented manufacturing capacity and infrastructure, needs to shift to a consumption-driven growth model. To address this structural imbalance, newly installed Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping laid out a sweeping economic reform agenda in the 2013 Third Plenary Session of the 18th CCP Central Committee (hereafter "Third Plenum").* However, responding to signs of economic weakness in 2015, including falling global exports, China's government resorted to stimulus measures to chase growth targets by rolling back some reforms, intervening in an effort to control the faltering stock market, and devaluing its currency, the renminbi (RMB).

Following a rapid climb in the first half of 2015, Chinese stocks began falling in mid-June, wiping out about \$4 trillion in value. Given the importance of the stock market in propping up sluggish economic growth, the Chinese government responded to the collapse with a heavy hand: ordering brokerages to buy shares, forbidding large shareholders from selling, sending police to root out "malicious" sellers, ordering state-owned companies and pension funds to invest in equities, and halting trading in many companies. The government also censored information, punished journalists for focusing on the bad news, and warned people against spreading "rumors" about the stock market rout.

China's unfair treatment of U.S. companies exporting to or investing in China and Beijing's failure to uphold its World Trade Organization commitments continue to trouble the bilateral relationship. Despite China's manufacturing slowdown, a substantial Chinese trade surplus continues to sour the U.S. trade relationship with China. In 2014, the U.S. goods trade deficit with China increased by 7.5 percent year-on-year to \$342.6 billion, a record. In the first eight months of 2015, the U.S.-China trade deficit in goods was \$237.3 billion, 9.7 percent increase over the same period in 2014. China's surprise devaluation of the RMB in August also

*Although President Xi said at the Third Plenum that the market will play a "decisive" role in all aspects of the economy, the Chinese government's view of economic reform emphasizes continued dominance of the state in the economy.

raised concerns among some observers and policymakers that China was once again trying to boost its exports by manipulating the RMB to make exports cheaper. The devaluation came amid China's efforts to promote a greater international role for the RMB, including making it one of the reserve currencies used by the International Monetary Fund. China's aspirations for the RMB as an international currency conflict with its practice of limiting the currency's convertibility and exposure to international currency markets.

Conclusions

- In 2014, the U.S. goods trade deficit with China increased by 7.5 percent year-on-year to \$342.6 billion, a new record. In the first eight months of 2015, the U.S. trade deficit in goods with China totaled \$237.3 billion, a 9.7 percent increase year-on-year. Over the same period, U.S. deficit with China in advanced technology products reached \$72.7 billion. China stalled on liberalizing key sectors in which the United States is competitive globally, such as services.
- As a consequence of domestic economic weakness, China's stated rebalancing policies appear to have been put on hold. Instead, fearful of a protracted slowdown, the Chinese government has been intervening in various sectors of the economy, including the stock market. However, the government's intervention, which failed to arrest the stock market's fall and stabilize the economy, undermined public confidence in the ability of China's policymakers to successfully manage the economy.
- Although it has been ten years since China moved the renminbi (RMB) to a managed float, the government continues to intervene in foreign exchange markets. For the first half of 2015 the government has prevented the RMB from depreciating, seeking its inclusion in the International Monetary Fund's Special Drawing Rights basket of reserve currencies. However, on August 11, the People's Bank of China unexpectedly devalued the RMB, giving rise to fears among observers and policymakers that the economic slowdown was becoming entrenched.
- The U.S. government's efforts to address tensions in the U.S.-China relationship through bilateral dialogue continue to yield limited results. The latest Strategic and Economic Dialogue concluded with some progress on environmental and financial issues, but reached an impasse in addressing fundamental strategic and economic issues such as cybersecurity, anti-corruption cooperation, and investment barriers to foreign firms in many industries.
- President Xi came to the United States in September on a state visit, and although Presidents Obama and Xi discussed several issues of concern, including commercial cyber espionage by Chinese actors, there were few significant breakthroughs. Among outcomes were the statements by the two presidents that neither country will engage in cyber espionage (though China continued to deny any involvement in commercial cyber

theft) and commitments to enhance cooperation on combatting climate change.

- China’s adherence to the World Trade Organization principles and its Protocol of Accession remains spotty. Most recently, the Office of the U.S. Trade Representative has engaged China over a program that provides export subsidies considered illegal by the World Trade Organization to businesses in seven critical industries.
- China launched two new development institutions: the Asian Infrastructure Investment Bank and the New Development Bank. In addition to boosting China’s economy by creating export opportunities for its companies, the new banks aim to extend China’s role in the international economic order, potentially challenging established multilateral development institutions.

Section 2: Foreign Investment Climate in China

Although China has been a major destination for global foreign direct investment (FDI) over the past decade, it maintains the most restrictive FDI regime among all Organization for Economic Co-Operation and Development (OECD) and G20 countries, according to the OECD. The U.S. Department of State estimates that in addition to over 1,000 rules and regulatory documents related to FDI in China issued by central government ministries, local legislatures and governments also enact their own restrictive rules and regulations on foreign investments in their jurisdictions. Further, Chinese government administrators seek to ensure inbound FDI supports industrial policy goals—designed to bolster the development of domestic industries and the creation of national champions—by identifying different industries as desirable for or restricted from foreign investment. Taken together, these laws and policies—and uncertain application thereof—create a complicated, opaque, and unfavorable environment for foreign investment.

As a result of this restrictive legal and regulatory environment, the foreign investment climate in China is deteriorating. Though the majority of U.S. firms still consider China a profitable market, optimism about future operations and profitability there is waning. Foreign companies felt the least welcome in sectors where China’s industrial policies favor domestic companies and authorities impose localization requirements. Some of the problems highlighted by foreign companies are the lack of market access in certain sectors and the conditioning of market access on the transfer of technology, intellectual property (IP), or know-how to local competitors. China primarily maintains national-level market access restrictions through a Foreign Investment Catalogue, though local governments frequently employ region- or industry-specific Catalogues, further restricting access. Though Chinese authorities released an updated version of the Foreign Investment Catalogue in 2015 that reduced the number of sectors where foreign investment is restricted and prohibited, industries the Chinese government has long sought to nurture as national champions—such as automobiles and health-care—saw heightened restrictions.

In line with China's industrial policies, foreign investment into some sectors has shifted from encouraged to restricted or even prohibited. These fluctuations in China's foreign investment restrictions reflect a pattern whereby the government welcomes FDI into sectors designated as strategic for China's national economic development in order to extract technology and other advantages from foreign firms. However, after domestic industry is deemed sufficiently developed, policies welcoming investment are gradually withdrawn and new policies restricting investment are put in place to free up market space for domestic firms and push out foreign firms. Within a legal framework subject to convoluted rule-making procedures and designed to serve the interests of the CCP, U.S. investors seemingly have little or no recourse to protect their rights or effectively resolve disputes. Moreover, because "there are no accepted techniques for estimating the impact of [investment barriers] on U.S. investment flows," according to the Office of the U.S. Trade Representative, it is difficult to quantify the effect of China's restrictive investment policies.

In addition to market access limitations, foreign companies also cite discretionary, unclear legal and regulatory interpretation and weak or inconsistent enforcement as top business challenges in China. In recent years, a broad range of Chinese regulatory activities seem to have focused disproportionately on foreign investors across various industries of strategic importance to China's national economy. In 2013 and 2014, China's increased enforcement of its Anti-Monopoly Law (AML) in particular against high-profile foreign companies contributed to this perception. According to the U.S. Chamber of Commerce, Chinese enforcement agencies have used the law to pursue industrial policy objectives, and appear to use the threat of investigations against foreign firms to control price and supply of goods, to the benefit of Chinese market participants.

U.S. companies report that China's competition policy enforcement activities consider nonmarket factors, including industrial policy; are lacking in due process and regulatory transparency; and rely on legal language that is ambiguous and therefore open to a wide range of discretionary interpretation. For example, as of September 2015, all of the 26 transactions that were either rejected or conditionally approved by China's Ministry of Commerce—which reviews mergers and acquisitions for anticompetitive effects—involved foreign firms. Similarly, China's price-related AML enforcement agency, the National Development and Reform Commission (NDRC), appears to disproportionately enforce the law against foreign companies to achieve industrial policy goals unrelated to the protection of competition. The administrative decisions of the NDRC and local commissions are short on evaluation of the effect of a certain behavior on competition, and lacking in evidence of why an actor should be exempted from punishment or receive a heavier or reduced fine. The lack of an effective mechanism for controlling the overly broad discretion granted to enforcement agencies appears to result in inconsistent decisions and unequal treatment, to the benefit of domestic firms and industries.

U.S. companies are also concerned about the application of the law to holders of IP rights. Chinese authorities appear to use the

threat of AML investigations to attempt to lower the licensing fees charged to would-be Chinese licensees of certain technologies, effectively giving these Chinese firms a competitive advantage in domestic and global markets. Under a 2015 law addressing anti-competitive use of IP, China's State Administration for Industry and Commerce can effectively compel foreign holders of certain patents to license under unfavorable or unfair terms, to the benefit of domestic licensees. Moreover, the law's dearth of specific and objective criteria surrounding IP licensing leaves companies unable to predict reliably whether refusing to grant a license in particular circumstances or on particular terms or conditions would constitute a violation of the AML.

In an attempt to test incremental reform of its foreign investment framework, China has lowered restrictions in four free trade zones by streamlining the approval process and adopting a negative list approach, which restricts or prohibits investment only in those sectors listed, and permits investment in all others. Although the adoption of a negative list will likely be a positive development for foreign firms, foreign investment in restricted sectors will face a new national security review process. The scope of the new review has been expanded to include any foreign investment that may damage the national security of China. In effect, Chinese authorities will have broader discretion to review incoming foreign investments for perceived national security threats. U.S. business groups—the U.S. Chamber of Commerce, AmCham China, and AmCham in Shanghai—expressed concern about the review's broad definition of national security, which they believe is “heavily skewed in favor of protecting national interests that fall outside the widely accepted scope of essential national security concerns” and “likely to have a significant adverse impact on the flow of foreign investment into China.”

Chinese foreign investment authorities have also circulated a draft of a new foreign investment law, which will abolish the three existing laws governing foreign investment in China when it goes into effect no earlier than January 2016. In its current form, the draft law would significantly improve the legal and regulatory regime for a majority of foreign investment in China by eliminating approval requirements in nonrestricted sectors. Other aspects of the draft law, however, threaten to expand the scope of foreign investments subject to the increased discretionary power of approval authorities. For example, the draft law expands the definition of “foreign investor” to include instances where the person or entity with ultimate “control” over the company making the investment is foreign. In effect, this practice will allow Chinese authorities to treat variable-interest entities, a prevalent investment structure used by foreign investors to access restricted sectors of China's economy, with increased scrutiny and administrative discretion.

To rectify the low levels of bilateral investment, the United States is negotiating a Bilateral Investment Treaty with China. Proponents argue a high-standard agreement would present the opportunity to address and ban Chinese investment practices that are out of line with international business and legal standards, including unclear regulatory and legal enforcement, forced technology transfer, preferential policies for state-owned enterprises (SOEs),

and long-standing market access barriers. Critics of the agreement worry even a high-standard agreement will not be meaningfully enforceable as it conflicts with Beijing's stated development path. They also argue that the benefits of the agreement would be potentially limited because of China's continued efforts to restrict the number of sectors that will be covered.

Conclusions

- U.S. companies continue to invest in China despite an increasing number of challenges on the ground and declining profitability. Chinese government measures, policies, and practices contributing to the deteriorating foreign investment climate include inconsistent and unclear legal and regulatory enforcement, increasing Chinese protectionism, and other preferential policies benefitting domestic companies.
- Across industries, market access barriers continue to top the list of Chinese government measures that limit the ability and willingness of U.S. companies to invest in China. As a means to protect its domestic companies and industries, China restricts foreign investment in sectors in which the United States maintains competitive advantage, including research and development-intensive and value-added information services sectors.
- Fluctuations in China's foreign investment restrictions reflect a pattern whereby the government welcomes foreign direct investment into sectors deemed strategic for China's national economic development in order to extract technology, intellectual property, and know-how from foreign firms. However, after domestic industry is deemed sufficiently developed, policies welcoming investment are gradually withdrawn and new policies restricting investment are put in place to free up market space for domestic firms and push out foreign firms.
- China's Anti-Monopoly Law enforcement agencies—the Ministry of Commerce, the National Development and Reform Commission, and the State Administration of Industry and Commerce—have failed to treat identical or similar violations of the law equally, resulting in more leniency toward state-owned enterprises, more rigorous enforcement against foreign companies, and substantially varied penalties imposed on companies in similar circumstances, regardless of nationality of the controlling shareholder. The enforcement practices of the National Development and Reform Commission in particular are lacking in transparency, consistency, and fairness.
- The imbalance in expectations between domestic and foreign firms for reporting mergers and acquisitions to China's Ministry of Commerce in accordance with the Anti-Monopoly Law puts foreign-invested enterprises at a disadvantage by unfairly and disproportionately exposing them to increased scrutiny, regulatory uncertainty, approval delays, and associated costs.
- Chinese Anti-Monopoly Law enforcers' legal interpretations of monopolistic abuse of intellectual property by "dominant" firms

could have a significant impact on the licensing of intellectual property in China, particularly by firms that account for a large share of sales in the technology market or hold patents that are essential to an industry standard—as several prominent U.S. tech firms do.

- China’s commitments to seriously and significantly open up to foreign investment are overshadowed by new measures that reinforce longstanding market access barriers and discriminatory treatment toward foreign investors.
- Some aspects of China’s proposed foreign investment law—such as streamlined approval processes and the negative list approach—are encouraging, and signal a move toward fulfilling economic reform goals set forth in the Third Plenum and converging with international investment practices. Yet, some troubling provisions remain, including a broadly discretionary and expanded national security review mechanism and targeting of foreign companies using particular investment structures to access the market.

Section 3: China’s State-Led Market Reform and Competitiveness Agenda

Smaller returns from fixed asset investment, lower labor productivity gains, slower export growth, and severe environmental degradation are eroding the traditional drivers of China’s economic growth. China’s senior leadership has recognized the seriousness of these challenges and the threat they pose to the CCP’s ability to deliver prosperity—the basis of its legitimacy since Tiananmen. Reform attempts under President Hu Jintao (2002–2012) to shift away from large-scale infrastructure and export-led growth toward an economy driven by consumption and high-technology failed to overcome entrenched interests and were largely put aside to spur economic growth following the global financial crisis. Newly installed President Xi outlined an ambitious economic reform agenda at the Third Plenum in November 2013 to more aggressively address these challenges and ensure the CCP’s long-term hold on power. While this agenda claims it will allow the “market to play a decisive role in allocating resources,” the Chinese government intends to retain a central role in the economy.

Announced reforms are seeking to reorient the drivers of China’s economic growth toward domestic consumption, improve capital allocation and industry efficiency through state-set market incentives, and provide a higher quality of life for its citizens. But senior leadership’s commitment to reforms is once again wavering in the face of China’s slowest economic growth in 24 years, rising unemployment, and increased market volatility this year.

To boost domestic consumption as a new driver of economic growth, the Chinese government is expanding the social safety net, increasing urbanization through major infrastructure investments and the addition of 100 million rural migrants to cities, reforming “hukou,” China’s household registration system, and opening the service sector to competition from private domestic and foreign firms. The Chinese government has been more successful in retool-

ing its infrastructure investments toward urbanization needs, but has faced slow progress in opening the service sectors and reforming the hukou system due to strong resistance to reform from vested interests.

The Chinese government is also instituting fiscal and financial reforms aimed at improving allocation of capital and resources. Fiscal reforms are restructuring local government debt and sources of funding to address the rapid buildup of costly local government debt since the rollout of China's \$596 billion (RMB 4 trillion) stimulus program in 2009 and local governments' increasing difficulty in servicing these debts as economic growth slows. While these reforms have significantly reduced local government financing costs, the Chinese government backtracked on its efforts to rein in local government borrowing as it struggled to maintain employment and growth. In the financial sector, the Chinese government is attempting to move away from politically driven capital allocation by taking small steps to loosen state controls on interest rates, increase competition in the banking sector, introduce risk, and enhance capital convertibility. The Chinese government has reduced interest rate controls and permitted several Chinese Internet companies to enter the state-controlled banking sector, but it has struggled with the market volatility that defaults and capital flows create. The Chinese government reasserted state control over the stock market following major losses and stalled further efforts to introduce risk to the market. Furthermore, the Chinese government reaffirmed its intention to maintain control over capital flows, directly undermining its promises to loosen capital controls.

The Chinese government is seeking to enhance China's industrial competitiveness by pursuing SOE reform, higher-value-added manufacturing, and indigenous innovation. The government is attempting to improve productivity and global competitiveness of SOEs by increasing mixed ownership (partial privatization), and consolidating large SOEs in megamergers, while paradoxically reinforcing the role of the CCP and state over SOEs. The Chinese government is also accelerating its efforts to move up the value-added chain through the establishment of the Made in China 2025 and Internet Plus initiatives this year, and the continuation of its indigenous innovation policy. But continued state subsidies have created pervasive overcapacity in sectors such as steel, leading producers to flood world markets with outputs from these sectors. The Chinese government also seeks new demand for this excess production through urbanization and creation of infrastructure-focused projects via the "One Belt, One Road" initiative, Asian Infrastructure Investment Bank (AIIB), and New Development Bank.

The Chinese government is attempting to improve the quality of life for its citizens by meeting public demands for greater prosperity and a safe, healthy environment. Urbanization, hukou reform, higher-value-added manufacturing, and innovation initiatives are increasing wages and employment opportunities for the country's citizens. China is also pursuing a multipronged approach to address severe environmental degradation through government spending, emissions and water quality targets, stronger regulations and harsher penalties, environmental targets within the CCP and Chinese government promotion structure, public interest lawsuits,

and support for the development of the clean technology sector. Despite robust public spending and success in meeting most of its environmental targets, the Chinese government's efforts overall have fallen short in addressing the severity and fundamental causes of existing environmental degradation.

China's status as the world's most populous nation, second-largest economy, top trading nation, and largest manufacturer means its economic reform agenda—even if only partially implemented—has significant implications for the United States. China's focus on services and technology may create one of the world's largest consumer markets, generating up to \$6 trillion of new market opportunities for the service- and technology-centric U.S. economy. However, the enduring high market access barriers for U.S. investors are preventing fair market access. Furthermore, preferential government policies for domestic Chinese firms, megamergers of China's SOEs, and the recently announced Made in China 2025 and Internet Plus initiatives are seeking to dislodge established industry leaders and replace them with Chinese brands. Since many U.S. multinationals are global leaders in targeted sectors such as biotechnology, e-commerce, and energy, these policies could have negative implications for the future competitiveness of the United States.

Conclusions

- President Xi Jinping and Premier Li Keqiang announced an ambitious reform agenda at the Third Plenary Session of the Chinese Communist Party's (CCP) 18th Central Committee (the Third Plenum) in November 2013 to transition China's economy toward consumption-led growth and allow the market to play a "decisive role." However, these reforms still reserve a dominant role for the Chinese government in the economy. As the economy slows and markets have shown volatility, the Chinese government is once again stalling or rolling back reforms while resuscitating old levers of economic growth—fixed asset investments and export-led growth—in order to boost economic growth and maintain employment.
- The Chinese government is calling for greater CCP leadership within state-owned enterprises, while simultaneously subjecting them to market forces such as competition, mixed ownership, and consolidation. These policies merely reinforce state-owned enterprises' special status and do little to level the playing field for private sector and foreign competitors.
- China's efforts to upgrade its industries and enhance innovation are largely state driven and target sectors in which the United States currently enjoys technological advantage. Recent policies clearly favor domestic Chinese firms, placing pressures on U.S. firms to transfer technology and shift production to China, to the detriment of U.S. businesses and workers.
- China's growing level of consumption, increasing rate of urbanization, opening of the service sector, and massive spending on the environment and clean technology are creating one of the world's largest markets. However, strict market entry criteria,

opaque regulations, China-specific technical standards, state-set pricing, and preferential support for domestic firms are increasing the costs to compete in this market.

- While fiscal reforms have made progress in providing new sources of local government revenue such as bonds and new forms of taxes, the Chinese government abandoned its attempt to rein in local government debt after sluggish first and second quarter data in 2015. Instead, the Chinese government restarted local government lending and required financial institutions to continue supporting insolvent infrastructure projects. Central intervention to prop up the debt-for-bonds swap for local governments ensured the costs of local governments' borrowing were negligible.
- China's financial sector reforms have made the most headway with progress in the liberalization of interest rates, opening of the banking sector, and loosening of capital controls. However, Chinese policymakers are uncomfortable with the market volatility these reforms create. This year, the Chinese government reaffirmed its role in managing capital accounts and reasserted state control over the stock market after it faced volatility beginning in June 2015.
- Public alarm over environmental degradation within China continues to rise. Robust public spending has contributed to enormous demand for technologies focused on energy efficiency, emissions reduction and monitoring, and environmental remediation, creating potential opportunities for U.S. environmental technology firms. China's environmental reforms could also benefit the U.S. environment through reduced emissions and pollution.
- China has achieved its enormous economic growth through investment and export-led policies that now must be coupled with greater domestic consumption to ensure a more balanced economy. CCP leaders could persevere in structural reforms, which—assuming the short-term dislocation is not too destabilizing—could confirm China as one of the world's great markets. If, however, the CCP draws back from such reforms as it has in the past, there is a possibility China could enter a period of low or stagnant growth, which affects its potential as a market and a producer. In either case, economic pressure on CCP leaders could lead to greater discrimination against foreign firms and investors or an enhancement of other practices, like technology theft, which will make China less attractive as a market for investment.

Section 4: Commercial Cyber Espionage and Barriers to Digital Trade in China

China causes increasing harm to the U.S. economy and security through two deliberate policies targeting the United States: coordinated, government-backed theft of information from a wide variety of U.S.-based commercial enterprises and widespread restrictions on content, standards, and commercial opportunities for U.S. busi-

nesses. Hackers working for the Chinese government—or with the government’s support and encouragement—have infiltrated the computer networks of U.S. government agencies, contractors, and private companies, and stolen personal information and trade secrets. The targets of the Chinese hackers include patented material, manufacturing processes, business and negotiating strategies, and other proprietary information. The Chinese government has in turn provided that purloined information to Chinese companies, including SOEs.

The United States is ill prepared to defend itself from cyber espionage when its adversary is determined, centrally coordinated, and technically sophisticated, as is the CCP and China’s government. The design of the Internet—developed in the United States to facilitate open communication between academia and government, and eventually expanded to include commercial opportunities—leaves it particularly vulnerable to spies and thieves. As the largest and most web-dependent economy in the world, the United States is also the largest target for cyber espionage of commercial IP.

The Chinese government also imposes heavy-handed censorship on Internet content and social media. These restrictions on free expression and access to information and news have driven from the Chinese market those U.S. companies unwilling to follow the authoritarian dictates of Beijing. The Chinese government has also begun to censor material originating outside its borders by directly attacking U.S.-based information providers.

The Chinese government has infiltrated a wide swath of U.S. government computer networks; the U.S. government response to the challenge has been inadequate. Federal agencies are not governed by a uniform system for defense against cyber intrusions. Other than to acknowledge an unrelenting series of assaults on its networks, the Federal Government has yet to devise adequate defenses, while top U.S. intelligence officials have grudgingly praised Chinese hackers for their bold ingenuity.

China’s authoritarian government maintains tight control over the flow of information across and within its borders with a system termed the “Great Firewall.” As part of this effort to control dissent by restricting speech, news, and social media, the Chinese government has implemented a policy of replacing foreign information technology and Internet providers with Chinese companies. This not only affects human rights in China and skews the thinking of Chinese citizens about the United States and their own country, but it also has a profound impact on a large segment of the U.S. economy. The Chinese government is in the process of passing and implementing comprehensive new laws and regulations that have the potential to limit or exclude U.S. technology companies from key tech-intensive sectors of the Chinese market. New proposals would impose localization requirements, limit market access, codify IP rights infringement, and create uncertain legal liability rules. Among the digitally intensive industries affected are: newspapers, periodicals, books, directories and mailing lists, motion pictures, sound recordings, video and music production and distribution, broadcasting, news syndicates, banking and insurance, credit card transactions, online retail trade, and wholesale trade in business-to-business transactions.

Conclusions

- China's government conducts and sponsors a massive cyber espionage operation aimed at stealing personally identifiable information and trade secrets from U.S. corporations and the U.S. government. Some of the stolen information is provided to Chinese state-owned businesses that compete with U.S. firms in China and abroad. Other recipients of U.S. trade secrets include sectors of the Chinese economy that the central government designated as Strategic Emerging Industries, which China intends to nurture into global competitors.
- The cost to the U.S. economy and to U.S. companies of government-sponsored cyber theft has been on the rise as network intrusions have become more sophisticated and harder to detect. The financial damage results from the loss of trade secrets such as copyrights and patents, manufacturing processes, foregone royalties, the costs of cyber defense, the loss of business and jobs, and the expense of remediating and repairing the damage to computer networks.
- U.S. cybersecurity companies and the Federal Government have become more adept at attributing computer network attacks to specific countries and to groups of hackers within those countries. Their willingness to release details on the culprits has also increased. U.S. companies have also become more willing to reveal details of the attacks on their computer networks.
- The U.S. reaction to the increasing number and sophistication of foreign cyber espionage and malicious network attacks has been mostly defensive. U.S. law does not allow retaliatory cyber attacks by private citizens and corporations, nor does it appear to allow counterintrusions (or "hack backs") for the purpose of recovering, erasing, or altering stolen data in offending computer networks. International law has not kept up with developments in cyber warfare, and no international consensus exists on how to attribute or appropriately respond to cyber attacks. However, a policy discussion on the issue of offensive and retaliatory cyber operations has begun.
- The Chinese government appears to believe that it has more to gain than to lose from its cyber espionage and attack campaign. So far, it has acquired valuable technology, trade secrets, and intelligence. The costs imposed have been minimal compared to the perceived benefit. The campaign is likely to continue and may well escalate as the Chinese Communist Party leadership continues to seek further advantage while testing the limits of any deterrent response.
- The Chinese government maintains strict censorship controls over the flow of information across and within its borders, and holds Internet providers, websites, search engines, and online news media responsible for censoring their content on the basis of vague guidelines and arbitrary rulings. The Chinese government's obsession with limiting citizen access to information harms U.S. companies attempting to compete in China. Some

U.S. companies have faced retaliation, including the filtering or outright blocking of their websites, and all foreign companies risk loss of business licenses for violating the Chinese government's unpredictable sensitivities.

- The Chinese government is in the process of passing comprehensive new laws and regulations on cybersecurity that would affect trade in digital goods and services in a wide range of industries, including the news media, banking, credit card transactions, online retail trade, entertainment media, and telecommunications. Some of the new rules would have the effect of excluding U.S. companies from participating in the world's fastest-growing digital market by requiring, for example, that servers containing information about Chinese citizens and companies be located exclusively in China, and that companies doing business in China provide encryption keys to allow government entry into their databases.

Chapter 2: Security and Foreign Policy Issues Involving China

Section 1: Year in Review: Security and Foreign Affairs

In his third year in office, President Xi continued to consolidate control over China's security decision-making processes and gradually increase China's global diplomatic engagement and military activities. Domestically, the Xi Administration has advanced the expansion and centralization of China's security state with the enactment of a National Security Law and the introduction of draft counterterrorism and cybersecurity laws. Abroad, China is pursuing focused and vigorous diplomacy, particularly with neighboring countries. President Xi's One Belt, One Road initiative is at the center of this effort.

China's military, the People's Liberation Army (PLA), is extending its global reach, particularly through the increased international activities of the PLA Navy. In 2015, the PLA Navy evacuated hundreds of Chinese and foreign citizens from Yemen in what was China's first-ever PLA-led noncombatant evacuation operation. In addition, the PLA Navy has maintained its antipiracy presence in the Gulf of Aden, and has expanded its naval presence in the Indian Ocean with submarine patrols. Since it first sent a submarine to the Indian Ocean in late 2013, the PLA Navy has conducted at least three more Indian Ocean submarine patrols. In September 2015, the PLA Navy sailed through Alaska's Aleutian Islands, the closest it has ever sailed to U.S. territory during a far seas deployment without a port call. The PLA Navy's increasing activities far from China's shores reflect China's growing capability and willingness to use its military to protect its overseas economic assets and expatriate population. To support these activities, China appears to be seeking to establish its first overseas military facility in Djibouti.

These developments are enabled by China's continued military modernization program, which seeks to transform the PLA into a technologically advanced military capable of projecting power throughout the Asia Pacific region and beyond. In 2015, China ac-

quired or produced an array of advanced naval and air platforms, many of which would be useful in contingencies in the East and South China seas and those involving islands held by Taiwan. Some of China's military modernization developments, such as its continued development and production of advanced submarines and surface ships, could increase the PLA Navy's expeditionary capabilities. The PLA's training missions and exercises are increasingly sophisticated and reflect China's goal to build a modern, integrated fighting force. To support its military modernization campaign, China's official annual defense budget rose 10.1 percent to \$141.9 billion (RMB 886.9 billion) in 2015, though its actual aggregate defense spending is much higher, as Beijing omits major defense-related expenditures from its official budget. After nominally increasing its defense budget by double digits every year since 1989, China's defense spending appears sustainable in the short term. Although China's slowing economic growth will generate opportunity costs as government spending strains to meet other national priorities, there is no sign this has affected military spending.

U.S.-China security relations suffered from rising tensions and growing distrust in 2015, largely due to China's cyberespionage activities against a range of U.S. government, defense, and commercial entities and its massive island-building campaign in the South China Sea. In May, as more details of China's land reclamation in the South China Sea emerged, the U.S. Navy began to publicize its air surveillance patrols near China's reclaimed land features; in October, a U.S. Navy guided missile destroyer conducted a freedom of navigation patrol within 12 nautical miles of one of the reclaimed features for the first time. Though China's maritime dispute with Japan over the Senkaku Islands in the East China Sea was less newsworthy in 2015, China continued to quietly increase its military and civilian presence in contested waters by conducting regular air and naval patrols near the islands and erecting 16 energy exploitation structures near disputed waters.

Conclusions

- Three years after coming to power, Chinese President Xi Jinping has made significant progress consolidating control over China's national security and foreign policy apparatus. Two areas of particular focus for the Xi Administration are strengthening the state's power over national security matters (as exemplified in three new and proposed laws governing national security) and emphasizing "peripheral diplomacy" with China's neighbors (as exemplified in the One Belt, One Road initiative).
- U.S.-China security relations continued to deteriorate in 2015. China's aggressive behavior in the South China Sea and its unremitting cyber espionage against the United States were the key drivers of growing distrust. Further, the Chinese military's continued emphasis on developing antiaccess/area denial capabilities makes clear that China seeks the capability to limit the U.S. military's freedom of movement in the Western Pacific.

- China's military modernization program continues to bear fruit, particularly as new naval and air force platforms and capabilities come online. In particular, new developments in China's naval modernization increase its ability to deploy troops and equipment in contingencies in the East and South China seas and those involving islands held by Taiwan. Moreover, the continued production of surface combatants, along with advances in submarine and aircraft carrier programs, supports China's ability to project force in its near seas.
- China in 2015 continued to take steps to bolster its position in its dispute with Japan over islands and adjacent waters in the East China Sea by constructing 16 structures to facilitate natural gas exploitation near disputed waters; conducting near-daily patrols of contested waters and airspace; and enhancing the PLA Air Force's presence in the East China Sea with the establishment of regular oversea training flights far from China's coast and a first-ever transit flight through Japan's Miyako Strait.
- The rapid growth of China's arms exports during the last ten years reflects the maturation of China's domestic defense industry. In the coming years, Chinese arms, including advanced systems such as jet fighters, will increasingly compete with U.S. and Russian arms on the global market.
- China's noncombatant evacuation operations, far seas submarine deployments, and interest in establishing an overseas military facility reflect its willingness to use military resources to defend its growing overseas assets. China's global security activities likely will increase as the population of Chinese nationals overseas grows along with Chinese overseas economic activity.
- As a result of China's comprehensive and rapid military modernization, the regional balance of power between China, on the one hand, and the United States and its allies and associates on the other, continues to shift in China's direction.

Section 2: China's Space and Counterspace Programs

Based on decades of high prioritization and sustained investment from its leadership, China has become one of the world's pre-eminent space powers, producing numerous achievements and capabilities that further its national security, economic, and political objectives. China's space program involves a wide network of entities spanning its political, military, defense industry, and commercial sectors, but unlike the United States it does not have distinctly separate military and civilian space programs. Rather, top CCP leaders set long-term strategic plans for science and technology development, coordinate specific space projects, and authorize resource allocations, while organizations within China's military execute policies and oversee the research, development, and acquisition process for space technologies. China's military also exercises control over the majority of China's space assets and space operations.

China's space activities are driven by military, economic, and political objectives. First, China's military strategists and analysts recognize that space forces are crucial to China's military modernization, enhancing functions such as intelligence, surveillance, and reconnaissance (ISR); environmental monitoring; communications; and position, navigation, and timing (PNT). These are particularly relevant to China's antiaccess/area denial strategy* for preventing or impeding U.S. intervention in a potential conflict in the Western Pacific. Second, China's space programs are expected to yield economic and commercial benefits, and China has specifically aimed to capture 15 percent of the global launch services market and 10 percent of the global commercial satellite market by 2015, although these efforts have produced mixed results. Finally, space achievements provide CCP leadership with significant domestic political legitimacy and international prestige and influence, and enable China to collaborate on a range of bilateral and multilateral space activities. China has notably engaged in cooperative efforts with Brazil, Russia, Ukraine, Venezuela, and the EU, and initiated the Asia-Pacific Space Cooperation Organization.

China is pursuing a broad array of counterspace capabilities and will be able to hold at risk U.S. national security satellites in every orbital regime if these capabilities become operational. China's 2007 test of the SC-19 direct-ascent antisatellite (ASAT) missile destroyed an aging Chinese satellite and sparked worldwide criticism for creating dangerous orbital debris. The test demonstrated China's ability to strike satellites in low Earth orbit where the majority of U.S. satellites reside. China's 2013 DN-2 rocket test reached the altitude of geosynchronous Earth orbit satellites, marking China's highest known suborbital launch to date and the highest worldwide since 1976; this indicated China is developing the capability to target higher orbits which contain U.S. Global Positioning System (GPS) satellites and most U.S. ISR satellites. Since 2008, China has also conducted increasingly complex tests involving spacecraft in close proximity to one another; these tests have legitimate applications for China's manned space program, but are likely also used for the development of co-orbital counterspace technologies. Computer network operations against U.S. space assets attributed to China have likely been used to demonstrate and test China's ability to conduct future computer network attacks and perform network surveillance. Finally, China has acquired ground-based satellite jammers and invested heavily in research and development for directed energy technologies such as lasers and radio frequency weapons.

China's space program has also progressed in the areas of space-based command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), space-based PNT, space-based communications, and space launch functions. China now has approximately 142 operational satellites in orbit, with approximately 95 of these owned and operated by military or defense in-

*According to the U.S. Department of Defense, "antiaccess" actions are intended to slow the deployment of an adversary's forces into a theater, or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive.

dustry organizations. China's current system of C4ISR satellites likely enables its military to detect and monitor U.S. air and naval activity out to the second island chain* with sufficient accuracy and timeliness to assess U.S. military force posture and cue other collection assets for more precise tracking and targeting. China's regional PNT satellite system, known as Beidou, became operational in 2012, with global coverage expected by 2020. When completed, this system will provide PNT functions, essential to the performance of virtually every modern Chinese weapons system, independent from U.S.-run GPS.

Although it lacks a designated civilian space program, China since the mid-1990s has incrementally developed a series of ambitious space exploration programs, categorized as civilian projects. China is one of three countries, along with the United States and Russia, to have independently launched a human into space, and has launched ten Shenzhou spacecraft and the Tiangong space lab in recent years as part of its human spaceflight program. In the program's next phase, scheduled for completion by 2022, China plans to launch a permanent manned space station into orbit. China's lunar exploration program has featured several lunar orbiting missions with multiple Chang'e spacecraft and the landing of a lunar rover, Jade Rabbit, in 2014. China plans to land and return a lunar rover in 2017 and become the first nation to land a spacecraft on the Moon's "dark side" in 2020. Beijing is likely also conducting research for a manned mission to the moon and a mission to Mars, although neither project has yet received official approval.

China's space activities present important implications and policy questions for the United States. Space capabilities have been integrated into U.S. military operations to such an extent that U.S. national security is now dependent on the space domain, and China's 2007 antisatellite missile test in particular has been described by General John Hyten, commander of U.S. Air Force Space Command, as a "wake-up call" to the U.S. military regarding the vulnerability of its space assets. In the economic realm, U.S. providers of commercial satellites, space launch services, and GPS-based services may face increased competition as China seeks to expand its foothold in these markets, benefited by the blending of its civilian and military infrastructures and by government funding and policy support. U.S. export controls have also prompted many European countries and their industries to pursue space systems that are free of U.S. technologies—and therefore restrictions—in order to reach the Chinese market. Finally, China's achievements in space will provide Beijing with greater prestige in the international system and expand its growing space presence, concurrent with declining U.S. influence in space; the United States currently depends on Russian launch vehicles to send humans into space, and the International Space Station is scheduled for deorbiting around 2024.

*The first island chain refers to a line of islands running through the Kurile Islands, Japan and the Ryukyu Islands, Taiwan, the Philippines, Borneo, and Natuna Besar. The second island chain is farther east, running through the Kurile Islands, Japan, the Bonin Islands, the Mariana Islands, and the Caroline Islands. PLA strategists and academics have long asserted the United States relies primarily on the first island chain and the second island chain to strategically "encircle" or "contain" China and prevent the PLA Navy from operating freely in the Western Pacific. Open Source Center, "PRC Article Surveys China's Naval Rivals, Challenges," January 6, 2012. ID: CPP20120109671003; Bernard D. Cole, *The Great Wall at Sea* (Second Edition), Naval Institute Press, 2010, 174–176.

Moreover, given current Congressional restrictions on U.S.-China space cooperation, the United States would not participate in any space program involving China, which raises concerns that reduced U.S. investment in its manned space program could result in the continued erosion of its technological edge and a shift of influence within the international space community.

Conclusions

- China has become one of the top space powers in the world after decades of high prioritization and steady investment from China's leaders, indigenous research and development, and a significant effort to buy or otherwise appropriate technologies from foreign sources, especially the United States. Although China's space capabilities still generally lag behind those of the United States and Russia, its space program is expanding and accelerating rapidly as many other nations' programs proceed with dwindling resources and limited goals.
- China's aspirations in space are driven by its judgment that space power enables the country's military modernization, drives its economic and technological advancements, allows it to challenge U.S. information superiority during a conflict, and provides the Chinese Communist Party with significant domestic legitimacy and international prestige.
- China's space program involves a wide network of entities spanning its political, military, defense industry, and commercial sectors. Unlike the United States, China does not have distinctly separate military and civilian space programs. Under this nebulous framework, even ostensibly civilian projects, such as China's human spaceflight missions, directly support the development of People's Liberation Army (PLA) space, counterspace, and conventional capabilities. Moreover, Chinese civilian and commercial satellites likely contribute to the PLA's command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) efforts whenever it is technically and logistically feasible for them to be so utilized, and they would probably be directly subordinate to the PLA during a crisis or conflict. Given the PLA's central role in all of China's space activities, U.S. cooperation with China on space issues could mean supporting the PLA's space and counterspace capabilities.
- China likely has capitalized on international cooperation to acquire the bulk of the technology and expertise needed for most of its space programs. China probably will continue to pursue close cooperation with international partners to overcome specific technical challenges and to meet its research and development objectives and launch timelines.
- Chinese analysts perceive that China's advances in space technology have become an important driver for the country's economic growth. Satellite and launch service sales provide China's defense industry with a growing source of revenue. Technology spin-offs offer competitive advantages in certain sectors, such as satellite navigation products. Exports of space technology-based products pose challenges to the United States not

only due to the non-market-based nature of China's economy, but also due to military and security concerns.

- As China's developmental counterspace capabilities become operational, China will be able to hold at risk U.S. national security satellites in every orbital regime.
- China is testing increasingly complex co-orbital proximity capabilities. Although it may not develop or operationally deploy all of these co-orbital technologies for counterspace missions, China is setting a strong foundation for future co-orbital anti-satellite systems that could include jammers, robotic arms, kinetic kill vehicles, and lasers.
- China is in the midst of an extensive space-based C4ISR modernization program that is improving the PLA's ability to command and control its forces; monitor global events and track regional military activities; and strike U.S. ships, aircraft, and bases operating as far away as Guam. As China continues to field additional intelligence, surveillance, and reconnaissance (ISR) satellites, its space-based ISR coverage almost certainly will become more accurate, responsive, and timely and could ultimately extend beyond the second island chain into the eastern Pacific Ocean and the Indian Ocean.
- China's rise as a major space power challenges decades of U.S. dominance in space—an arena in which the United States has substantial military, civilian, and commercial interests.

Section 3: China's Offensive Missile Forces

China's offensive missile forces are integral to its military modernization objectives and its efforts to become a world-class military capable of projecting power and denying access by adversaries to China's periphery. The PLA's Second Artillery Force—responsible for China's missile forces initially as a solely nuclear force and since the 1990s as a conventional force as well—has taken on new missions and seen its bureaucratic status within the PLA elevated. The Second Artillery provides China with a decisive operational advantage over other regional militaries competing to defend maritime claims, and its long-range precision-strike capabilities improve its ability to engage the U.S. military at farther distances in the event of a conflict. These capabilities provide an increasingly robust deterrent against other military powers and—in the case of China's nuclear arsenal—serve as a guarantor of state survival, ultimately bolstering the CCP leadership in its quest for legitimacy.

China is making significant qualitative improvements to its nuclear deterrent along with moderate quantitative increases in the course of its efforts to build a more modern nuclear force. China's nuclear doctrine is premised on the concept of a "lean and effective" force guided by a doctrine of "no-first-use" of nuclear weapons (although the exact circumstances under which China would use nuclear weapons, what China would consider "first use," and whether the policy may be reconsidered have been subjects of debate). China specifically has approximately 250 nuclear warheads, according to unofficial sources. It has invested in enhancing its theater nuclear force and diversifying its nuclear strike capabilities away from liquid-fueled, silo-based systems. China's DF-5 missiles have

been equipped with multiple independently-targetable reentry vehicles, confirmed by the U.S. Department of Defense (DOD) for the first time in 2015; newer intercontinental ballistic missiles (ICBMs) in development could also have this capability, increasing China's ability to penetrate adversary missile defenses and enhancing the credibility of its nuclear forces as a deterrent. China is expected to conduct its first nuclear deterrence submarine patrols using the JIN-class nuclear-powered ballistic missile submarine by the end of 2015, marking China's first credible at-sea second-strike nuclear capability and presumably requiring changes to its "de-alerting" policy of keeping nuclear warheads stored separately from missiles. China may also be developing a nuclear-capable air-launched cruise missile, the CJ-20, potentially introducing an air-delivered theater nuclear strike capability into its arsenal for the first time. Importantly, as stated by Dr. Christopher Yeaw, founder and director of the Center for Assurance, Deterrence, Escalation, and Non-proliferation Science & Education, in his testimony to the Commission, China may also perceive its nuclear arsenal to be useful in the political management of an unsustainable conventional conflict, in which it would punctuate non-nuclear operations with tactical- or theater-level nuclear strikes to seek deescalation on terms favorable to China. A key implication of this approach for the United States is that China "may escalate across the nuclear threshold at a time and manner, and for a purpose, that we do not expect."

China has achieved extraordinarily rapid growth in its conventional missile capability, according to DOD, developing a wide range of conventional ballistic and cruise missiles to hold targets at risk throughout the region, even as far as the second island chain. China's short-range ballistic missile (SRBM) force has grown from 30 to 50 missiles in the mid-1990s to at least 1,200 in 2015, mostly deployed along the Taiwan Strait. China's development of medium-range ballistic missiles (MRBMs) and intermediate-range ballistic missiles (IRBMs) provide the ability to conduct precision strikes against land and naval targets within the first island chain. China in 2010 fielded the world's first antiship ballistic missile, an MRBM variant known as the DF-21D, and revealed at a September 2015 military parade that the DF-26 IRBM—with a stated range reaching out to the second island chain, including Guam—also has an antiship variant. China has also continued to modernize its cruise missiles, most notably by developing two supersonic antiship cruise missiles: the surface ship- or submarine-launched YJ-18 and the air-launched YJ-12, both of which will provide a significant range extension over previous capabilities. China has a hypersonic weapons program in developmental stages, and reportedly conducted its fourth and fifth hypersonic glide vehicle tests in 2015, after conducting three in 2014. Mark Stokes, executive director of the Project 2049 Institute, testified to the Commission that China may be able to field a regional hypersonic glide vehicle by 2020 and a supersonic combustion ramjet-propelled cruise vehicle with global range before 2025. Whether China arms its hypersonic weapons with nuclear or conventional payloads—or both—will provide more information regarding how it intends to incorporate hypersonic weapons into PLA planning and operations.

The increasing survivability, lethality, and penetrability of China's missile forces present several implications for the United States. First, these forces can threaten increasingly greater portions of the Western Pacific, and a spending competition between additional Chinese missiles and U.S. missile defense systems would likely be highly unfavorable to the United States based on relative cost. In response, the United States is working to develop lower-cost-per-shot missile defense systems, while other options include disrupting networks that would support Chinese missile forces or using long-range stealth bombers to operate beyond the reach of advanced Chinese missiles. Second, China's increasing ability to threaten U.S. partners and allies with its missile arsenal supports its regional ambitions, improves its coercive ability, weakens the value of deterrence efforts targeted against it, and widens the range of possibilities that might draw the United States into a conflict. Third, China's missile buildup has contributed to a U.S. policy debate regarding the modern-day relevance of U.S. treaty obligations to forgo developing ground-launched ballistic and cruise missiles with ranges of between 500 and 5,500 kilometers (311 and 3,418 miles); some experts suggest modifications could allow the United States to strengthen its regional deterrence capabilities. Finally, these developments present new challenges for the United States and China as they consider how to successfully manage and deescalate potential crises in an environment with new factors of instability.

Conclusions

- The chief roles of China's nuclear arsenal are to deter an adversary from undertaking a nuclear first strike and to reduce the pressure on China to yield to an adversary's demands, or desist from aggression, under threat of nuclear attack. China's belief that its nuclear arsenal would deter an adversary from taking a conventional fight into the nuclear realm could encourage it to be more adventurous in its risk-taking during a crisis because it may not sufficiently fear the prospect of nuclear escalation.
- China is secretive about the details of its official nuclear policy, leading to uncertainty regarding key principles of its nuclear weapons doctrine. Key elements of China's nuclear policy, such as its "no-first-use" pledge and presumptive de-alerting policy, may be under reconsideration but are unlikely to change officially.
- China appears to be pursuing a theater nuclear capability in addition to the strategic nuclear capability it has maintained since it became a nuclear state in the 1960s. In a conflict, China's maturing theater nuclear capability could provide it with the means to flexibly employ nuclear weapons to deescalate or otherwise shape the direction of conflict.
- China is pursuing a credible second-strike capability with an emphasis on survivability against an adversary's first strike. By diversifying its nuclear strike capabilities away from solely land-based systems in silos, China seeks to ensure its ability

to absorb a nuclear strike and retaliate in kind. Examples of this diversification include road-mobile intercontinental ballistic missiles, submarine-launched ballistic missiles, and potentially air-launched land-attack cruise missiles.

- China's initial development of its conventional missile forces focused heavily on expanding its short-range ballistic missile force for Taiwan contingencies. In the past decade, China's development of longer-range missiles, pursuit of advanced missile technologies, and diversification of launch platforms have enabled it to hold at risk a wider range of targets farther from its shores.
- China is developing cruise missiles that are increasingly difficult for the U.S. military to detect and defend against. The People's Liberation Army (PLA) has fielded its first ground-launched land-attack cruise missile, and also appears to be developing air-, ship-, and submarine-launched cruise missiles with land-attack and antiship missions. China is in the midst of improving the qualitative aspects of its cruise missile technologies; in the meantime, the quantitative strength of its cruise missiles poses a formidable challenge to existing U.S. Navy defenses.
- China recognizes that adversary missile defenses—particularly the U.S. ballistic missile defense architecture—pose a major challenge to the success of its missile operations. As a result, China is developing measures to improve its forces' ability to penetrate opposing missile defenses, such as multiple independently-targetable reentry vehicles, maneuverable reentry vehicles, and hypersonic weapons.
- To realize the full potential of its long-range precision strike capabilities, China requires detailed awareness of a potential battlespace as well as the ability to obtain targeting data at increasingly farther distances from the Chinese mainland. Effective and timely target selection and information coordination is an area the PLA continues to seek to improve.

Chapter 3: China and the World

Section 1: China and Central Asia

One of the most visible manifestations of China's expanding global engagement has been its cultivation of close economic, political, and security ties with countries in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). Beijing sees Central Asia as a potential land bridge to markets in the Middle East and Europe, a source of much-needed oil and natural gas resources, and a dependable bastion of diplomatic support. But Central Asia is also a source of anxiety for Beijing, which fears Islamist groups in its economically and politically restive western province of Xinjiang will find common cause with extremist or terrorist groups operating in the region. As the United States reshapes its own Central Asia policy in the wake of the drawdown

in Afghanistan, it will have to take China's growing presence there into careful consideration.

The centerpiece of China's engagement with Central Asia, the "Silk Road Economic Belt" initiative, was announced by President Xi in 2013, but it is not new. Rather, it is a culmination and a re-branding of several previous policies and projects aimed at linking China with its trading partners. The land-based Silk Road Economic Belt has a maritime counterpart, the "21st Century Maritime Silk Road," which will run from China's coast through South-east Asia and the Indian Ocean to Africa and the Mediterranean Sea. Together, they form the One Belt, One Road initiative. To facilitate its engagement with countries that fall within One Belt, One Road, China's State Council created the \$40 billion Silk Road Fund, which began operating in February 2015.

Although the primary objective of China's economic engagement with Central Asia is to promote the security and development of Xinjiang, this policy has significant benefits for China's overall economic growth. First, China intends to diversify its energy portfolio by gaining access to Central Asian resources. Second, Beijing seeks to develop new markets for its companies through construction of roads and railways, with the ultimate goal of reaching Russia, Iran, and Europe. This has an added corollary of creating outlets for Chinese industries such as iron, steel, and cement, which are experiencing overcapacity and slackening domestic demand due to China's economic slowdown. Finally, China seeks to engender political goodwill and influence by fostering economically based "good neighborly relations." For landlocked Central Asia, China's economic largesse is an opportunity to upgrade its outdated infrastructure and connect to the global economy. Central Asian states also welcome China as a counterbalance to Russia, which until recently tended to economically dominate the former Soviet republics.

While China's economic engagement with Central Asia appears most often in imports of natural resources or investment in energy companies and energy-related infrastructure, China has also become an important source of exports of manufactured goods and loans to non-energy-related projects. The structure of the trade shows a lack of diversity, with China exporting finished goods and importing natural resources. Despite the strength of its energy exports, Central Asia as a whole tends to run trade deficits with China.

China's security relations with Central Asia focus largely on counterterrorism and are designed to bolster China's stability and security objectives in Xinjiang. Most of China's security cooperation with the region occurs via the Shanghai Cooperation Organization, which currently includes four Central Asian countries, Russia, and China, but which China dominates. The organization has yet to take on some of Central Asia's biggest security challenges, but Beijing finds it useful because it is a resource for regional intelligence on terrorist threats and because it provides China with an opportunity to demonstrate regional leadership. The sources of instability that concern China in Central Asia are even more prevalent in Afghanistan, and China is positioning itself to take on greater responsibility for its neighbor's security in anticipation of the withdrawal of U.S. and international forces. China's growing interest in

the region's security provides opportunities for cooperation with the United States on shared goals. However, the Chinese and Central Asian governments' heavy-handed approaches to security threats can come into conflict with the U.S. values of transparency, openness, and rule of law.

Conclusions

- Although engagement with Central Asia has been a long-standing endeavor for the Chinese government, Chinese President Xi Jinping has recently elevated the region in China's foreign policy in the form of the Silk Road Economic Belt initiative, which envisions a massive network of trade and infrastructure connecting China with Europe by way of Central Asia.
- China's overarching objective for engagement with Central Asia is to encourage economic development and stability in its westernmost province, Xinjiang, which shares an extensive border with Kazakhstan, Kyrgyzstan, and Tajikistan. Chinese leaders perceive ethnic tensions, separatist movements, and related violent activity in Xinjiang to be among the greatest security threats facing China today, and fear patterns of religious extremism and terrorism in Central Asia enable this unstable environment. Therefore, Beijing uses its relations with Central Asian governments to seek to neutralize and eradicate these perceived threats.
- China's security cooperation with Central Asia is designed to augment domestic security policies in Xinjiang, and therefore focuses on counterterrorism and information sharing about extremist and terrorist groups and individuals. China's security engagement with the region occurs primarily via the Shanghai Cooperation Organization, which China uses as a tool to influence and demonstrate leadership in the region, but which has yet to play a significant security-providing role.
- Although the primary objective of China's economic engagement with Central Asia is to promote the security and development of Xinjiang, this domestic-oriented policy also promotes China's overall economic growth by (1) allowing China to diversify its energy portfolio by gaining access to Central Asian resources, (2) developing new markets for its companies in industries experiencing overcapacity at home, and (3) engendering goodwill toward its policies in the region.
- China's trade with the region is growing rapidly, but it is very unbalanced, with China exporting finished goods and importing natural resources. Despite the strength of its energy exports, Central Asia as a whole tends to run trade deficits with China. For most countries in the region, China is the biggest trade partner. Kazakhstan, the region's largest economy, is the biggest recipient of Chinese trade, investment, and loans. Through its massive investments in Central Asia's infrastructure—including roads, railways, hydroelectricity, and telecommunications—China has also become a de facto provider of development assistance.

- Chinese leaders look to oil- and natural gas-rich Central Asian countries to diversify China's energy sources, though the volumes involved will not be sufficient to overcome China's dependence on traditional sources of hydrocarbon imports, particularly Middle Eastern oil. One notable exception is Turkmenistan, which in recent years has emerged as China's largest supplier of natural gas, accounting for 44 percent of China's imports in 2014.
- As China's influence in Central Asia grows, it increasingly is competing with Russia, which has long dominated the region in the economic, security, and cultural realms. China now dominates in the economic realm, though Russia is still the primary military and cultural power in the region. Beijing, which seeks stable ties with Moscow, avoids creating the perception of overt competition between the two countries.
- After several years of relative disinterest, China has been increasing engagement with Afghanistan since 2012. As with Central Asia, China fears extremist and terrorist elements in Afghanistan contribute to instability in Xinjiang. Anticipating the U.S. withdrawal from Afghanistan, China is starting to realize it will have to involve itself in the country's reconstruction and stabilization to preserve stability and security in Xinjiang.
- China and the United States appear to share similar priorities in Central Asia, such as promoting economic growth and connectivity and preventing the spread of extremism and terrorism. Yet Beijing and Washington pursue these goals in very different ways, which could make meaningful cooperation in the region challenging. In particular, while the United States seeks to encourage democratization and discourage corruption in government and business, China supports the region's authoritarian governments and is more tolerant of the region's widespread corruption.

Section 2: China and Southeast Asia

China's relationships with Southeast Asian countries are complex. Although economic ties between China and Southeast Asia have expanded in recent years, China has become more assertive in advancing its territorial claims in the South China Sea at the expense of its Southeast Asian neighbors.

China's land reclamation and construction on disputed land features in the South China Sea have cast a shadow over China-Southeast Asia relations since 2014. Over the last two years, China has expanded seven land features it controls in the Spratly Islands by more than 2,900 acres—the equivalent size of more than 2,000 football fields. China is also building, expanding, and upgrading military and civilian infrastructure, including at least one, and up to three, airstrips, on these artificial islands. The scale and speed of China's land reclamation has far outpaced those of other claimants. China will be able to use these land features to bolster its ability to sustain its military and maritime law enforcement presence in the South China Sea.

Rival claimants Vietnam and the Philippines (a U.S. treaty ally) are impacted the most, but even neutral parties like Singapore and Indonesia have expressed concern about China's activities. In 2015, the Association of Southeast Asian Nations (ASEAN) issued its strongest statements about the South China Sea yet, including assertions that China's land reclamation activities "eroded trust and confidence and may undermine peace, security and stability in the South China Sea," and that these activities have "increased tensions." Moreover, China's assertive approach to the South China Sea disputes in recent years has prompted Southeast Asian countries to enhance their maritime security capabilities and strengthen security cooperation with the United States and other countries in the Asia Pacific, particularly Japan.

Even as China's activities in the South China Sea create security challenges in Southeast Asia, China has enhanced security cooperation with some countries in the region through military aid, exercises, and cooperation on nontraditional security challenges.

Amid its increasingly strained relations with Southeast Asia, China has employed economic cooperation as a means to diffuse tensions and garner diplomatic goodwill. China has done so through both increased economic assistance and deeper economic integration with Southeast Asia. Two key initiatives by China to expand economic assistance to the region include the 21st Century Maritime Silk Road and the AIIB. Under the banner of the Maritime Silk Road, China has pledged to extend more loans and investments to ASEAN members, with assistance targeting infrastructure development and poverty alleviation. The AIIB, which is led by China and includes all ten ASEAN nations as members, will likely serve as another important vehicle for China to channel its development aid to Southeast Asia in hopes of gaining diplomatic leverage.

However, whatever goodwill China may gain from these initiatives may be tempered by strains in other areas of China-Southeast Asia economic relations. As a whole, Southeast Asia has grown more economically integrated with China, with two-way trade and investment and use of the RMB in international transactions rising significantly in recent years. China's growing economic influence in Southeast Asia has raised concerns that ASEAN countries may become overly dependent on China and are at risk of economic coercion. For example, since the implementation of an ASEAN-China Free Trade Area in 2010, ASEAN failed to maintain a long-standing trade surplus with China, and instead has experienced a large and rapidly increasing trade deficit, which reached nearly \$90 billion in 2014. In addition, China's construction of hydropower dams along the Mekong River and plans for large-scale water diversion projects are creating friction with downstream Southeast Asian countries. These lower Mekong countries, especially Cambodia and Vietnam, are vulnerable to the river's altered water levels and ecological damage caused by these projects.

Conclusions

- China's approach to Southeast Asia involves both consolidating its territorial claims in the South China Sea and seeking to improve economic ties with countries in Southeast Asia. China's

leaders seem to believe that striking a balance between these two endeavors enables China to protect its perceived sovereignty in the South China Sea and benefit from economic engagement with the region, while ensuring tensions along its periphery do not become intolerably high for Beijing.

- Since late 2013, China has conducted dramatic land reclamation and construction activities on the land features it controls in the Spratly Islands. These rapid activities appear to be driven by several factors: China's desire to unilaterally impose its claims and avoid arbitration or negotiation with other parties over the disputes; China's ambition to enhance its ability to project power into the South China Sea; and, potentially, China's intention to establish an air defense identification zone over part of the South China Sea.
- Southeast Asian countries have reacted with increasing alarm to China's activities in the South China Sea. They continue to enhance their military and civilian maritime patrol capabilities and to strengthen security relations with the United States and other countries in the Asia Pacific. However, despite growing worry among Southeast Asian countries about China, and rising assertiveness in expressing these concerns, they still seek to preserve positive relations with China and appear to still be balancing their relationships with China and the United States.
- Although historical animosities and China's actions in the South China Sea continue to hamper trust of China in Southeast Asian capitals, defense and security cooperation between China and countries in Southeast Asia has grown over the last 15 years. China's most prominent defense ties in Southeast Asia are with countries in mainland Southeast Asia: Burma (Myanmar), Cambodia, Laos, and Thailand, all of which are among its nearest neighbors. China has also increasingly engaged with Southeast Asian countries in the areas of non-traditional security and humanitarian assistance and disaster relief.
- China is vastly expanding its foreign assistance and investment programs in Southeast Asia as a means of achieving its foreign policy goals in the region, including efforts to defuse tensions surrounding contentious disputes such as those in the South China Sea. Chinese foreign assistance to Southeast Asia comes primarily in the form of infrastructure investment, and projects are frequently implemented by Chinese firms using Chinese labor, limiting the benefits for local communities.
- The Association of Southeast Asian Nations' (ASEAN) trade liberalization with China from 2004 to 2010 has led to a large and growing bilateral trade deficit. Economic integration has also increased the association's vulnerability to fluctuations in China's economy, with China's recent economic slowdown exacerbating ASEAN's trade deficit with China.
- Use of the renminbi (RMB) in international transactions is expanding rapidly in Southeast Asia and paving the way toward

more extensive use of the currency regionally. Limited progress in advancing multilateral monetary cooperation in Southeast Asia, such as through the Chiang Mai Initiative Multilateralization, may allow for the RMB's increased circulation in the region.

- China continues to unilaterally construct dams along the Mekong River without any obligation to share information about water management with downstream Mekong countries. China's actions on the Mekong are causing major fluctuations in water levels in the Mekong Basin, but China has expressed little interest in cooperating with its southern neighbors by joining the Mekong River Commission. Dam construction and resource mismanagement by downstream nations also pose a significant problem.

Section 3: Taiwan

Cross-Strait relations in 2015 were essentially stable, but could be facing a major shift with Taiwan's national elections approaching in January 2016 and the Democratic Progressive Party (DPP)—Taiwan's opposition and traditionally pro-independence party—leading in presidential polls. Taiwan citizens' wariness of China, spurred by the Mainland's increasing economic interconnectedness with Taiwan, appears to be partially responsible for flagging public confidence in Taiwan's Kuomintang (KMT)-led government. Some observers assess Beijing is worried that if DPP Chairperson Tsai Ing-wen is elected, she may seek to steer Taiwan toward *de jure* independence, even though Chairperson Tsai's comments on cross-Strait matters have seemed pragmatic and favorable of the status quo. Still, should the DPP win, it is unclear how Beijing would approach relations with Taipei.

Cross-Strait economic ties continued to grow even as progress on major cross-Strait negotiations slowed and the ratification of signed cross-Strait agreements stalled since the 2014 Sunflower Movement, during which protestors occupied Taiwan's legislature in opposition to the Cross-Strait Services Trade Agreement. As of August 2015, China remains Taiwan's largest trading partner, top source of imports, and biggest export market. Annual cross-Strait trade in 2014 reached \$130.2 billion, a 32 percent increase from 2008. Growth in Taiwan exports to China slowed, in part due to the rise of Chinese competitors, while Chinese exports to Taiwan reached an all-time high, exceeding \$48 billion. According to official Taiwan data, Taiwan FDI into China reached \$10.3 billion in 2014, increasing for the first time since 2010 (and far outpacing mainland FDI in Taiwan), but analysts believe this number is significantly undervalued.

Although China pressures other countries through the UN and other international organizations to restrict Taiwan's full participation in the international community, Taiwan is actively pursuing greater international space in a number of areas. Taipei has expressed interest in joining regional trade and investment regimes, such as the U.S.-led Trans Pacific Partnership, to encourage economic growth and new market opportunities. While China has been increasingly assertive in the East and South China seas, Taiwan

has proposed diplomatic frameworks and signed fisheries agreements with other claimants to encourage the shelving of territorial disputes and promotion of joint resource development, and has taken steps to clarify its own claims in the East and South China seas according to international law.

U.S.-Taiwan relations in 2015 remained strong, despite the lack of substantive progress on bilateral trade and investment negotiations and the absence of major U.S. arms sales to Taiwan since 2011. In 2014, annual bilateral trade reached a record high, increasing by 6 percent to \$67.4 billion, while Taiwan became the tenth-largest trading partner of the United States, passing both India and Saudi Arabia. U.S.-Taiwan military-to-military contacts also increased in 2014. That year, over 3,000 DOD personnel conducted visits to Taiwan, a 50 percent increase over visits in 2013.

Seven years of cross-Strait rapprochement have been beneficial to the United States by reducing cross-Strait tensions and allowing U.S. policymakers to address other priorities in the U.S.-China and U.S.-Taiwan relationships. Nonetheless, China's military exercises and military modernization are still largely directed toward its mission to eventually reunify Taiwan with the Mainland. Taiwan's focus on indigenous weapons platforms and asymmetric capabilities, along with its expanded defense engagement with the United States, has served to improve its ability to inflict costs on China should it decide to use force against Taiwan, but the cross-Strait military balance continues to shift in Beijing's favor. With Taipei's stagnating defense budget and capabilities and China's improving antiaccess/area denial capabilities threatening to keep U.S. forces farther from China's shores, Beijing has increasing advantages in a Taiwan contingency, raising the cost for the United States to take action in a crisis or conflict.

Conclusions

- Taiwan and China have enjoyed seven years of increased economic and trade ties, but fears among Taiwan citizens about economic coercion and China's political encroachment over Taiwan are more widespread than in the past.
- The younger generation of Taiwan citizens appears to view itself increasingly as Taiwanese rather than Chinese, and to be willing to take visible and substantial steps to assert their national identity. This has the potential to disrupt the diplomatic narrative that has allowed China and Taiwan to coexist without armed conflict. At the same time, Taiwan may not have the will or ability to counterbalance the growing Chinese military advantage. In view of China's growing power in the region as a whole, these trends have the potential to create stress on the ability of the United States to meet its obligations to Taiwan under the Taiwan Relations Act.
- Although China restricts Taiwan's ability to join multilateral institutions, Taiwan continues to make some progress on issues affecting its international space. Were Taiwan to succeed in its efforts to participate in emerging regional economic mechanisms like the Asian Infrastructure Investment Bank, Regional Comprehensive Economic Partnership, and Trans-Pa-

cific Partnership, its integration in the region and ability to make a positive contribution to the international community would increase further.

- In response to China's increasingly assertive actions in the East and South China seas, Taiwan has initiated diplomatic frameworks and signed agreements with claimants to encourage the shelving of territorial disputes and promotion of joint resource development. Through an updated fisheries agreement with Japan and steps taken to clarify its claims in the South China Sea over the past year, Taiwan continues to play a role in helping preserve regional stability.
- The United States and Taiwan share a close relationship based on common democratic values, strong commercial ties, and a U.S. commitment to aid in Taiwan's defense. U.S.-Taiwan trade is at a record high, underlying Taiwan's increasing importance as a close economic partner. Furthermore, the United States continues to support Taiwan's defense through increasing military-to-military contact and other discreet defense cooperation.
- China's military modernization continues to focus on its ability to conduct military operations against Taiwan and deter the United States from defending Taiwan in a potential conflict. Although Taiwan has improved its defense capabilities through a combination of domestic production and acquisition of arms from the United States, the cross-Strait military balance of power continues to shift strongly in China's favor.

Section 4: Hong Kong

Extended periods of public debate and protests in Hong Kong surrounding how to elect the region's next top leader, the chief executive, continued into early 2015. In August 2014, the Politburo Standing Committee of the CCP offered an electoral reform framework featuring a restrictive nomination mechanism that effectively precluded the nomination of prodemocracy candidates. In response, prodemocracy activists rejected Beijing's framework and sought universal suffrage with a genuine choice of candidates.

On June 18, 2015, several months after the protests dispersed, electoral reform legislation based on the Standing Committee's framework was voted down in Hong Kong's Legislative Council (LegCo) by all 27 pan-democrat legislators and one pro-establishment lawmaker. Only eight pro-establishment lawmakers voted in favor of the plan, allegedly due to a miscommunication when 31 LegCo members walked out in a botched attempt to delay the vote. As a result of LegCo's defeat of the electoral reform plan, the current election framework—whereby the chief executive is chosen by a 1,200-member election committee representing only 0.02 percent of eligible voters—will be used for the 2017 chief executive election. While Hong Kong's government could expand the voting base by implementing local legislation to bypass the constitutional amendment process, political divisions in LegCo make it unlikely that the method for electing the chief executive in 2017 will differ from the current method.

Hong Kong's press freedom ranking continued an overall downward trend in 2015, with watchdog organizations noting the enormous economic and political influence Beijing wields to exert indirect pressure on media, resulting in growing self-censorship. Some media organizations, including television, radio, and print news outlets, faced accusations of self-censorship over coverage of the prodemocracy movement, raising concerns about credibility. This trend is highlighted by the shuffling of senior management and editors and controversial editorial practices at several of Hong Kong's most prominent news outlets. Academic freedom also came under scrutiny in 2015 at one of Hong Kong's top universities. The prolonged delay and ultimate rejection of the appointment of a University of Hong Kong administrator involved in the prodemocracy movement led many in the academic community to criticize the university governance structure.

In its capacity as an international financial center and offshore RMB hub, Hong Kong is being used by the Mainland to push through reforms, including development of its domestic financial market, improvement of the international competitiveness of its firms, and managed liberalization of its capital account. As of December 2014, a total of 149 authorized banking institutions in Hong Kong engaged in RMB business, with RMB deposits worth more than \$161 billion (RMB 1 trillion), accounting for approximately 24 percent of foreign currency deposits among authorized institutions there.

The Hong Kong and Chinese stock markets are also bringing the two economies closer together. In line with China's "going global" strategy, which encourages Chinese firms to both invest abroad and expand overseas operations, mainland firms are increasingly participating in Hong Kong's equity market—among the \$30 billion in initial public offering funds raised last year on the Hong Kong Stock Exchange, Chinese firms contributed approximately 86 percent. As of December 31, 2014, 876 mainland enterprises were listed on the Hong Kong exchange—50 percent of the total number of listed companies—accounting for 60 percent of the total market capitalization. Mainland enterprises benefit from raising capital in a freely convertible currency and taking advantage of the Hong Kong market's greater liquidity and its more effective and better regulated risk management investment instruments.

Meanwhile, several new developments aimed at enhancing market transparency, foreign investor access on the Mainland, and cross-border fund flows have been introduced. The Shanghai-Hong Kong Stock Connect, launched in November 2014, enables institutional or retail foreign investors for the first time to trade shares in mainland China-based companies traded on Chinese exchanges. Though daily trading through the link has been minimal, it has provided additional liquidity for Hong Kong's stock market and supports the region's offshore RMB business and its role as a financial gateway to China. However, a number of restrictive features of the stock link may create operational complexity and introduce risk, especially given recent volatility in mainland stock markets. In July 2015, Chinese and Hong Kong financial regulators jointly announced the introduction of a long-awaited "Mutual Recognition of Funds" initiative, giving international asset managers a channel

to access mainland China's growing and previously untapped retail investor market boosted by a growing middle class and a huge pool of domestic savings.

Conclusions

- In June 2015, Hong Kong's Legislative Council voted down electoral reform legislation based on a framework designed by China's central government. This framework would have limited the candidates eligible for chief executive nomination to those acceptable to Beijing. As a result, election of the chief executive in 2017 will employ the same method as the 2012 chief executive election, whereby a 1,200 member committee elects the leader.
- Members of the general public, legislators, students, and other vested parties lack consensus on how to pursue electoral reform in Hong Kong's future chief executive and Legislative Council elections.
- Press freedom in Hong Kong is increasingly under pressure due to recent instances of violence against journalists, increasing political and economic pressure to self-censor, and use of economic coercion to disrupt independent reporting. The absence of a freedom of information law in Hong Kong also contributes to a lack of transparency with regard to open access to and preservation of government records.
- Hong Kong's world-class economy, particularly its capital markets, is playing an increasingly pivotal role in mainland China's efforts to push through financial reforms, including development of its domestic financial market, improvement of the international competitiveness of its firms, and liberalization of its capital account.
- In an effort to internationalize the renminbi, among other objectives, Hong Kong and mainland China have jointly established a number of pilot programs, including the Shanghai-Hong Kong Stock Connect and the Mutual Recognition of Funds initiative, to boost international participation in China's markets. These developments are expected to enhance market transparency and foreign investor access on the Mainland and enhance cross-border fund flows.
- Deepening integration exposes Hong Kong to the risks inherent in China's volatile equity markets, presenting operational risks for some investors. Moreover, foreign investment into mainland markets through Hong Kong still faces structural and quantitative limitations.

THE COMMISSION'S KEY RECOMMENDATIONS

The Commission considers 10 of its 37 recommendations to Congress to be of particular significance. The complete list of recommendations appears at the Report's conclusion on page 563.

The Commission recommends:

- Congress assess the coverage of U.S. law to determine whether U.S.-based companies that have been hacked should be allowed to engage in counterintrusions for the purpose of recovering, erasing, or altering stolen data in offending computer networks. In addition, Congress should study the feasibility of a foreign intelligence cyber court to hear evidence from U.S. victims of cyber attacks and decide whether the U.S. government might undertake counterintrusions on a victim's behalf.
- Congress require the Administration to provide a comprehensive, publicly-available assessment of Chinese foreign direct investments in the United States prior to completion of negotiations on a Bilateral Investment Treaty. This assessment should include an identification of the nature of investments, whether investments received support of any kind from the Chinese government and at which level (national, provincial, or municipal), and the sector in which the investment was made.
- Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.
- Congress direct the U.S. Department of Defense, U.S. Air Force, and relevant agencies within the U.S. Intelligence Community to jointly prepare a classified report that performs a net assessment of U.S. and Chinese counterspace capabilities. The report should include a strategic plan for deterring, with active and passive systems, strikes against U.S. assets in light of other countries' rapid advancements in kinetic and non-kinetic counterspace technology.
- Congress assess the ability of, and if necessary amend, existing U.S. trade laws to address China's industrial policies, abusive legal or administrative processes, and discriminatory treatment of foreign investors, and to determine the consistency of these practices with China's World Trade Organization commitments.
- Congress continue to support initiatives to harden U.S. bases in the Asia Pacific, including the Pacific Airpower Resiliency Initiative, in order to increase the costliness and uncertainty of conventional ballistic and cruise missile strikes against these facilities, and thereby dis-incentivize a first strike and increase regional stability.
- Congress continue to support the U.S. Department of Defense's efforts to reduce the vulnerability of U.S. space assets through cost-effective solutions, such as the development of smaller and more distributed satellites, hardened satellite communications, and non-space intelligence, surveillance, and reconnaissance assets such as unmanned aerial vehicles.
- Congress require the Administration to prepare an annual classified report on foreign government-sponsored cyber attacks against all Federal Government agencies, including but not limited to an assessment of the damage and the affected agencies' plans to secure their networks against further attacks.

- Congress direct the U.S. Government Accountability Office to prepare a report assessing the U.S. New Silk Road policy. This report should evaluate the New Silk Road's strengths and weaknesses and its current status and future prospects for meeting U.S. policy objectives in Central Asia. This report should investigate how U.S. policy toward Central Asia intersects and interacts with U.S. policy toward China more broadly, and how the U.S. and Chinese Silk Road initiatives interact in Central Asia.
- Congress pass legislation to require the Securities and Exchange Commission (SEC) to make clear to publicly traded companies and their investors the circumstances under which the theft of intellectual property through a computer network intrusion may be a material fact that might affect a company's revenues and should therefore be required to be disclosed to the SEC.

INTRODUCTION

Chinese Communist Party (CCP) General Secretary and President Xi Jinping's first state visit to the United States in September 2015 was lauded as a success by Obama Administration officials and Beijing. The pomp and circumstance and diplomatic niceties, however, were overshadowed by a long and growing list of grievances the United States has against China's behavior, and resulted in a very limited set of deliverables. The grievances include the alleged theft by Chinese hackers of personal records of 22 million people, including U.S. government employees, their families, and friends; state-sponsored cyber espionage against U.S. companies to steal trade secrets and pass them to Chinese competitors; an unprecedented island-building campaign in disputed waters of the South China Sea; and a series of new laws restricting access by foreign companies to China's market or demanding technology transfers in return for such access.

In November 2013 the CCP in its Third Plenum appeared to accept the reality of slower growth, professing a commitment to allow the market to play a greater role in the economy and to rebalance its economy away from reliance on fixed investment and exports to one based on greater domestic consumption. However, since gross domestic product (GDP) growth slipped to, at most, 7 percent in the first half of 2015 according to Chinese official statistics and even lower according to unofficial estimates, the government appears to be putting on hold or even reversing reforms in order to chase higher GDP growth. The Chinese government's heavy intervention to prop up the stock market after its bubble burst this summer undermined confidence in China's commitment to reform and the Chinese public's faith in the government's ability to manage the economy.

The Chinese government's emphasis on boosting performance in response to the slowdown this year reinforces the idea that for the CCP, legitimacy and popular support stem from its ability to deliver high economic growth. It also serves as a reminder that for China, economic reform does not mean a free market economy; rather, it means that while certain sectors of the economy will be subject to some market discipline, the government intends to retain a dominant role.

Meanwhile, the U.S. trade deficit with China continues to increase, and the enthusiasm among some in the West that marked China's admission to the World Trade Organization in 2001 is waning. This is partly explained by China's economic slowdown, but is also caused by China's efforts to substitute domestic production for that of its trade partners. China is a less welcoming place for foreign companies. A series of newly adopted or proposed Chinese laws favors domestic companies and could seriously undermine the ability of U.S. and other foreign companies to do business there.

The most problematic of these is the National Security Law, whose scope is vague and so broad it covers the economy, environment, Internet, and space exploration. Other areas of concern are the draft cybersecurity law, which authorizes even broader discretion by the government to control the flow of information online; a draft counterterrorism law, which could require foreign companies to turn over encryption keys; and a draft law threatening the operations of foreign nongovernmental organizations in China.

Economic struggles at home mean external trade and investment are again becoming a more important part of the Chinese government's plan to prop up growth. China's "Silk Road" initiatives in Central and Southeast Asia, the Asian Infrastructure Investment Bank, and the New Development Bank, among other institutions, reflect China's strategy of extending its diplomatic reach while boosting Chinese exports by creating demand for Chinese-built infrastructure across Asia. Chinese government officials see these initiatives as outlets for massive overcapacity at home, especially in such industries as steel and cement.

The economic slowdown may weaken public support for the government, which could encourage nationalist displays and adventurism abroad. Indications of such a trend are already manifesting, most notably in the South China Sea. Although China has pursued its maritime claims there with increasing assertiveness since 2009, its island-building campaign begun in late 2013 and continuing in 2015 represents an unprecedented level of expansion. With 2,900 acres reclaimed so far, China is rapidly pursuing an unrelenting strategy of incremental steps which have not thus far been effectively counteracted and which, taken together, present the smaller, weaker claimants in the region with a fait accompli.

The man-made islands are all the more provocative because they are being outfitted with a range of military infrastructure—from airstrips to artillery—which will enable China's increasingly powerful navy and air force to project power deep into the South China Sea and beyond. This is just the latest indication, contrary to reassurances from Beijing, that China's military modernization is challenging decades of U.S.-led peace and stability in the Asia-Pacific region. Other elements of China's military modernization are cause for concern as well. China's conventional missile forces, having undergone both quantitative and qualitative growth in recent decades, are capable of targeting U.S. ships and bases in the Pacific. Some nuclear missiles are capable of targeting the continental United States. Meanwhile, China is pursuing offensive capabilities in space and cyberspace, which it refers to as "the new commanding heights in strategic competition." Deployed in a conflict, China's counterspace and offensive cyber capabilities could enable China to neutralize an otherwise militarily superior adversary. In short, China's military modernization is designed to counter key aspects of U.S. military power.

These developments would be of lesser concern if China were demonstrating itself to be a force for democracy, rule of law, and responsible governance on the world stage. China has taken some action to contribute to global peace and security through antipiracy patrols, peacekeeping operations, and humanitarian assistance and disaster relief efforts. At the same time, though, China's willing-

ness to empower corrupt elites in other countries often undermines good governance and human rights. Meanwhile, Beijing continues to undermine the autonomy of Hong Kong, and use incentives and intimidation to draw Taiwan closer to the Mainland.

The expectation in the United States of economic reforms when Xi Jinping came into power has not yet been borne out by his government's performance. Instead, President Xi has not been able to resist the temptation of resorting to old economic tools—including government subsidies for favored industries, currency manipulation, overinvestment in fixed assets, and excessive intervention in the financial system—in order to avoid short term dislocation and retain popular support. At the same time, the government's military buildup, expansion in the South China Sea, and crackdown on dissidents and journalists have created significant concern elsewhere in Asia and increased doubts about China's intentions as it asserts itself on the world stage.

CHAPTER 1

U.S.-CHINA ECONOMIC AND TRADE RELATIONS

SECTION 1: YEAR IN REVIEW: ECONOMICS AND TRADE

Introduction

Although China boasted stronger-than-expected growth in 2015, the year was marked by often record-setting downturns and government intervention in the workings of its economy. China has acknowledged that its growth has been driven by high levels of investment in manufacturing capacity and infrastructure, which is not sustainable; therefore, the Chinese government announced in policy statements that the economy needs to shift to a consumption-driven growth model. To address these structural imbalances, Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping laid out a sweeping economic reform agenda in the 2013 Third Plenary Session of the 18th CCP Central Committee (hereafter “Third Plenum”).* However, responding to signs of economic weakness in 2015, in particular falling global exports and slowing gross domestic product (GDP) growth, the government resorted to stimulus measures to chase growth targets, rolling back some reforms, intervening to support the faltering stock market, and devaluing its currency, the renminbi (RMB).

On the external side, China is failing to deliver on its rebalancing pledge as well. Despite Chinese leaders’ stated intent to reduce reliance on exports as a source of growth, China continues to run massive global trade surpluses—an uninterrupted trend since 1995. In 2014, China’s global trade surplus in goods and services reached \$382 billion. China’s trade relationship with the United States is its most unbalanced: In 2014, the U.S. goods trade deficit with China increased by 7.5 percent year-on-year to \$342.6 billion, a record. And in the first eight months of 2015, the U.S. trade deficit in goods with China totaled \$237.3 billion, a 9.7 percent increase year-on-year, raising troubling questions for the bilateral relationship.

This section explores China’s external and internal rebalancing and the evolution of U.S.-China bilateral engagement since the

*For more on President Xi’s economic reform priorities and pledges (the Third Plenum reforms), see Nargiza Salidjanova and Iacob Koch-Weser, “Third Plenum Economic Reform Proposals: A Scorecard,” *U.S.-China Economic and Security Review Commission*, November 19, 2013.

Commission's 2014 Annual Report. It also serves as an introduction to a comprehensive assessment of China's changing economy and U.S.-China economic interaction that appears in subsequent sections. For an in-depth examination of the regulatory environment, competition policy, and other factors related to treatment of foreign firms, see Chapter 1, Section 2, "Foreign Investment Climate in China." For a full treatment of China's economic rebalancing and reform priorities, see Chapter 1, Section 3, "China's State-Led Market Reform and Competitiveness Agenda." And see Chapter 1, Section 4, "Commercial Cyber Espionage and Barriers to Digital Trade," for analysis of the Chinese government's efforts to boost its domestic companies by state-sponsored cyber theft of U.S. trade secrets.

China's Domestic Rebalancing

The Chinese government proclaimed a major realignment of the Chinese economy from one driven by fixed investment and exports to one driven more by domestic consumption. The leadership under President Xi has acknowledged that a managed slowdown is a necessary component of this rebalancing—the official GDP target has been reset to "approximately 7 percent" for 2015.¹ The government has said, however, that weakness in key indicators calls for additional measures to prevent growth from falling below the target.

As China registered its slowest economic growth in 24 years, the senior leadership in 2014 began to promote the "new normal" principle,² the core tenets of which are to:

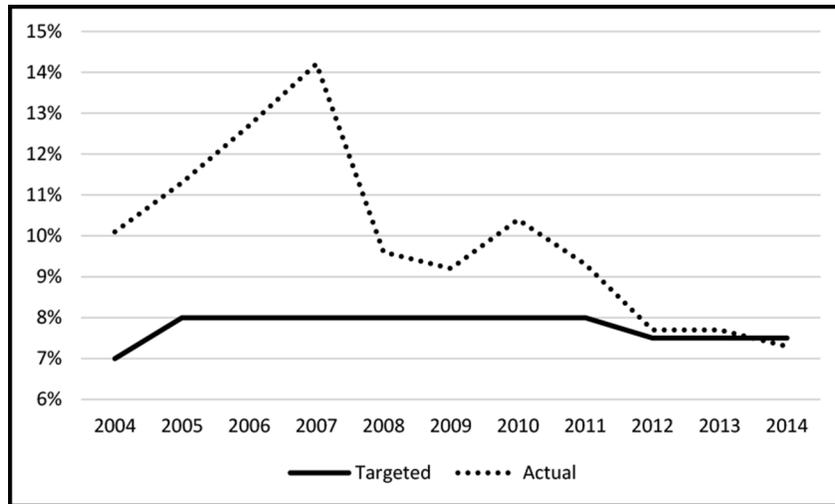
- Transition from high-speed growth to medium-high-speed growth;
- Optimize and upgrade the economic structure; and
- Transition from a factor- and investment-driven economy to an innovation-driven economy.³

The "new normal" principle reinforces China's long-held objectives—stated repeatedly since the 11th Five-Year Plan (2006–2010)—to focus on the quality of growth and rebalance the economy toward consumption, services, and high-tech manufacturing. According to Chinese policymakers, this would also mean abandoning the low-margin and low-value-added assembly of imported parts, certain energy-intensive manufacturing, and highly polluting mining operations.

In 2014, China appeared to make progress in its rebalancing agenda: GDP growth slipped to 7.3 percent, its lowest annual rate since 1990.⁴ It was also 0.2 percentage points short of the official government target, the first time this happened in over a decade (see Figure 1). In allowing the GDP to miss its official target of 7.5 percent, the Chinese government appeared to cross an important psychological threshold, signaling it would indeed accept slower, more balanced growth. However, the Chinese government's commitment to reform began to falter as growth in 2015 fell to the slowest rate since early 2009—7 percent in each of the first two quarters and 6.9 percent in the third quarter according to official estimates. The Chinese government started introducing measures to boost growth, and by the time the mainland stock exchange fell into turmoil in June 2015, the government was in full rescue mode.

The People’s Bank of China (PBOC) has attempted to stimulate the economy by lowering interest rates six times since November 2014 to encourage borrowers; it has also reduced banks’ reserve requirement ratios (RRR) four times in 2015 to loosen lending.⁵

Figure 1: China’s Actual and Targeted Real GDP Growth
(year-on-year)



Source: World Bank; International Monetary Fund (IMF); China’s National Bureau of Statistics.

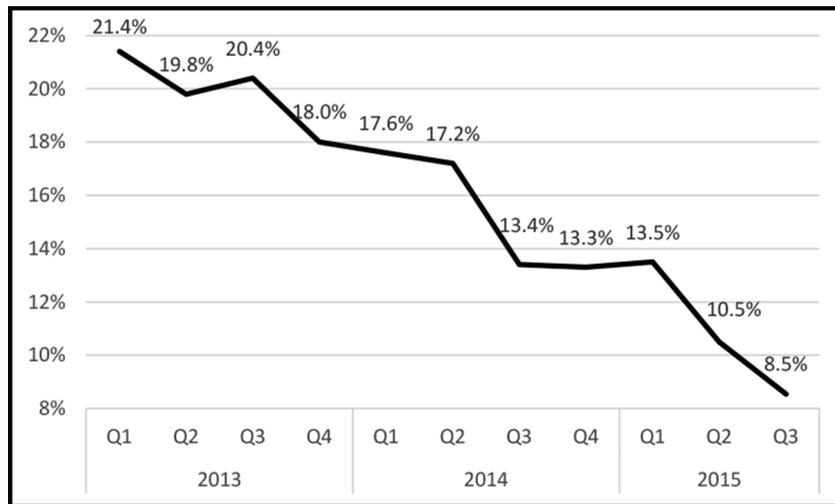
Defying Forecasts: The Reliability of China’s GDP Data

China’s official statistics showed better-than-expected GDP growth in the first half of 2015—7 percent—giving rise to speculation that the data were flawed and exaggerated. China’s National Bureau of Statistics stepped in to dispel the rumors, saying the data were accurate,⁶ but analysis of private estimates and synthetic measures of growth shows something is indeed amiss in China’s reporting, especially the politically sensitive GDP growth rate.

Unofficial estimates of China’s growth in the first half of 2015 vary, but all agree the GDP was well below the reported 7 percent. For example, according to Lombard Street Research, a London-based consultancy, in the second quarter of 2015, China’s GDP grew only 3.7 percent year-on-year, while Fathom Consulting, another research firm, estimates GDP growth in 2015 will reach only 2.8 percent.⁷ Rail volume, an important economic indicator, was down 10.1 percent in the first half of the year.⁸ Electricity production, meanwhile, grew by just 0.7 percent—which Gary Hufbauer, senior fellow at the Peterson Institute for International Economics, indicates is incompatible with 7 percent GDP growth, saying that “it’s consistent with maybe 4 percent at best.”⁹

Anemic factory utilization, a drop in fixed asset investment, and weaker consumption growth contributed to the slowdown in 2015. Expansion of fixed asset investment, a key pillar of China's traditional growth model, slowed to just 8.5 percent year-on-year in the third quarter (see Figure 2). In addition, China's disposable income per capita increased just 7.7 percent year-on-year in the third quarter, barely up from 7.6 percent in the second quarter.¹⁰

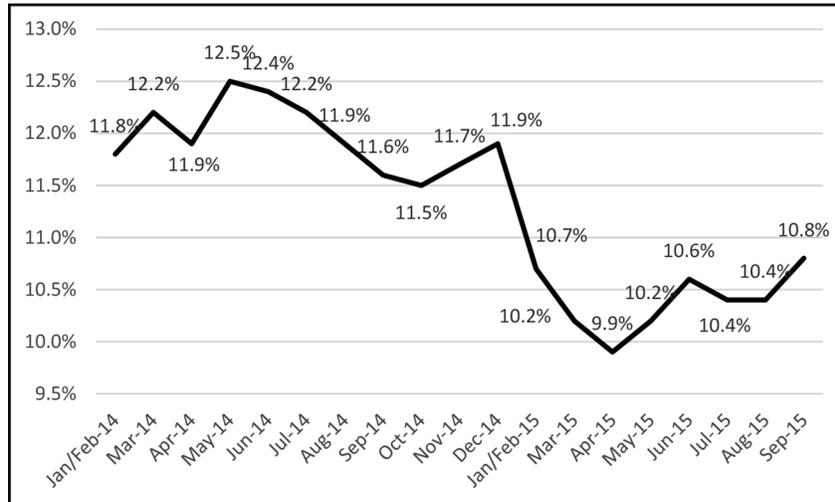
Figure 2: Growth in Fixed Asset Investment
(quarterly, year-on-year)



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

The stronger-than-anticipated third quarter was supported in large part by a small recovery in consumption and a resilient service sector, which grew 8.6 percent, up from 8.5 percent in the second quarter.¹¹ Retail sales of domestic goods and services, a proxy figure for overall consumption, grew at 10.8 percent year-on-year in September 2015, up from just 9.9 percent in April 2015 and 10.4 percent in August 2015 (see Figure 3).

Figure 3: China Retail Sales of Consumer Goods
(monthly, year-on-year)

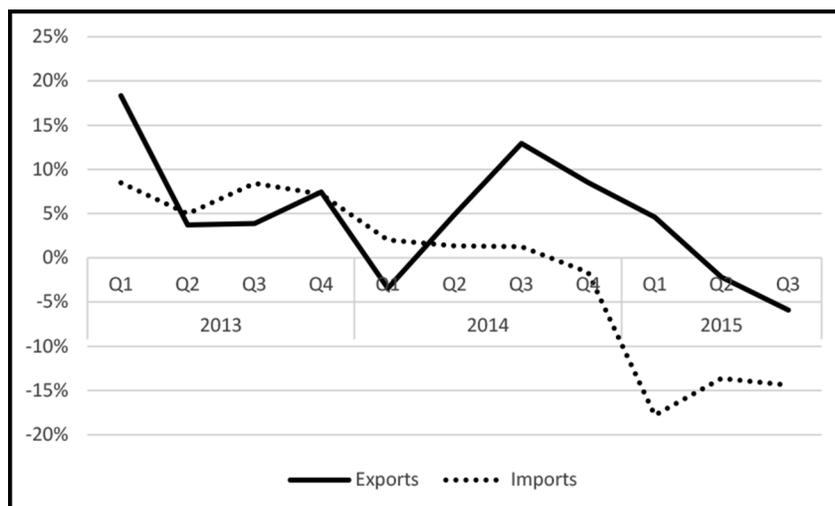


Source: China's National Bureau of Statistics via CEIC database.

Like investment, manufacturing activity has been sluggish. The Caixin/Markit unofficial estimate shows China's manufacturing Purchasing Managers' Index (PMI) at 47.2 in September 2015, down fractionally from 47.3 in August (a reading above 50 points distinguishes growth from contraction).¹² This is the lowest PMI reading since March 2009 and, together with ongoing fall in factory employment, raises fears that China's slowdown might be worsening.¹³

A stronger currency and low demand caused Chinese global exports to contract 5.9 percent year-on-year in the third quarter of 2015 (see Figure 4). Coupled with a contraction of nearly 14.5 percent for imports compared to the third quarter of last year, China's production rate is unlikely to increase in the short term; typically, declining import growth suggests a lack of demand from factories.

Figure 4: Growth in China's Exports and Imports
(quarterly, year-on-year)



Source: China's Administration of Customs via CEIC database.

Other traditional growth drivers are also showing signs of weakness. Profits at state-owned enterprises (SOEs) fell 8.2 percent year-on-year in the first three quarters of 2015, despite government's efforts to boost economic growth.¹⁴ Though the state sector has declined in importance, SOEs still contribute about half of all profits generated by Chinese companies, and SOEs in strategic sectors (such as energy) enjoy monopoly privileges. The central government, long unhappy with poor performance by SOEs, has aggressive plans to increase their efficiency. State media reported in late April that Beijing plans to consolidate central state-owned conglomerates from 112 to 40.¹⁵ By forcing major SOEs to merge, the central government wants to create industrial giants or "national champions" capable of competing globally.

Increasing SOE efficiency is a critical component of President Xi's agenda. In addition, President Xi has included SOE leadership in his stepped-up efforts to fight corruption. The Communist Party's top anticorruption agency, the Central Commission for Discipline Inspection, is in the midst of a two-year investigation of SOEs in strategic sectors.¹⁶ At the time of publication of this Report, the latest target of the campaign is Wang Tianpu, the powerful head of state-owned oil company Sinopec Group.¹⁷ Several executives at another state-owned energy major, China National Petroleum Corp., are also under investigation. In fact, according to Chinese media reports, 25 percent of the 124 senior SOE officials under investigation for corruption are from SOEs in the energy sector.¹⁸ (For more on China's efforts to restructure its SOEs, see Chapter 1, Section 3, "China's State-Led Market Reform and Competitiveness Agenda.")

China's Stock Market Collapse

Following a rapid climb in the first half of 2015, Chinese stocks began experiencing an extraordinary fall in mid-June.* On August 26, 2015, its lowest point, China's main exchange, the Shanghai Composite, was down 38 percent from its peak in June (see Figure 5), while Shenzhen, the smaller, tech-dominated exchange, was down 40 percent.¹⁹ Since the two exchanges started their slide, investors have lost about \$4 trillion, roughly equal to China's total market capitalization in 2012.²⁰

Given the importance of the stock market in propping up sluggish economic growth, the Chinese government responded to the collapse with heavy interference: ordering brokerages to buy, forbidding large shareholders to sell, sending police to root out "malicious" sellers, and dedicating significant government resources to stabilize prices (see Table 1 for a timeline of government intervention). As the market sell-off continued unabated into August, the government also resorted to outright censorship of information: state-run media outlets stopped reporting about the crash except as prescribed by government guidelines to keep coverage "strictly in line with official rules intended to deter pessimism or panic";²¹ at the same time, nearly 200 people were punished for "spreading rumors" online, including discussion of the stock market.²²

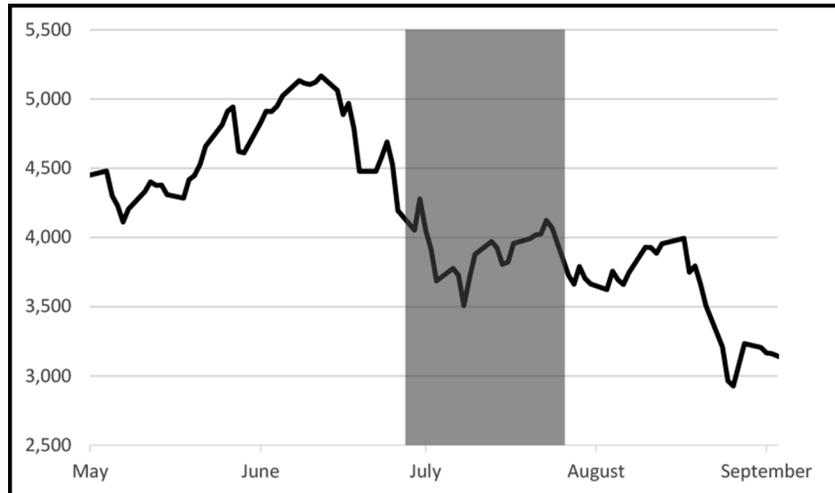
Analysis by Reuters shows China has spent nearly \$800 billion (RMB 5 trillion)† of public and private funds to stabilize the stock market.²³ This interference represents a dramatic reversal of President Xi's pledge at the 2013 Third Plenum that the market will play a "decisive" role in all aspects of the economy.²⁴

Even as the government put forth new policies to intervene in the market and prevent further collapse, shares continued to tumble after a brief recovery in early July (see Figure 5). Despite the fall, as of September 30 the Shanghai and Shenzhen exchanges were up, respectively, 31 percent and 29 percent year-on-year.²⁵

Policies pursued by the government in search of new sources of growth (beyond the traditional emphasis on fixed asset investment) are at least partly to blame for the creation of the bubble before stocks collapsed. Investment in the stock market was viewed as a way to generate capital for SOEs, boost funding for private companies, and provide households with means of realizing returns. State-run media outlets, including *People's Daily*, ran laudatory editorials describing the stock market growth as a sign of economic strength.²⁶ At the same time, regulators were reluctant or unable to step in because of interagency infighting and the political pressure to allow stock growth.²⁷

*For a brief analysis of China's stock market before the collapse, see Nargiza Salidjanova, "China's Stock Market Collapse and Government's Response," *U.S.-China Economic and Security Review Commission*, July 13, 2015.

† Unless otherwise specified, this Report uses the following exchange rate throughout: 1 RMB = 0.16 U.S. dollar.

Figure 5: Shanghai Composite Index, April–September 2015

Source: Bloomberg. <http://www.bloomberg.com/quote/SHCOMP:IND>.

Note: The shaded area represents the period of active government intervention highlighted in Table 1.

Table 1: Government Measures to Resuscitate the Stock Market, 2015

Date	Description
June 27	The PBOC stepped in to stop a selloff in Chinese stock markets, cutting benchmark interest and deposit rates by 25 basis points each (to 4.85 percent and 2 percent, respectively), and the RRR for some banks by 50 basis points. In a statement, the PBOC said the measures were aimed at reducing borrowing costs and “stabilizing growth,” but did not provide implementation details. ²⁸ This is the fourth time the PBOC has cut lending and deposit interest rates since November 2014; it is also the first time since October 2008 the central bank cut both interest rates and the RRR. ²⁹
June 29	The Ministry of Human Resources and Social Security and the Ministry of Finance published draft regulations allowing pension funds managed by local governments to invest in stocks, funds, private equities, and other stock-related products. The proportion of investment in stocks will be capped at 30 percent of the pension fund’s net value. ³⁰ The funds have combined assets worth more than \$320 billion (RMB 2 trillion), of which up to \$97 billion could flow into the stock market. ³¹
July 1	The China Securities Regulatory Commission (CSRC) allowed investors to use homes and other real assets as collateral to borrow money to purchase stocks. ³²
July 4	21 brokerages set up a fund worth about \$19 billion (RMB 120 billion) to buy shares. ³³ The CSRC suspended all new initial public offerings to reduce volatility. ³⁴
July 5	The CSRC said the PBOC will “uphold market stability” by providing funds (about \$42 billion, or RMB 260 billion) to a state-run margin trader, China Securities Finance Corporation (CSFC), to lend money to brokerage firms for purchases of shares. ³⁵ The PBOC also announced the CSFC will receive liquidity to “hold the line” against systemic risks, in essence using PBOC money to directly buy shares—a radical departure from its traditional role as a lender to brokerages. ³⁶

Table 1: Government Measures to Resuscitate the Stock Market, 2015—*Continued*

Date	Description
July 8	The CSRC banned shareholders with stakes above 5 percent from selling shares for six months. ³⁷
July 17	The CSRC announced it will have access to up to \$480 billion (RMB 3 trillion) from the PBOC and state-owned commercial banks to stabilize the market. ³⁸
July 27	The CSRC announced the CSFC will step up its buying of stocks, and launched an investigation into two major margin-lending platforms' involvement in a coordinated selloff. ³⁹

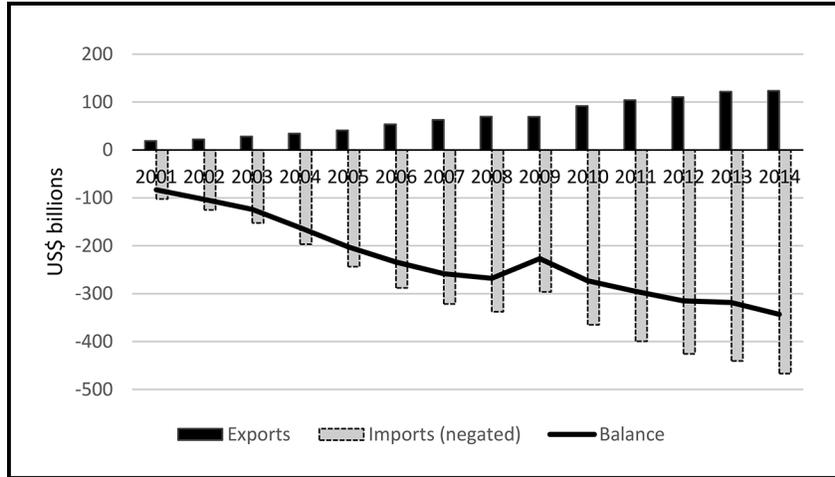
Concerns over China's slowing growth and falling stocks roiled global markets.⁴⁰ However, the isolation of Chinese stock markets, where foreign investors own only about 1.5 percent of Chinese shares, means global markets are unlikely to suffer long-term negative consequences.⁴¹ The effect on China's domestic consumption will likewise be contained, since stocks account for less than 15 percent of household financial assets.⁴² Nevertheless, this market rout is a major source of domestic concern in China. Beyond the stock markets, commodities and emerging market currencies fell on fears of China's instability.⁴³

The Chinese government's heavy-handed response to the stock market collapse prompted the International Monetary Fund (IMF) in July to urge China to return to its economic reform agenda, arguing that it was "increasingly urgent" because the stimulus was "not sustainable and is raising vulnerabilities."⁴⁴ (For a full treatment of China's reform priorities and rebalancing progress, see Chapter 1, Section 3, "China's State-Led Market Reform and Competitiveness Agenda.")

U.S.-China Bilateral Trade and Investment Issues

Despite slowing economic growth, China's trade surplus with the United States continues to rise. And though U.S. exports to China continue to increase, imports from China have grown even faster, leading to a trade relationship that is progressively more unbalanced. In 2014, the U.S. goods trade deficit with China increased by 7.5 percent year-on-year to \$342.6 billion, a record (see Figure 6). U.S. exports to China grew 1.9 percent year-on-year, while imports increased 6 percent. This stood in contrast to 2013, when U.S. exports to China rose by 10.2 percent, outpacing imports by 6.7 percentage points. In effect, after some progress in 2013, efforts to achieve a closer balance in bilateral trade are faltering. In the second half of 2014, U.S. exports to China actually declined by 2.1 percent year-on-year, compared to 15.9 percent growth during the same period a year earlier.

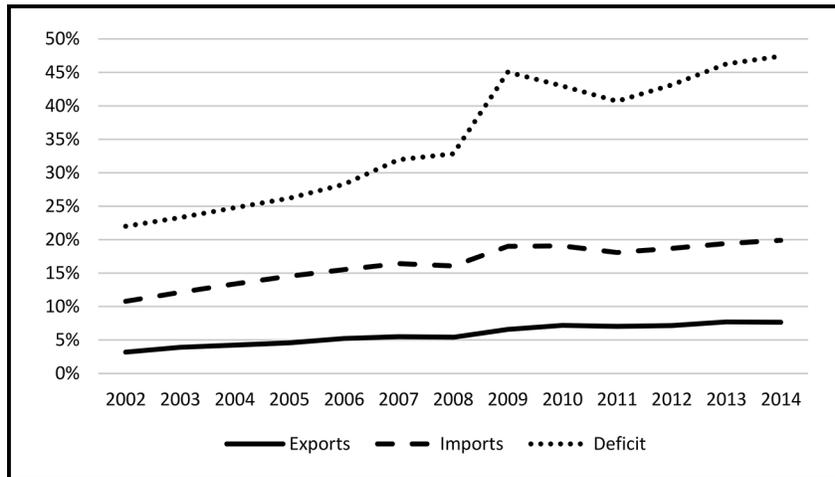
Figure 6: U.S.-China Goods Trade, 2006-2014



Source: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division, North American Industry Classification System (NAICS) database, May 2015.

China's share of the U.S. goods deficit with the world also set a new record in 2014, reaching 47 percent (see Figure 7). The overall goods deficit for 2014 was \$722.5 billion. U.S. exports to China also grew at a slower rate than U.S. exports to the rest of the world, counter to the prevailing trend of the past five years.

Figure 7: China's Share of U.S. Goods Exports, Imports, and Deficit



Source: U.S. Census Bureau.

In the first eight months of 2015, the U.S.-China trade deficit in goods was \$237.3 billion, a \$21 billion (or 9.7 percent) increase over the same period in 2014 (see Table 2). U.S. exports to China declined 3.9 percent in the first eight months of 2015, while imports rose 6.1 percent year-on-year.

Table 2: U.S. Goods Trade with China, January–August 2015

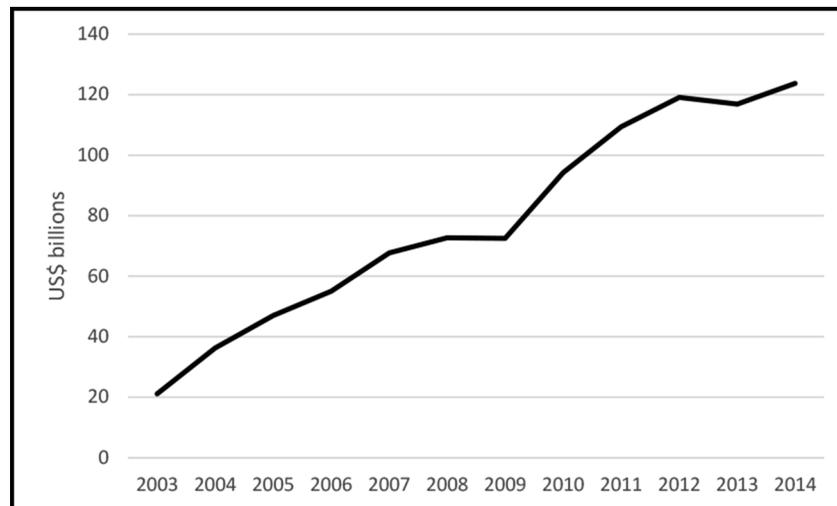
(US\$ billions)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Exports	9.6	8.7	9.9	9.3	8.8	9.7	9.5	9.2
Imports	38.2	31.2	41.1	35.8	39.2	41.1	41.1	44.1
Balance	(28.6)	(22.5)	(31.2)	(26.5)	(30.5)	(31.5)	(31.6)	(34.9)
<i>Balance YTD</i>								
2014	(27.8)	(48.7)	(69.1)	(96.4)	(125.2)	(155.2)	(186.1)	(216.3)
2015	(28.6)	(51.1)	(82.4)	(108.9)	(139.3)	(170.8)	(202.3)	(237.3)

Source: U.S. Census Bureau.

The United States continues to register a surplus in services with China; however, the amount is dwarfed by the U.S. deficit in goods. In 2014, the U.S. trade surplus in services with China totaled \$26.8 billion, a 14.5 percent increase from 2013.⁴⁵ Total bilateral trade in services rose approximately 8 percent in 2014, with U.S. service exports growing 10 percent, the same rate as in 2013, and Chinese service imports growing 2.6 percent.⁴⁶ Travel (including for business and education) is the top U.S. service export to China, followed by charges for use of intellectual property.⁴⁷

The United States continued to maintain a deficit in advanced technology products (ATP) trade with China in 2015, a long-standing trend (see Figure 8). In the eight months of 2015, the United States imported \$95.3 billion of ATP from China, and exported \$22.6 billion, for a deficit of \$72.7 billion. China now accounts for 10 percent of total U.S. ATP exports and 34 percent of U.S. ATP imports.⁴⁸

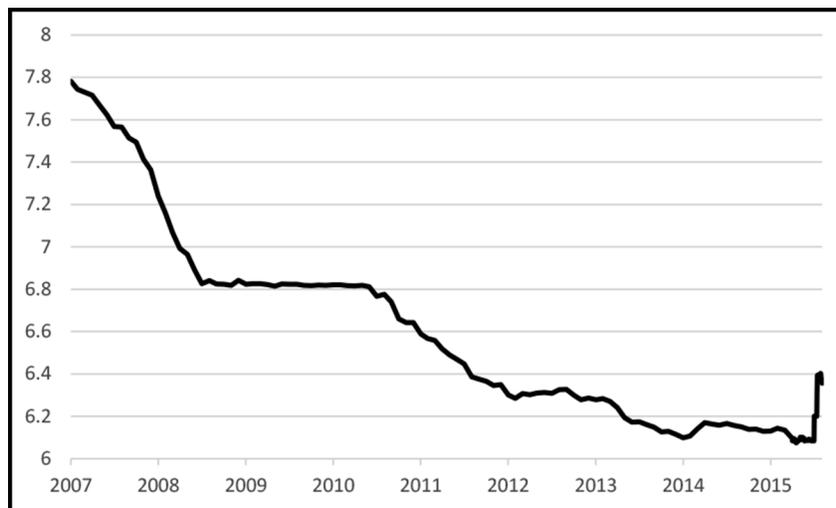
Figure 8: U.S. Deficit with China in ATP

Source: U.S. Census Bureau.

Currency and Foreign Exchange Reserves

In July 2005, China moved the RMB from a tight peg to the U.S. dollar to a managed float.* A decade later, the government retains a firm grip on the currency: the PBOC sets a new value for the RMB-dollar exchange rate each trading day, even while permitting fluctuations in intra-day trading within a 2 percent trading band. In the intervening years, the government has allowed the RMB to slowly appreciate against the dollar—though the government reinstated the peg during the financial crisis—ultimately rising 30 percent (see Figure 9).

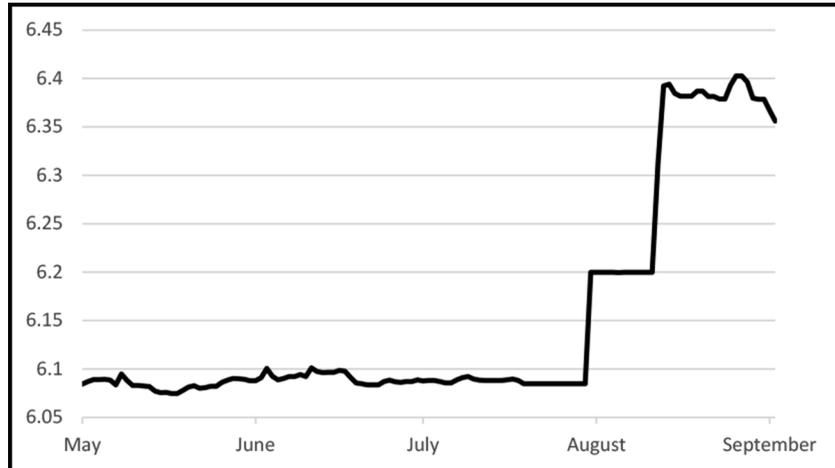
Figure 9: RMB to U.S. Dollar Exchange Rate, 2007–September 2015



Source: Oanda, “Historical Exchange Rates.” <http://www.oanda.com/currency/historical-rates/>.

As China’s economic growth weakened in the first half of 2015, the Chinese government stepped in to act. On August 11, the PBOC unexpectedly devalued the RMB by 1.9 percent, followed by another 1.6 percent cut on August 12, and a 1.1 cut on August 13, bringing the total devaluation over three days to 4.4 percent, the biggest drop in decades (see Figure 10). Rather than using its traditional method of devaluing the currency—buying dollars and selling the RMB—the PBOC set the RMB daily trading rate according to the market-determined closing price within its trading band from the previous day. This change in policy does not mean the RMB will now have a free-floating exchange rate, since the PBOC reserves the right to reset the exchange rate to any value.

*According to the PBOC, the RMB’s value is managed against a basket of currencies. The composition of this basket has not been revealed.

Figure 10: RMB to U.S. Dollar Exchange Rate, May–September 2015

Source: Oanda, "Historical Exchange Rates." <http://www.oanda.com/currency/historical-rates/>.

After the three-day devaluation under the new trading system prompted worries that the RMB would have a prolonged fall, the PBOC intervened on August 15, stopping the devaluation and setting the daily RMB-dollar exchange rate marginally higher (see Figure 10). By the end of August, the central bank spent as much as \$200 billion of China's foreign exchange reserves to keep the RMB from falling too much.⁴⁹

The government's decision to turn to a weaker currency raises concerns among observers that the economy is slowing down much faster than previously thought. This was a significant departure, since in the first half of 2015, the government has been intervening in the foreign exchange markets to keep the RMB from depreciating against the dollar. Since May 2015—and until the August 11 devaluation—the RMB had barely moved against the dollar (see Figure 10). Many China watchers welcomed the move to weaken the currency because it better corresponds to the overall state of China's economy. According to Nicholas Lardy, senior fellow at the Peterson Institute for International Economics, if the RMB were permitted to move based on a market-determined exchange rate, it likely would have depreciated on its own in response to China's slowdown.⁵⁰ Others, however, warned that China's government devalued the RMB to help China's battered export sector.⁵¹ China has a history of manipulating its exchange rate for mercantilist purposes; therefore, the burden is high on China to prove that this devaluation of the RMB is indeed a step toward a more market-determined rate and not an opportunistic way to boost competitiveness of its exports.

The RMB's devaluation comes at a time when China is seeking a broader international role for its currency. In May 2015, the IMF announced that, in its view, China's currency was "no longer undervalued," citing the RMB's appreciation over the previous 12 months.⁵² This announcement marked an important reversal by

the IMF after more than a decade of criticizing China for tightly managing the RMB's value.

While acknowledging that the RMB “had appreciated in real effective terms,” the U.S. government believes that China’s currency “remains below its appropriate medium-term valuation.”⁵³ This is a change from its previous assessment that the RMB is “significantly undervalued.” In its October 2015 semiannual report to Congress, the U.S. Department of the Treasury pointed to China’s high current account surplus and lack of sufficient domestic rebalancing toward consumption over investment as indicators that “core factors that have driven RMB appreciation remain in place.”⁵⁴ The report also highlighted that China’s central bank, the PBOC, continues to intervene in the value of the RMB.⁵⁵ Following China’s move to a new exchange rate mechanism, Treasury said it would carefully monitor its implementation—specifically, whether China allows the RMB to respond to market forces—and called for further exchange rate policy transparency.⁵⁶ The only way of determining the actual value of the RMB against the dollar would be to allow the Chinese currency to be freely traded on international currency markets without government interference—something Beijing has steadfastly refused to do.

The IMF’s May 2015 announcement comes amid China’s efforts to promote the RMB for inclusion as a reserve currency in the Special Drawing Rights (SDR) basket at the IMF.* Chinese authorities have stated publicly their interest in including the RMB in the SDR basket. IMF First Deputy Managing Director David Lipton said, “RMB inclusion [in the SDR basket] is not a matter of ‘if’ but ‘when.’”⁵⁷ The IMF’s decision on the SDR basket is expected in November 2015; in August, however, the IMF indicated that following the decision, the new basket will become effective starting October 2016 rather than January 2016 as is customary.⁵⁸ A currency must be “freely usable” to be eligible for inclusion—a criterion China does not meet because it maintains strict controls over movement of capital over its borders and the amount the RMB can move against the dollar.⁵⁹ The IMF reviews composition of the SDR basket every five years; therefore, if the RMB were not included in 2015, then it would not be up for reconsideration until 2020.

The Chinese government’s intervention to keep the RMB steady before the August 11 devaluation and after partly explains why China’s foreign exchange reserves declined † from \$4 trillion last year to \$3.51 trillion in September 2015.⁶⁰ China’s official holdings of U.S. Treasuries ‡ recovered in August to reach \$1.27 trillion, after falling more than \$30 billion in July 2015 (Japan is in second place, with \$1.20 trillion).⁶¹

*The SDR is an international reserve asset created by the IMF. Currently, the SDR basket is composed of the U.S. dollar, euro, pound, and yen. See International Monetary Fund, “Special Drawing Rights (SDRs),” April 9, 2015.

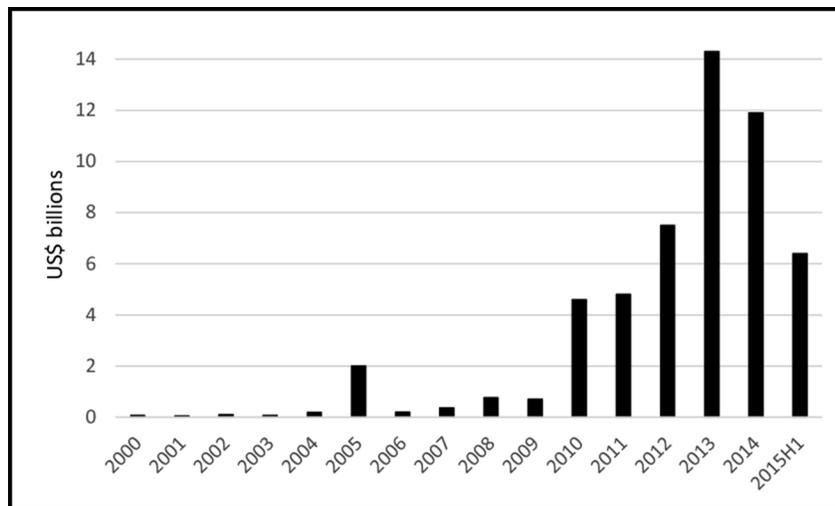
† Other causes of the decline in China’s foreign reserves are capital flight (estimates put the amount at \$250 billion to \$300 billion in the six months to March 2015) and China’s contribution to the two multilateral development institutions it has spearheaded, the Asian Infrastructure Investment Bank and the New Development Bank, though the amounts in both cases are relatively small.

‡ Because the Chinese government also buys unregistered Treasuries on the secondary market—purchases that do not show up in official tallies—China’s actual holdings of U.S. government securities are higher than officially reported.

Chinese Investment in the United States

Chinese investment in the United States continued to rise in 2015.* According to data from Rhodium Group, the stock of Chinese foreign direct investment (FDI) in the United States grew from \$2.5 billion in 2005 to \$47.6 billion in 2014, with \$11.9 billion worth of deals completed in 2014 alone.⁶² In the first six months of 2015, Chinese investors spent \$6.4 billion in the United States, nearly double the amount for the same period last year (see Figure 11).

Figure 11: Chinese FDI in the United States, 2000–2015H1



Note: Data for 2015 are for the first six months.

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

The biggest transaction so far this year is the \$1.95 billion acquisition of the Waldorf Astoria hotel in New York City by Anbang, a Chinese insurance company (see textbox below). This continues the trend of sizable investments by Chinese companies in U.S. real estate, including residential and commercial properties.⁶³ The information and communications technology sector is also a major recipient of Chinese investment. Chinese computer company Lenovo’s acquisitions of Motorola Mobility (for \$2.9 billion) and IBM’s x86 server business (for \$2.1 billion) were the two biggest deals by Chi-

*This section relies on private, rather than official, estimates of Chinese FDI in the United States. Official statistics (both U.S. and Chinese) underestimate the true volume of Chinese investment because they do not fully account for flows of FDI, including through Hong Kong and other offshore financial centers. Official data are also provided after a significant delay, which hinders analysis. For example, as the International Trade Administration (ITA), a bureau within the U.S. Department of Commerce, stated in a 2013 report on Chinese FDI in the United States, estimates from the Rhodium Group showed \$6.5 billion of FDI flows from China to the United States in 2012, while U.S. government estimates showed only \$219 million for the same year. In the same report, ITA said it is “important to be aware of different estimates” of Chinese investment. ITA noted that private sector valuations employ different definitions of FDI, data-gathering mechanisms, and accounting methods that lead to differences in reported value of investments. See International Trade Administration, *Report: Foreign Direct Investment (FDI) in the United States from China and Hong Kong SAR*, July 17, 2013.

nese investors in the United States in 2014. This year, Tsinghua Unigroup, the investment arm of one of China's top universities, reportedly wanted to acquire U.S. chip maker Micron for \$23 billion.⁶⁴ News of the rumored deal prompted concern from observers and policymakers about the potential national security implications of selling the last U.S.-based chipmaker to a Chinese SOE at the time when cyber attacks against U.S. companies by China-based groups are on the rise (for more on Chinese state-sponsored cyber theft, see Chapter 1, Section 4, "Commercial Cyber Espionage and Barriers to Digital Trade in China"). Another Tsinghua subsidiary, Unisplendour, also announced a planned acquisition: \$3.78 billion for a 15 percent stake in Western Digital, a U.S. data storage company; the deal is expected to close in early 2016.⁶⁵

U.S. Government Officials Avoid Waldorf Astoria after the Sale

The Waldorf Astoria in New York City has historically served as the residence for U.S. ambassadors to the UN, and for decades has been used as accommodation for U.S. diplomats during the UN General Assembly.⁶⁶ The acquisition of the Waldorf by a Chinese company created a minor controversy when it was revealed that the president, White House officials, and U.S. Department of State personnel will not stay in the hotel following the purchase. The spokesman for the U.S. Department of State said the residency at the Waldorf of the current U.S. envoy to the UN, Samantha Power, was under review, but would not comment on the decision.⁶⁷ While U.S. government officials declined to comment, it is widely believed the decision was prompted by fears of Chinese espionage and the announcement of an upcoming "major renovation," which could be used to install surveillance equipment in the hotel.⁶⁸

The Chinese government significantly liberalized regulations on outbound investment by abolishing the requirement for: (1) Ministry of Commerce approval for nonsensitive outbound FDI, (2) National Development and Reform Commission approval for projects of \$1 billion or less, and (3) State Administration of Foreign Exchange approval of foreign exchange transactions related to FDI.⁶⁹ These changes are likely to encourage more Chinese firms to invest abroad, including in the United States.

At the same time, FDI flows into China continue to decelerate as the investment climate for foreign firms seeking to invest in China deteriorates. According to the U.S. Bureau of Economic Analysis, in 2014, annual U.S. FDI in China reached \$6.3 billion, a 4.9 percent decrease year-on-year. In the first half of 2015, according to Chinese statistics, investment from the United States declined 37.6 percent year-on-year, and investment from Japan, another big investor, decreased 16.3 percent.⁷⁰ Alongside rising costs, increased competition, and inadequate protection of intellectual property, hostile and discriminatory treatment by Chinese regulators has emerged as a key obstacle for U.S. and other foreign investors.

(China’s regulatory environment, competition policy issues, and other factors related to treatment of foreign firms are covered in depth in Chapter 1, Section 2, “Foreign Investment Climate in China.”)

A U.S.-China Bilateral Investment Treaty (BIT) currently under negotiation has the potential to alter the bilateral investment relationship. BIT negotiations entered a new phase with China’s formal submission of its negative list* on June 12. China made a revised negative list offer in advance of the September summit between President Barack Obama and President Xi. U.S. Trade Representative Michael Froman said the revised negative list, while an improvement, fell short of “the kind of high-standard agreement necessary to achieve our mutual objectives.”⁷¹

U.S.-China Bilateral Engagement

World Trade Organization-Related Issues

The U.S.-China relationship continues to be marked by tensions over China’s violation of key World Trade Organization (WTO) provisions and failure to make a sufficient offer to join the WTO’s Agreement on Government Procurement, which China agreed to do in 2001 as part of its accession to the WTO. In December 2014, China submitted its latest accession offer to join the Agreement on Government Procurement, making incremental improvements in the scope of coverage, though other parties to the Agreement—including the United States—still deemed it insufficient. The primary improvement in the new offer is the minor addition of five provinces and new service sectors to the deal.† China has refused to include most SOEs as parties to the deal—a key demand from the United States.

The United States also continued to urge China to report its subsidies to the WTO. Although China agreed to do so when it acceded to the WTO in 2001, it has never submitted a “complete notification of subsidies maintained by central and sub-central governments.”⁷² In response to China’s failure to carry out its obligations, the United States has been conducting its own research and analysis, and filing with the WTO so-called “counter notifications” of Chinese subsidy measures. The United States made its first such submission in 2011, listing nearly 200 subsidies; it followed with a second notification in October 2014, identifying over 100 subsidies.⁷³ In their 2015 *Subsidies Enforcement Annual Report to the Congress*, the Office of the U.S. Trade Representative (USTR) and the U.S. Department of Commerce noted that to date “China has not provided a complete, substantive response to these counter notifications,” instead claiming that the United States has “misunderstood” China’s subsidy programs.⁷⁴ China also refuses to discuss this matter with the United States or to notify any of the subsidies in question to the WTO.⁷⁵

* Under a negative list, only items in the list are excluded from the agreement; all other items are included. In other words, foreign investment is prohibited or restricted in the sectors included in the negative list, but permitted in all other sectors.

† For details of China’s latest accession offer, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, January 7, 2015.

New and pending WTO cases between the United States and China are summarized in Addendum I. Other key developments in U.S.-China engagement at the WTO are discussed in the following subsections.

China Ends Rare Earths Quotas, Introduces Licensing System

In January 2015, the Chinese government announced the end of restrictive quotas on exports of rare earth minerals, tungsten, and molybdenum, all of which are crucial for many advanced technology industries, including clean energy and weapons guidance systems. The move was widely expected following the WTO dispute settlement body's ruling (upheld on appeal) finding China's exports restrictions on rare earths to be in violation of China's WTO obligations.* In May, China announced it had complied with the WTO ruling and eliminated export duties on rare earths; however, the United States did not agree that China was in full compliance.⁷⁶ The two sides agreed to resolve the dispute in accordance with WTO procedures; the outcome is pending.

The ending of the quotas will likely have limited impact on the global rare earths market. One reason is that China's exports of rare earths—and therefore the importance of the quotas—started to decline slightly before the WTO's ruling when other nations, pressed by price shocks and limited supply, ramped up their own production or sought alternatives. According to the latest estimates, as other sources of supply became available, China's exports of rare earths started falling below levels permitted by the quota.⁷⁷ Molycorp, the only U.S. miner and producer of rare earth elements, came online after China initially restricted exports. However, as global prices for rare earths plunged in response to the rise of alternative sources of production or substitutes, Molycorp struggled to turn a profit, ultimately filing for bankruptcy protection in June 2015.⁷⁸

Still, the Chinese government does not plan to relinquish control over the rare earths industry following the ending of the quotas. The announcement from China's Ministry of Commerce ending the quotas also introduced a licensing system for enterprises wishing to export rare earths. Enterprises that seek to export rare earths will need to apply for a license, with approvals decided on a case-by-case basis.⁷⁹

United States Challenges Chinese Export Subsidies at the WTO

In 2015, the USTR announced new action at the WTO over China's "Demonstration Bases-Common Service Platform" program, which provides WTO-illegal export subsidies† to businesses in industrial clusters—known as "Demonstration Bases"—located throughout China. The program targets seven critical industries: (1) textiles, apparel, and footwear; (2) advanced materials and metals (including specialty steel, titanium, and aluminum products); (3) the light industry; (4) specialty chemicals; (5) medical products;

*For background on the case, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, April 4, 2014.

†While the WTO permits some subsidies, those that are "contingent, in law or in fact, whether wholly or as one of several conditions, on export performance," are among those deemed prohibited. See World Trade Organization, "Agreement on Subsidies and Countervailing Measures."

(6) hardware and building materials; and (7) agriculture.⁸⁰ The request for consultations is a first step in the dispute settlement process. In the meantime, the EU, Brazil, and Japan requested to join the consultations.

The United States alleges that under the program, “enterprises that meet export performance criteria and are located in 179 Demonstration Bases throughout China” receive cash grants and low-cost or no-cost services (such as information technology [IT], product design, and worker training).⁸¹ According to USTR estimates, China has given almost \$1 billion over a three-year period to Common Service Platform suppliers. In addition, certain Demonstration Base enterprises have received at least \$635,000 worth of benefits annually.⁸² According to the USTR, exports from Demonstration Bases comprise a significant portion of China’s exports. For example, 16 of the approximately 40 Demonstration Bases in the textiles sector accounted for 14 percent of China’s textile exports in 2012.⁸³

The United States has a history of challenging China’s export subsidy programs at the WTO. The USTR brought a 2007 case against subsidy programs supporting a wide range of industries, including steel, computers, and other manufactured goods,⁸⁴ and a 2008 case against China’s “Famous Brands” program, which offered grants, loans, and other incentives to Chinese enterprises to promote their global presence.⁸⁵ Both cases were ultimately settled by mutual agreements, with China agreeing to eliminate the prohibited subsidies.⁸⁶ The new Demonstration Bases-Common Service Platform program itself was discovered during consultations with China over export subsidies to the auto industry under China’s “National Auto and Auto Parts Export Base” program.⁸⁷ Although the consultations on the auto subsidy program began in September 2012,⁸⁸ three years later they have yet to reach a resolution, and USTR officials said they are still “actively engaged” with China.⁸⁹

Information Technology Agreement

On July 28, 2015, the WTO announced that negotiations to revise the Information Technology Agreement (ITA) have concluded.⁹⁰ The agreement covers 201 tariff lines, including new-generation semiconductors, global positioning system (GPS) navigation systems, tools for manufacturing printed circuits, telecommunications satellites, and touch screens.⁹¹

By the end of October 2015, each participant agreed to submit a draft implementation schedule, with the goal of finalizing the agreement in time for the December ministerial conference in Nairobi. The participants agreed to reduce tariffs on the covered goods in four equal annual reductions of customs duties, beginning on July 1, 2016, and concluding on July 1, 2019.⁹²

The original ITA went into effect in 1997 among the United States and 28 other WTO members, not including China (which did not join the WTO until 2001).^{*} Negotiations for a revised ITA were begun in 2012 and slated for conclusion at the WTO Bali Summit in December 2013. However, the process stalled because Beijing de-

^{*}The ITA currently includes 81 participants, including the United States, China, South Korea, and the EU member states. For a full list, see World Trade Organization, “Information Technology: Schedule of Concessions.”

vised a long list of items it wanted to either exclude completely or subject to tariff phaseout periods longer than those permitted under the original ITA framework.⁹³ The talks were suspended in November 2013. In November 2014, the U.S. Administration announced it convinced China to table a more acceptable offer. Specifically, China agreed to: (1) revise its ITA list to include disputed tariff lines, notably advanced semiconductors known as MCOs, magnetic resonance imaging (MRI) machines, and high-tech testing equipment; and (2) ensure its tariff phaseout periods comply with the ITA framework's three staging categories of immediate, three years, and five years.⁹⁴ Based on the U.S.-China agreement, the other ITA participants reopened the talks.

Since 1997, information technologies have proliferated, IT product trade has risen threefold, and China has become a dominant producer and consumer of technology goods. As Table 3 demonstrates, the United States currently runs trade deficits with China in several key technology product lines (for example, static converters, video game consoles, and semiconductors). In some cases, China accounts for the largest share of U.S. imports of these goods.

Table 3: U.S.-China Trade in Select Technology Products

(US\$ millions; share %)

	U.S. Imports					
	U.S. global imports			China's share		
	2002	2008	2014	2002	2008	2014
Static converters	3,594	6,517	9,060	30.7%	45.0%	49.5%
Video game consoles	5,893	12,849	6,106	45.0%	90.2%	87.9%
Diodes, transistors, and semi-conductors	3,289	5,549	9,447	8.5%	17.2%	31.3%
CT scanners	387	455	526	1.0%	20.8%	20.6%
MRI machines	514	530	444	0.7%	4.0%	7.5%
	U.S. Exports					
	U.S. global exports			China's share		
	2002	2008	2014	2002	2008	2014
Static converters	1,505	2,815	4,004	3.3%	6.3%	6.6%
Video game consoles	1,161	4,567	2,939	0.4%	0.4%	0.7%
Diodes, transistors, and semi-conductors	4,020	8,555	7,466	5.4%	5.1%	4.8%
CT scanners	240	656	430	8.0%	6.0%	17.9%
MRI machines	478	441	722	4.1%	7.4%	20.8%

Source: U.S. International Trade Commission.

Note: HS Codes used for this table are static converters (850440); video game consoles (9504); diodes, transistors, and semiconductors (8541); CT scanners (9022120000); and MRI machines (9018130000).

While the conclusion of the WTO negotiations is important, it does not guarantee success. China has not consented to including tariff elimination on several key products, including liquid crystal displays (LCDs). More important, phaseout periods for the covered items remain subject to negotiation.⁹⁵ Although China may not go

beyond the maximum phaseout period, ITA members meeting for the first round of negotiations for the phaseouts reported China was demanding it be allowed to phase out tariffs over the longest period (five or seven years, depending on the product) for around 80 IT products (40 percent of the total) being considered.⁹⁶ If China succeeds in securing these phaseouts, it could use those years to establish nontariff barriers that protect sensitive products from foreign competition. Examples of such barriers include discriminatory value-added taxes on imports, hidden subsidies for domestic producers, standards that favor indigenous products, and control over procurement of key technologies by state-owned entities. (China is still not a signatory to the WTO's Agreement on Government Procurement, which generally bans discrimination against foreign goods in government purchases.)

Minimal Progress at Seventh Strategic and Economic Dialogue

At the seventh round of the Strategic and Economic Dialogue (S&ED) talks, held in Washington on June 23–24, 2015, participants discussed over 100 issues but accomplished little. Several of the outcomes announced at the conclusion of the S&ED merely repackaged China's existing reforms as new commitments. Overall, the S&ED yielded slight progress on environmental and financial issues but reached an impasse in addressing fundamental strategic and economic issues such as China's activities in the South China Sea, cybersecurity, anticorruption cooperation, and investment barriers. Among the limited outcomes of the S&ED are:

- *China's commitment to reduce intervention in the RMB exchange rate:* China promised to intervene in its exchange rate only when "disorderly market conditions" make it necessary.⁹⁷ This commitment serves the Chinese government's purpose of portraying the RMB as a liberalized currency, and allows Beijing to promote the RMB for inclusion as a reserve currency in the SDR basket at the IMF.⁹⁸ As U.S. Treasury Secretary Jacob J. Lew cautioned early on in the S&ED, "the real test will come when the market again pushes for RMB appreciation against the dollar."⁹⁹
- *China's pledge to expand foreign investors' access to its capital markets:* The Chinese government repackaged its financial reforms as an S&ED commitment. The reforms were previously outlined at the Third Plenum in December 2013. At the S&ED, China once again promised to loosen restrictions on access to its capital markets for foreign financial firms and investors, particularly in its pilot Shanghai Free Trade Zone (FTZ).¹⁰⁰ These promises outlined in more detail than previous commitments greater freedom for foreign firms to issue ratings on local government bonds; set up futures, private security fund management, and joint venture securities companies; and participate in interbank and listed bond markets.¹⁰¹ If implemented, these policies could open market access to the world's third-largest bond market after the United States and Japan, though strong state controls will remain in place.¹⁰²

- *Enhanced cooperation on climate change and environment protection:* The United States and China bolstered their environmental cooperation, with nearly half of the strategic outcomes listed related to climate change and environmental protection.¹⁰³ The United States and China established a formal U.S.-China fisheries dialogue and announced the creation of six new collaborations under the “EcoPartnerships” program, which brings together nonprofit, public, and private organizations to address air pollution, carbon dioxide sequestration, iron and steel slag waste, aircraft biofuel, solar thermal power, and sea turtle migration.*¹⁰⁴ The two sides also highlighted exchanges or past agreements such as the extension of the Clean Energy Research Center in November 2014, overstating the accomplishments of the seventh S&ED.¹⁰⁵

President Xi Visits the United States

President Xi Jinping made his first state visit to the United States in September 2015. Given the daunting list of U.S. complaints against China’s conduct—including commercial cyber espionage and a worsening foreign investment climate in China—expectations for substantive breakthroughs were low.

President Xi started the visit in Seattle, delivering a speech to 650 business leaders and other guests which sought to dispel concerns about China’s slowing growth and reassure the U.S. government and companies that China remains committed to its reform agenda. President Xi said China will not manipulate its currency, discriminate against foreign businesses, or engage in cyber theft.¹⁰⁶ For all its rhetorical flourish, the speech was light on substance, with few firm statements or concessions on the direction of Chinese government policies in key areas of friction.

After Seattle, President Xi traveled to Washington for a meeting with President Obama. The two countries announced several cooperative efforts, including on commercial cyber espionage and climate change. On commercial cyber espionage, the joint factsheet issued by the United States and China said 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,” though President Xi continued to deny that China ever engaged in cyber espionage for economic purposes (for an in-depth assessment of President Xi’s Seattle visit and the cyber agreement, see Chapter 1, Section 4, “Commercial Cyber Espionage and Barriers to Digital Trade”).¹⁰⁷

The announcement on cooperation to combat climate change was more substantial. China confirmed that it plans to launch in 2017 a national emissions trading system (known as cap-and-trade), which will cover power generation, steel, cement, and other industrial sectors.¹⁰⁸ China has seven pilot emissions trading systems, and originally planned a nationwide system for 2015 and then 2016, but the deadline kept getting delayed due to difficulties of

*For additional analysis on China’s clean energy policy and U.S.-China clean energy cooperation, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 183–226.

scaling up local projects nationally and lack of transparency in pricing and quota allocations.¹⁰⁹ The delay prompted some skepticism over the summit announcement, with some observers saying the 2017 start date refers only to the initial stages of the nationwide implementation.¹¹⁰

Presidents Obama and Xi also expressed a “common vision” for UN climate talks in Paris in December 2015.¹¹¹ China, one of the world’s biggest suppliers of public infrastructure, promised to provide \$3.1 billion (RMB 20 billion) to a bilateral fund designed to help developing countries combat climate change.¹¹²

No substantial progress was announced on the BIT. A statement released by the White House said both presidents “reaffirm as a top economic priority the negotiation of a high standard BIT” and promised to “intensify the negotiations.”¹¹³ The statement went on to commit both governments to “limit the scope of their respective national security reviews of foreign investments (for the United States, the CFIUS process) solely to issues that constitute national security concerns, and not to generalize the scope of such reviews to include other broader public interest or economic issues.”¹¹⁴ The statement is directed at Chinese concerns over U.S. review of Chinese acquisitions, and U.S. concerns over unfair treatment of foreign companies in China, but lacks firm commitments, raising questions about its practical significance.

China’s Financial Statecraft

This year China launched several initiatives that will extend its global reach and boost Chinese exports by creating demand for Chinese-built infrastructure across Asia. Together with China’s “Silk Road” initiatives in Central and Southeast Asia, the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB), among other institutions, reflect China’s strategy of “targeting gaps within established intergovernmental organizations” to push “towards a realignment of the international order.”¹¹⁵ (For an in-depth discussion of the Silk Road policies in Central Asia, see Chapter 3, Section 1, “China and Central Asia”; for Chinese activities in Southeast Asia, including the role of China-led development institutions, see Chapter 3, Section 2, “China and Southeast Asia.”)

Asian Infrastructure Investment Bank

In June 2015, almost two years after President Xi first proposed the idea, China launched the AIIB to provide loans for construction projects in Asia.¹¹⁶ Though no Western nation signed the 2014 Memorandum of Understanding (MOU) to become a founding AIIB member,* by the time the bank launched in 2015, it received backing from 50 countries, including many U.S. allies, despite alleged pressure from the United States not to join. The United Kingdom became the first Western nation to announce its intention to join the AIIB, followed days later by France, Germany, Italy, Switzerland, and Australia.¹¹⁷

*The founding AIIB members are Bangladesh, Brunei, Cambodia, China, India, Kazakhstan, Kuwait, Laos, Malaysia, Mongolia, Burma (Myanmar), Nepal, Oman, Pakistan, the Philippines, Qatar, Singapore, Sri Lanka, Thailand, Uzbekistan, and Vietnam. Xinhua (English edition), “21 Asian Countries Sign MOU on Establishing Asian Infrastructure Investment Bank,” October 24, 2014.

The AIIB will be headquartered in Beijing, with initial capital of \$50 billion and an authorized capital of \$100 billion.¹¹⁸ Share allocation will be based on GDP, with China as the largest shareholder. According to the announcement from China's Ministry of Finance, China supplied about 30 percent of the \$100 billion initial operating capital and has 26.1 percent of the voting power. India and Russia, the second- and third-largest shareholders, will have 7.5 percent and 5.9 percent voting power, respectively.¹¹⁹ Since major decisions require 75 percent agreement, China will have de facto veto power.

Proponents argue the AIIB provides long overdue competition to international financial institutions and promises to address the unmet demand for infrastructure investment. The AIIB's creation can be attributed in part to China's frustration "with the lack of governance reform, slow pace of project implementation, and reluctance to expand lending on the part of the existing development banks."¹²⁰ Despite promises sought by China to restructure the governance procedures at the IMF and World Bank, increases in the voting shares for China and other emerging economies have not materialized due to Congressional inaction.¹²¹ According to David Dollar, senior fellow at the Brookings Institution (and formerly the Treasury emissary to China and the World Bank country director for China and Mongolia), the AIIB "will provide some healthy competition" for the IMF and World Bank.¹²² Dr. Dollar hopes this pressure will lead to needed IMF and World Bank reform, so China will "buy fully into the existing institutions."¹²³

The Asian Development Bank (ADB), World Bank, and IMF all publicly announced support for the AIIB, and expressed interest in partnering with the bank.¹²⁴ Jim Yong Kim, president of the World Bank, stated the AIIB "should be a very welcome addition to the current situation, which is a woeful lack of financing for infrastructure."¹²⁵ In 2010, the ADB estimated that infrastructure investment in Asia will require roughly \$800 billion per year in financing to meet demand between 2010 and 2020.¹²⁶ Multilateral development banks and private investors have contributed \$205 billion, representing just a fraction of the demand.¹²⁷

Critics argue the AIIB lacks fair governance arrangements, risks weakening international lending requirements such as environmental and social standards, and challenges the existing international and regional lenders, namely the World Bank and the ADB.¹²⁸ While the White House has not publicly criticized the AIIB, it reportedly pressured U.S. allies to abstain from joining the new bank.¹²⁹ The U.S. Treasury and Japan's Ministry of Finance raised transparency and governance objections to the AIIB's proposed lending practices.¹³⁰ China continues to rank as the least transparent donor nation or institution.¹³¹ As one U.S. official asked, "How would the Asian Infrastructure Investment Bank be structured so that it doesn't undercut the standards with a race to the bottom?"¹³² Consequently, the ADB urged the AIIB to "adopt international best practices in procurement and environmental and social safeguard standards on its projects and programs."¹³³ If the bank complies, the stricter rules may attract additional AIIB members.

New Development Bank

Launched less than a month after the AIIB—and attracting significantly less fanfare and controversy—the NDB is another China-led institution aiming to challenge the established global development finance order. Brazil, Russia, India, China, and South Africa (BRICS) announced the creation of the NDB at the July 2014 BRICS summit in Brazil. The bank will be headquartered in Shanghai with initial subscribed capital of \$50 billion, which will later be increased to \$100 billion. The five members will have “equal shares” in the bank, according to the state-run news agency Xinhua.¹³⁴ The NDB will also set up a \$100 billion emergency swap fund, to which China has pledged to contribute \$41 billion.¹³⁵ The bank’s first leader, K.V. Kamath, is Indian, and will be followed by a Brazilian and then a Russian.

The NDB funds are to be directed toward “infrastructure and sustainable development projects in BRICS and other emerging and developing countries”; as such, they could fill an estimated \$1 trillion infrastructure gap in low- and middle-income countries.¹³⁶ However, reactions from international observers have been mixed. Bhaskar Chakravorti, senior associate dean at The Fletcher School of Law and Diplomacy at Tufts University, questioned the credibility of the new bank as a globally responsible lender, and criticized the structural inequity of its members’ contributions, roles, and economic weight.¹³⁷ In contrast, Raj M. Desai and James Vreeland, associate professors at Georgetown University, welcomed the bank’s creation, arguing it will exert much-needed pressure on the World Bank and IMF to reform their quota system and accord a larger role to emerging economies.¹³⁸

Implications for the United States

China’s weak growth this year and the government’s heavy-handed and haphazard intervention to stop the stock market collapse have shaken global confidence in China’s commitment to economic reform. At least in the short term, the U.S. economy remains somewhat insulated from China’s economic difficulties. Exports to China account for about 1 percent of U.S. GDP, while China’s relatively closed capital account means few U.S. investors will be affected by the stock market decline.

However, the slowdown—and possible deferral—of China’s rebalancing will have negative repercussions not only for the prospects of China’s future growth, but also for the continued economic health of its trade partners. The U.S. trade deficit with China, already the world’s largest bilateral deficit, has continued to increase despite global economic weakness, with negative consequences for U.S. businesses and workers. Meanwhile, China’s reliance on investment-driven growth and policies that support SOEs at the expense of the private sector and foreign competitors continues to frustrate U.S. efforts to create a level playing field for U.S. firms.

In the international arena, the launch of the AIIB—and support from many U.S. allies despite U.S. opposition—was seen as a major diplomatic victory for President Xi. U.S. dominance in international institutions such as the World Bank has provided the United States significant political and economic influence in shaping lending practices and developing international lending norms. There-

fore, the creation of the AIIB and other similar organizations could erode U.S. leadership and its established international economic institutions and policies.

Conclusions

- In 2014, the U.S. goods trade deficit with China increased by 7.5 percent year-on-year to \$342.6 billion, a new record. In the first eight months of 2015, the U.S. trade deficit in goods with China totaled \$237.3 billion, a 9.7 percent increase year-on-year. Over the same period, U.S. deficit with China in advanced technology products reached \$72.7 billion. China stalled on liberalizing key sectors in which the United States is competitive globally, such as services.
- As a consequence of domestic economic weakness, China's stated rebalancing policies appear to have been put on hold. Instead, fearful of a protracted slowdown, the Chinese government has been intervening in various sectors of the economy, including the stock market. However, the government's intervention, which failed to arrest the stock market's fall and stabilize the economy, undermined public confidence in the ability of China's policymakers to successfully manage the economy.
- Although it has been ten years since China moved the RMB to a managed float, the government continues to intervene in foreign exchange markets. For the first half of 2015 the government has prevented the RMB from depreciating, seeking its inclusion in the International Monetary Fund's Special Drawing Rights basket of reserve currencies. However, on August 11, the People's Bank of China unexpectedly devalued the RMB, giving rise to fears among observers and policymakers that the economic slowdown was becoming entrenched.
- The U.S. government's efforts to address tensions in the U.S.-China relationship through bilateral dialogue continue to yield limited results. The latest Strategic and Economic Dialogue concluded with some progress on environmental and financial issues, but reached an impasse in addressing fundamental strategic and economic issues such as cybersecurity, anticorruption cooperation, and investment barriers to foreign firms in many industries.
- President Xi came to the United States in September on a state visit, and although Presidents Obama and Xi discussed several issues of concern, including commercial cyber espionage by Chinese actors, there were few significant breakthroughs. Among outcomes were the statements by the two presidents that neither country will engage in cyber espionage (though China continued to deny any involvement in commercial cyber theft) and commitments to enhance cooperation on combatting climate change.
- China's adherence to the World Trade Organization principles and its Protocol of Accession remains spotty. Most recently, the Office of the U.S. Trade Representative has engaged China over a program that provides export subsidies considered illegal by the World Trade Organization to businesses in seven critical industries.

- China launched two new development institutions: the Asian Infrastructure Investment Bank and the New Development Bank. In addition to boosting China's economy by creating export opportunities for its companies, the new banks aim to extend China's role in the international economic order, potentially challenging established multilateral development institutions.

Addendum I: Pending WTO Cases

Pending WTO Cases Brought by the United States against China

No.	Title	Request for Consultations	Panel Report	Appellate Body Report	Status
DS450	Certain Measures Affecting the Automobile and Automobile-Parts Industries	September 17, 2012	In consultations; panel not yet formed		The United States requested consultations with China concerning export-contingent provisions of certain subsidies and other incentives to automobile and automobile-parts enterprises in China.
DS489	Measures Related to Demonstration Bases and Common Service Platforms Programs	February 11, 2015	In consultations; panel established		The United States requested consultations with China with regard to certain measures providing subsidies contingent upon export performance to enterprises in several industries in China.

Source: World Trade Organization; compiled by Commission staff.

Pending WTO Cases Brought by China against the United States

No.	Title	Request for Consultations	Panel Report	Appellate Body Report	Status
DS471	Antidumping Methodologies	December 3, 2013	Panel established March 26, 2014; report pending		China requested consultations with the United States regarding the use of certain methodologies in antidumping investigations involving Chinese products.

Source: World Trade Organization; compiled by Commission staff.

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SECTION 2: FOREIGN INVESTMENT CLIMATE IN CHINA

Introduction

In addition to China's economic slowdown, foreign companies doing business in China continue to face challenges related to China's preferential treatment of domestic firms, including foreign investment restrictions, unequal and sometimes targeted law enforcement and implementation, weak enforcement of intellectual property (IP) rights, and lack of transparency. To explore these issues, the Commission held a hearing in January 2015 on the foreign investment climate in China, China's Anti-Monopoly Law (AML) enforcement, and continuing reform of the foreign investment framework. This section draws on expert testimony, findings from the Commission's July trip to China, and a substantial body of staff research into China's application and enforcement of the AML and other investment-related laws.

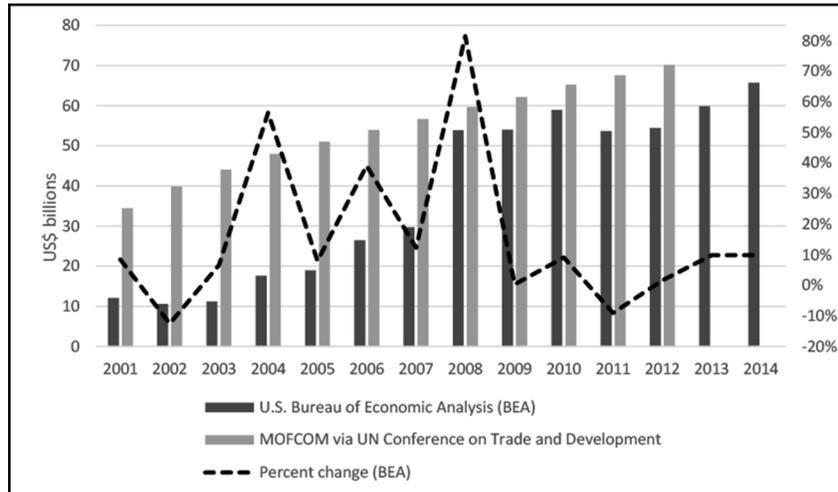
Trends in U.S. Direct Investment in China

Bilateral foreign direct investment (FDI) between the United States and China remains relatively low, considering the two countries have been the top recipients of global FDI since 2009 and are among the top ten largest sources of annual outbound FDI in the last decade.¹ For the first time, Chinese FDI flows to the United States now exceed U.S. FDI flows to China by most measures due to rapid growth in Chinese annual FDI to the United States over the past five years, according to U.S.-based advisory firm Rhodium Group.^{*2} In contrast, growth in U.S. FDI in China over the last five years appears to have slowed and even decreased. According to the U.S. Bureau of Economic Analysis (BEA), in 2014, annual U.S. FDI in China reached \$6.3 billion—a 4.9 percent decrease year-on-year—bringing the share of U.S. FDI flowing to China in 2014 to 2 percent of total outbound U.S. FDI.³ As seen in Figure 1, official U.S. data show accumulated U.S. FDI into China measured \$65.76 billion in 2014, representing approximately 9 percent of the stock of U.S. direct investment in the Asia Pacific region and only 1.3 percent of the total stock of U.S. investment abroad.⁴ China's Ministry of Commerce (MOFCOM) estimates the U.S. FDI stock in China is higher—reaching around \$70 billion in 2012—illuminating discrepancies in official data, which are lagging significantly and often fail to capture major trends.[†]

^{*} For a more detailed analysis of U.S.-China bilateral investment, see Chapter 1, Section 1, "Year in Review: Economics and Trade," of this Report.

[†] International Trade Administration, *Report: Foreign Direct Investment (FDI) in the United States from China and Hong Kong SAR*, July 17, 2013; Thilo Hanemann, "China Investment Monitor: Methodology Update," *Rhodium Group*, July 15, 2015.

Figure 1: U.S. FDI Stock in China, 2001–2014
(cumulative, historical-cost basis)



Note: Latest data available (as of August 2015).

Source: U.S. Department of Commerce, Bureau of Economic Analysis; China's Ministry of Commerce via UNCTADstat database.

Across industries, official U.S. data show the top destination by far for U.S. direct investment into China is manufacturing (52.5 percent), followed by wholesale trade (8.8 percent), depository institutions (6.1 percent), nonbank holding companies (5.3 percent), and finance and insurance excluding depository institutions (5.2 percent) (see Table 1).⁵ U.S. investment in manufacturing in China fell into several main categories, including chemicals, transportation equipment, computers and electronic products, and food (see Figure 2). As seen in Table 1, the overall sectoral distribution of investment has for the most part remained constant since 2007; data for intervening years were not comprehensive.

Table 1: U.S. FDI Stock in China by Sector
(US\$ millions)

	2007	2009	2014
Mining	1,772	3,148	3,323
Manufacturing	18,461	23,972	34,552
Wholesale Trade	2,015	2,645	5,834
Information	546	2,487	1,792
Depository Institutions	850	(D)	4,045
Finance	1,798	(D)	3,417
Professional, Scientific, and Technical Services	227	777	1,732

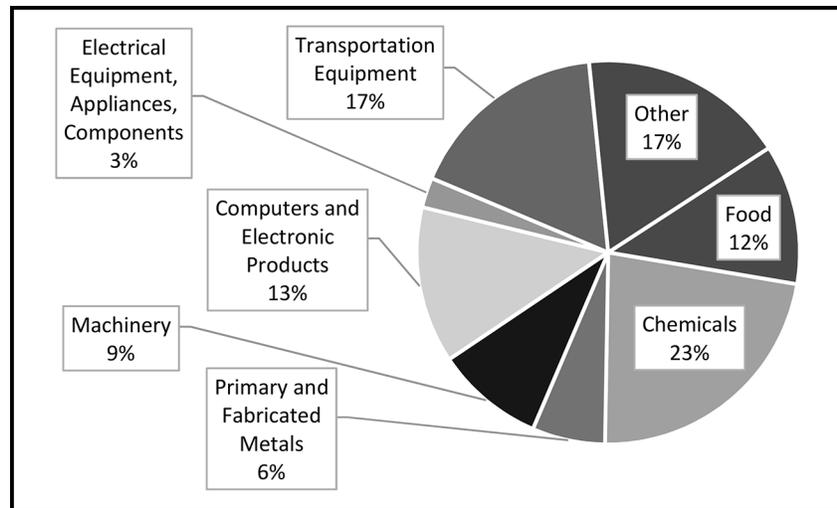
Table 1: U.S. FDI Stock in China by Sector—Continued
(US\$ millions)

	2007	2009	2014
Nonbank Holding Companies	1,644	(D)	3,494
Other	2,397	(D)	7,577

Note: (D) indicates that the data in the cell have been suppressed to avoid disclosure of data of individual companies.

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

Figure 2: Total U.S. FDI in China's Manufacturing Sector by Product, 2014



Note: For U.S. FDI, industry classifications for estimates after 1997 are based on the North American Industry Classification System (NAICS).

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *China Factsheet*, July 31, 2015.

China's Foreign Investment Regime

Legal and Regulatory Framework

Compared to other large economies, China maintains a restrictive FDI regime. China's discriminatory restrictions on foreign equity and onerous screening and approval requirements have placed it at the top of the Organization for Economic Co-Operation and Development's (OECD) FDI Regulatory Restrictiveness Index* every year since its inception in 2010.⁶ The U.S. Department of State estimates that in addition to over 1,000 rules and regulatory documents related to FDI in China issued by central government

* Among OECD economies and non-OECD member economies. The OECD FDI Regulatory Restrictiveness Index is based on four main indicators: "equity restrictions, screening and approval requirements, restrictions on foreign key personnel, and other operational restrictions (such as limits on purchase of land or on repatriation of profits and capital). The discriminatory nature of measures is the central criterion to decide whether a measure should be scored." Blanka Kalinova, Angel Palerm, and Stephen Thomsen, "OECD's FDI Restrictiveness Index: 2010 Update," *OECD Working Papers on International Investment* 03 (2010): 6.

ministries, local legislatures and governments also enact their own rules and regulations on foreign investments in their jurisdictions.⁷ Taken together, these laws and policies—and the uncertain application thereof—create a complicated, opaque, and unfavorable environment for foreign investment.

In an effort to push through a series of open market reforms announced during the November 2013 Third Plenum, China's MOFCOM and the National Development and Reform Commission (NDRC) published a draft of a new, unified foreign investment law (FIL) on January 19, 2015.⁸ When it comes into effect, this new law will apply to all forms of foreign investment and replace the three existing laws, potentially streamlining and clarifying foreign investment procedures.* (For details on the draft FIL, see “Reforms of China's Foreign Investment Framework” in this section.) Until the unified FIL is implemented, FDI in China will continue to be governed by three main laws: the Sino-Foreign Equity Joint Venture (JV) Law, the Sino-Foreign Cooperative JV Law, and the Wholly Foreign-Owned Enterprise Law. In addition to the these laws, the Chinese government maintains a series of policies that directly and indirectly affect foreign investors and the overall foreign investment climate in China, including additional government approval policies, industrial policies, and processes for reviewing and appealing administrative decisions.

Foreign Investment Approval Policies

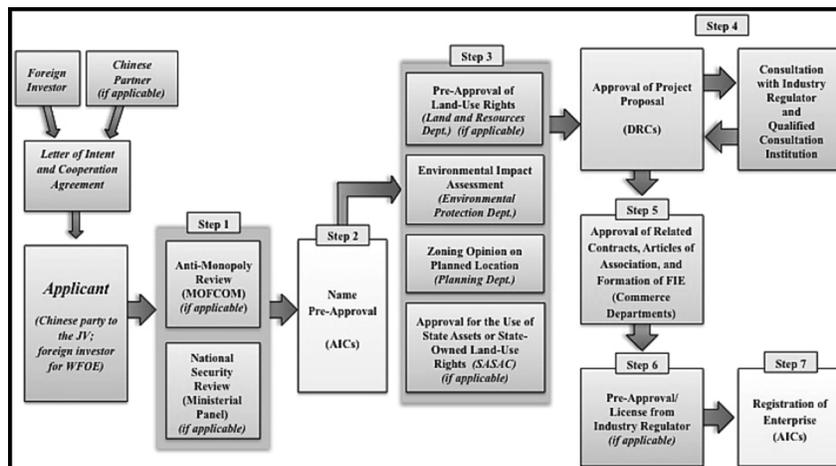
Before a foreign-invested entity (FIE) is established in China, it must undergo a lengthy approval process. Under the authority of China's State Council, MOFCOM and the NDRC maintain the Catalogue for the Guidance of Foreign Investment Industries (Catalogue), which categorizes industries as either “encouraged,” “restricted,” or “prohibited” to foreign investment.†⁹ In principle, any sector not included in the Catalogue is permitted, and foreign investors in such sectors need only file with the local government. In encouraged industries, foreign investors may enjoy preferential policies such as tax incentives. In restricted industries, however, foreign investment is often subject to higher levels of government scrutiny, stricter review, and burdensome application requirements.¹⁰ The Catalogue also outlines other structural guidelines for foreign investment in specific sectors. For example, in certain industries, foreign investment may be limited to Sino-foreign JVs, or may require that a Chinese partner is the “controlling shareholder” of the investment.¹¹

* MOFCOM will revise the draft FIL on the basis of comments gathered from the public, and submit the revised draft to the standing meeting of the State Council for deliberation and then circulate an updated draft for the Standing Committee of the National People's Congress to review. The FIL is not expected to be promulgated before 2018. Anna Elshafei, “China's Draft Foreign Investment Law Could Be a Game Changer?” *Miller Canfield*, June 8, 2015.

† “Encouraged” sectors include high technology, green technology, energy conservation, and pollution control; “restricted” sectors include rare earth smelting and passenger rail transportation companies; “prohibited” sectors include those that fall under national security (such as manufacturing of weapons), or are sectors where the government seeks to preserve state monopolies (such as postal companies) or protect Chinese firms from competition (such as mining of rare earth elements). Wayne M. Morrison, “China-U.S. Trade Issues,” *Congressional Research Service*, March 17, 2015, 24.

Even if a foreign investment is permissible in accordance with the Catalogue, it must undergo a lengthy series of additional approvals to be established. These approvals and the processes for obtaining them typically vary depending on the structure of the investment, the specific industry, and local regulations.¹² Generally, a foreign investment must undergo the following approval processes: AML review, national security review, preapproval of enterprise name and corporate registration with the State Administration of Industry and Commerce (SAIC) or its local branches, approval of use of local land from various government authorities, project approval from the NDRC and local development and reform commissions (DRCs), foreign investment approval from MOFCOM, regulatory approval, and other administrative registrations (see Figure 3).¹³

Figure 3: General Approval Process for FDI in China



Note: WFOE is wholly foreign-owned enterprise. AIC is Administration for Industry and Commerce. SASAC is State-Owned Assets Supervision and Administration Commission.

Source: U.S. Chamber of Commerce, "China's Approval Process for Inbound Foreign Direct Investment: Impact on Market Access, National Treatment and Transparency," 2012, 10.

Industrial Policies

China's national economic goals are bolstered by industrial policies, which are designed to support the development of domestic industries and the creation of national champions.¹⁴ To ensure inbound FDI supports these goals, the Chinese government identifies different industries as desirable for or restricted to foreign investment in the Catalogue. In addition to the Catalogue, other laws and regulations allow industrial policies to dictate treatment of foreign investors in certain industries. For example, while China's AML enforcement decisions reference competition law and cite alleged threats to competition, in reality these decisions do not always promote competition, and in some cases actually hinder it, in furtherance of Chinese industrial policy objectives.¹⁵ (For more de-

tails on China's industrial policies, see Chapter 1, Section 3, "China's State-Led Market Reform and Competitiveness Agenda," in this Report.)

Review and Appeal Processes

Foreign investors who fail to gain approval face a daunting appeals process that, in the end, frequently reverts to a decision in favor of domestic competitors regardless of the merits of the case. If a foreign investor feels an application has been unreasonably denied by Chinese authorities, the investor may appeal.* In practice, however, the appeal process has severe limitations, and foreign investors seldom use it.¹⁶ For one, the grounds for denying investment applications are very broadly defined, and approval authorities are not required to approve applications submitted to them even if all requirements are clearly met. Another factor that discourages foreign investors from pursuing administrative appeal is the difficulty in producing solid evidence of inappropriate conduct on the part of reviewing agencies, given such misconduct is often informally or orally executed. A third factor is that the decisions of approval authorities and the People's Courts are all subject to the supervision of the Chinese Communist Party (CCP), and are expected to align with the Party's underlying policies.¹⁷

Challenges for Foreign-Invested Enterprises in China

Overall, China remains a profitable market for U.S. companies, though profitability levels are decreasing.¹⁸ According to a survey conducted by the US-China Business Council (USCBC), 85 percent of respondents † described their operations in China as profitable, but at lower profit margins than in previous years due to rising costs.¹⁹ Similarly, 73 percent of companies ‡ surveyed by the American Chamber of Commerce in China (AmCham China) described their China operations in 2014 as profitable.²⁰ In both surveys, roughly two-thirds of respondents reported profit margins in China comparable to or higher than margins for their company operations in other markets.²¹

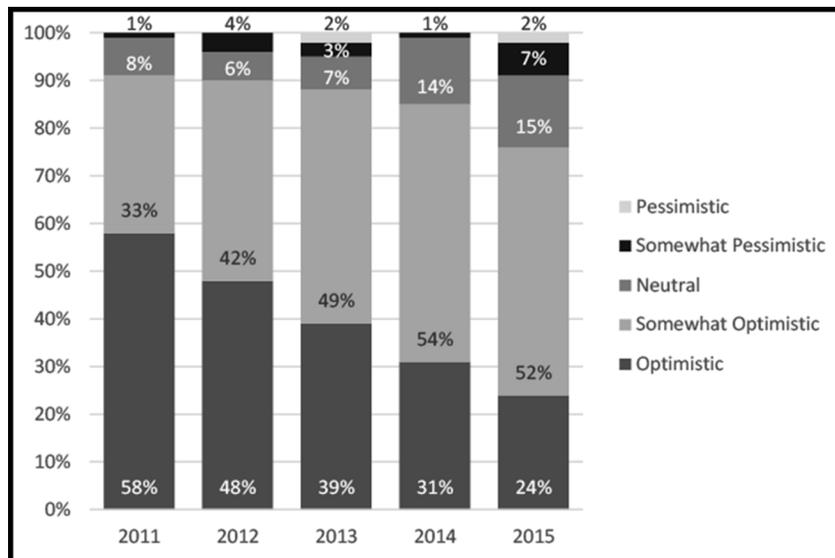
* In theory, a rejected foreign investor may apply for administrative reconsideration within 60 days of the contested decision; the reviewing agency may affirm or nullify the original administrative decision within 60 to 90 days. If the applicant is not satisfied with the reviewing agency's decision, or if the reviewing agency has failed to act, the applicant may bring an administrative lawsuit within 15 days of the reconsideration decision. U.S. Chamber of Commerce, "China's Approval Process for Inbound Foreign Direct Investment: Impact on Market Access, National Treatment and Transparency," 2012, 20.

† The USCBC's 2015 China business environment survey analyzed responses from 106 companies, representing roughly half of its member companies. Fifty-eight percent of respondents operate in the manufacturing sector, 47 percent in the services sector, and 13 percent in primary industries such as agriculture. The majority of respondents have been operating in China for more than 20 years. US-China Business Council, "USCBC 2015 China Business Environment Survey Results: Growth Continues amidst Economic Slowdown, Rising Competition, Policy Uncertainty," 2015, 33.

‡ AmCham China's 2015 business climate survey analyzed responses from 477 companies, representing 47 percent of the organization's 1,012 member companies. Respondent companies were fairly evenly distributed across four lines of business, with approximately 30 percent in the resources and industrial sector, approximately 25 percent in the services (excluding information services) sector, approximately 25 percent in the information/knowledge-based services sector, and approximately 15 percent in research and development (R&D)-intensive industries. Nearly 40 percent of respondents forecasted a revenue of \$100 million or more for 2014. American Chamber of Commerce in the People's Republic of China, "2015 China Business Climate Survey Report," February 2015, 7.

Though the majority of U.S. firms still consider China a profitable market, optimism is waning (see Figure 4). According to AmCham China's 2015 member survey, 29 percent of respondents described the foreign investment environment in China as deteriorating—an increase of 11 percentage points from the previous year—with 2 percent fewer companies reporting improvements in the environment (see Figure 5).²² Nearly half of companies surveyed—a 3 percent increase from the previous year—reported foreign enterprises are less welcome in China than in previous years.²³ Members of the EU Chamber of Commerce in China (European Chamber) are similarly concerned: only 58 percent of survey respondents* in 2015 were optimistic about the growth outlook in China—a 10-point drop from 2014, and an all-time low—while only 28 percent of respondents were optimistic about profitability in the next two years.²⁴

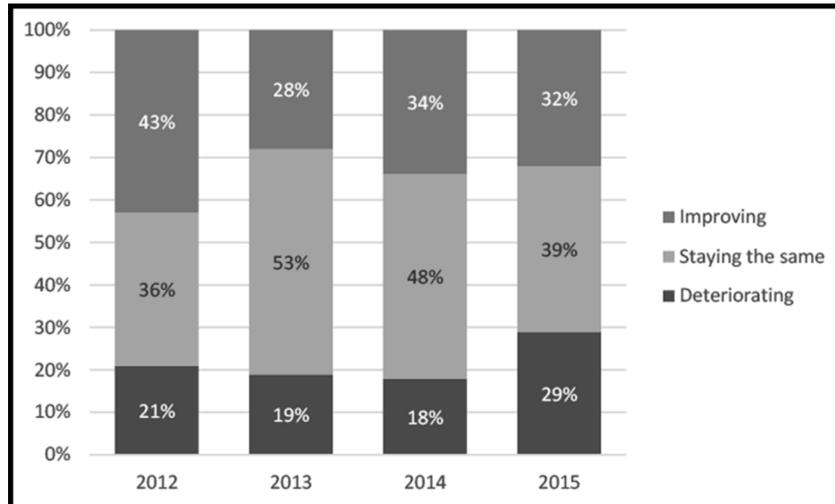
Figure 4: Five-Year Outlook for Business in China, 2011–2015
(surveyed U.S. companies)



Source: US-China Business Council, "USCBC 2015 China Business Environment Survey Results: Growth Continues amidst Economic Slowdown, Rising Competition, Policy Uncertainty," 2015, 5.

* The European Chamber's 2015 member survey analyzed responses from 541 respondents, or 37 percent of 1,474 member companies. The various industries were represented almost equally, with 37 percent of respondents in the industrial goods and services sector, 35 percent in the consumer goods and services sector, and 27 percent in the professional services sector. The majority of respondents are small- and medium-sized enterprises that employ fewer than 250 employees, and 54 percent of those surveyed have been operating in mainland China for more than ten years. EU Chamber of Commerce in China, "Business Confidence Survey," June 2015, 57–59.

Figure 5: Quality of China's Foreign Investment Environment, 2012–2015
(surveyed U.S. companies)



Source: American Chamber of Commerce in the People's Republic of China, "2015 China Business Climate Survey Report," February 2015, 19.

While some of the challenges—including rising labor costs and human resources constraints—cited by foreign investors in China stem from the country's economic slowdown, investors also attribute the worsening business climate in China to the restrictive legal and regulatory framework for foreign investment and the government's discretionary, uneven enforcement thereof (see Table 2). These challenges are exacerbated by the Chinese government's industrial policies, which serve to support domestic companies in sectors deemed strategic to the development of the national economy by extracting advantages from foreign competitors. For example, 53 percent of companies in both the resources and industrial sector* and research and development (R&D)-intensive industries†—sectors where China's industrial policies favor domestic companies and authorities impose localization requirements on foreign companies—felt the least welcome.²⁵ In contrast, investors in the services (excluding information services) sector‡ largely reported improvements in the investment environment, likely due to the recent relaxing of foreign investment restrictions in that sector to boost domestic consumption.²⁶ Optimism among European companies surveyed reflected a similar division: those in industrial goods and services were least optimistic about future growth and profitability,

* The AmCham China survey categorizes the following industries as part of the resources and industrial sector: agriculture; metals (mining and production); oil, energy, and power; chemicals; construction, architecture, and interior design; electronics; automotive; cosmetics; other manufacturing and sourcing; and other consumer goods.

† The AmCham China survey categorizes the following as R&D-intensive industries: information, communications, and technology; clean technology; aerospace; pharmaceuticals; and environmental protection.

‡ The AmCham China survey categorizes the following industries as part of the services (excluding information services) sector: hospitality; food and beverage; healthcare services; real estate and development; banking and financial services (other than insurance); insurance; retail and distribution; transportation and logistics; and travel and leisure.

while those in professional services and consumer goods and services were more optimistic.²⁷

Table 2: Top Business Challenges for Foreign Firms in China, 2015
(surveyed U.S. and European companies)

	USCBC, 2015	AmCham China, 2015	European Chamber, 2015
1	Competition with Chinese companies in China	Labor costs	Chinese economic slowdown
2	Foreign investment restrictions	Inconsistent regulatory interpretation/Unclear laws	Rising labor costs
3	Cost increases	Shortages of qualified employees	Global economic slowdown
4	Intellectual property rights (IPR) enforcement	Shortage of qualified management	Market access barriers and investment restrictions
5	Transparency	Increasing Chinese protectionism	Competition from Chinese privately owned enterprises
6	Licensing		Renminbi (RMB) volatility
7	Human resources		Ambiguous rules and regulations
8	Data flows		Talent attraction and retention
9	Uneven enforcement		Discretionary enforcement of regulations
10	Overcapacity in the China market		Lack of sufficient and qualified talent

Note: Derived from latest information available. AmCham China only releases the top five business challenges in its survey.

Source: US-China Business Council, “USCBC 2015 China Business Environment Survey Results: Growth Continues amidst Economic Slowdown, Rising Competition, Policy Uncertainty,” 2015, 1; American Chamber of Commerce in the People’s Republic of China, “2015 China Business Climate Survey Report,” February 2015, 20; EU Chamber of Commerce in China, “Business Confidence Survey,” June 2015, 17.

During the Commission’s trip to Beijing and Hong Kong in July, U.S. business representatives expressed grave concern about the “chilling effect” of a new series of Chinese laws on the prospects of foreign companies, saying they could seriously harm foreign firms’ ability to do business there, especially in IP-intensive sectors.²⁸ The laws identified as most problematic are the National Security Law, adopted July 1, which requires onshoring of R&D, among other requirements; the draft Cybersecurity Law, which authorizes broad discretion to control the flow of information online; a draft counterterrorism law, revised in February, which could require foreign companies to turn over encryption keys; and a draft law threatening the operations of foreign nongovernmental organizations (NGOs) in China.²⁹ One U.S. business representative in the financial services industry, for example, reports these laws prevent stakeholders from attending meetings in mainland China, result in transfer of data due to onshoring requirements, and have a detrimental impact on cross-border trade due to controls on the flow of information.³⁰ In effect, these laws counteract China’s efforts to liberalize aspects of the foreign investment framework. While China’s

market and investment barriers have been discussed in nearly every meeting of the U.S.-China Strategic and Economic Dialogue (S&ED), some U.S. business representatives argue S&ED outcomes have not been sufficiently implemented.³¹

Market Access Restrictions

In general, according to World Bank calculations, starting a business in China is getting easier: globally, China ranked 128th out of 189 economies* in the ease of starting a business in 2015, a 23-position improvement in ranking since 2014.³² However, continuing or expanding operations in China in certain sectors is getting increasingly difficult. Across industries, market access limitations are the primary inhibitors of U.S. companies' ability and willingness to invest in China (see Table 3).³³ China primarily maintains national-level market access restrictions through the Foreign Investment Catalogue, though local governments frequently employ region- or industry-specific Catalogues, further restricting access. Contradictions between the Catalogue and other measures serve to confuse investors, contributing to the perception among foreign-invested firms that investment guidelines do not provide a secure basis for business planning and undermine confidence in the stability and predictability of the investment climate.³⁴ Chinese authorities sometimes condition provision of market access on forced technology transfer or price suppression.³⁵ For example, during the Commission's July trip to Asia, U.S. business representatives in the information technology sector said foreign tech firms were required to form JVs with local partners in order to be allowed to provide cloud-based services.³⁶ The broad and potentially intrusive national security review mechanism as proposed in the new draft foreign investment law could also be used to hinder market access (see "National Security Review" later in this section).³⁷ U.S. business representatives who met with the Commission during its fact-finding trip to China this year said these measures reflect the Chinese government's concerns about protecting local competitors, resulting in unequal treatment toward foreign investors.³⁸

Table 3: Chinese Government Measures Limiting U.S. Investment, 2015

	Services (excl. Information Services)	Information/ Knowledge-Based Services	R&D-Intensive Industries	Resources and Industrial
1	Market access limitations	Market access limitations	Market access limitations	Market access limitations
2	Local partner/equity requirements	Local partner/equity requirements	Targeted enforcement for foreign firms	Chinese government funding provided solely for domestic competitors
3	Unequal approval process for investments	Targeted enforcement for foreign firms	Chinese government funding provided solely for domestic competitors	Targeted enforcement for foreign firms

*A ranking of 1 denotes the easiest place to do business, and 189 is the most difficult. Data collected by the World Bank estimates starting a business in China on average requires 11 procedures, takes 31.4 days, costs 0.9 percent of income per capita, and requires no paid-in minimum capital.

Table 3: Chinese Government Measures Limiting U.S. Investment, 2015
Continued

	Services (excl. Information Services)	Information/Knowledge-Based Services	R&D-Intensive Industries	Resources and Industrial
4	Targeted enforcement for foreign firms	Unequal approval process for investments	De facto technology requirement for market access	Local partner/equity requirements
5	Chinese government funding provided solely for domestic competitors	Investment approvals	Local partner/equity requirements	Investment approvals

Source: American Chamber of Commerce in the People's Republic of China, "2015 China Business Climate Survey Report," February 2015, 25.

Foreign Investment Catalogue

In early 2015, MOFCOM and the NDRC jointly released an updated version of the Catalogue, the sixth amended version since it was first implemented in 1995.³⁹ Restrictions were eased, particularly for foreign-invested enterprises entering the service sector. Compared with its predecessor, the 2011 Catalogue, the 2015 version reduces the number of restricted sectors from 79 to 38; the number of sectors in which Sino-foreign JVs are required decreased from 43 to 15; and the number of sectors requiring Chinese majority shareholding fell from 44 to 35.⁴⁰ But industries the Chinese government has long sought to nurture as national champions—such as automobiles and healthcare—saw heightened restrictions. Industries no longer categorized as restricted include many manufacturing industries; e-commerce (excluding any value-added telecommunications services such as Internet access services);* land development, construction, and operation of high-end hotels and office buildings; investment in real estate secondary market and real estate brokerages; operation of golf courses and other entertainment venues; and nonbank financial institutions, trust companies, and currency brokerage companies.⁴¹ In addition, the 2015 Catalogue uses tax incentives and subsidies to encourage wholly foreign-owned enterprises to establish and operate nursing homes.⁴²

Despite these positive changes, restrictions remain largely intact in those industries—such as banking, telecommunications, and art and cultural industries†—that have consistently faced heavy con-

*Telecommunications services in China are divided into basic telecommunications services and value-added telecommunications services, which include: (1) online data processing and online transaction processing business, (2) domestic multiparty communication business, (3) domestic Internet virtual private network (VPN) business, (4) Internet data center business, (5) store and forwarding business, (6) call center business, (7) Internet access business, and (8) information service business. Karen Ip and Huang Yilin, "China: TMT Liberalized in the Shanghai FTZ: Part 1," *Mondaq*, November 18, 2014.

†Cultural industries include production and publication of broadcasting and television programs and films, construction and operation of cinemas and large theme parks, and brokering of stage performances. Art industries include publication of books, newspapers, and periodicals, production and publication of audio and visual products, electronic publications, and radio programs, and auction and antique auction businesses. "Catalogue for the Guidance of Foreign Investment Industries (Comparison of the English translations of the new 2015 Catalogue against the 2011 Catalogue)," Covington & Burling LLP, 2015.

trols on foreign investment.⁴³ Moreover, a number of restrictions on foreign investment in culture and entertainment industries that were originally removed from a 2014 draft version of the revised Catalogue were maintained in the 2015 version.⁴⁴ Additionally, some industries became more restricted to foreign investment.

- *Automobile (auto) manufacturing*: For the first time, the 2015 Catalogue designated the manufacturing of complete cars, specialty vehicles, and motorcycles as restricted, requiring at least 50 percent Chinese ownership. In the 2011 Catalogue, foreign investment was permitted in the industry, and in the 2004 Catalogue it was encouraged. Moreover, one foreign investor is not permitted to invest in more than two JVs manufacturing the same type of motor vehicle, except where the foreign investor acquires or merges with a Chinese JV partner.⁴⁵ While foreign equity restrictions have always been in place in some form in China's auto manufacturing industry, the new cap on JVs "may be implicitly aimed at encouraging the development of its self-owned branded vehicles."⁴⁶
- *Medical institutions*: In contrast to the 2011 Catalogue, under which wholly foreign-owned enterprise investment into Chinese medical institutions was permitted, the 2015 Catalogue categorizes the industry as restricted, and limits foreign investment to JVs with Chinese partners.⁴⁷ This tightening of restrictions counteracts a MOFCOM pilot program implemented in July 2014 to allow foreign investors full ownership of medical institutions in seven pilot cities, implying foreign investors in this sector may meet increased challenges in obtaining the necessary regulatory approvals.⁴⁸ Two major U.S. groups—Massachusetts General Hospital and Columbia Pacific Management—have planned investments upward of \$200 million for two hospitals in China under the pilot program, but municipal and provincial authorities have yet to specify the necessary steps to move forward.⁴⁹
- *Educational services*: In addition to upper secondary school institutions, which were restricted under the 2011 Catalogue, tertiary (e.g., university) and preschool educational institutions are now restricted, and foreign investment is now limited to cooperative JVs with a Chinese partner.⁵⁰ Compulsory educational institutions (primary school through early secondary school) remain prohibited to foreign investors. The chief administrator of the JV must be a Chinese national, and the Chinese partner must account for at least half of the members on the board of directors.⁵¹ Moreover, education provided by the JV must be unrelated to the military, law enforcement, politics or political parties, and religion.⁵² The market for educational services in China is experiencing rapid growth: spending on education in China reached approximately \$66 billion in 2014, and Chinese households spend 30 percent of their income on education.⁵³

- *Legal services:* While the legal services industry was restricted to foreign investment in the 2011 Catalogue, the revised Catalogue categorizes the industry as prohibited, though it clarifies that foreign law firms may “provide information on the impact of the Chinese legal environment” in an effort to uphold China’s World Trade Organization (WTO) commitments to do so.⁵⁴ Market access liberalization offered to foreign firms upon WTO accession was small—limited to opening one representative office, subject to approval—and the types of services they could provide were restricted.⁵⁵ Despite encouragement from WTO members to liberalize its legal services market, China has made little progress.⁵⁶

Market Access Barriers in China’s Automotive Industry

Over the past three decades, China’s automotive industry has grown to become the world’s top auto producer and biggest auto sales market.⁵⁷ According to global management consulting firm McKinsey & Company, China’s auto sector grew at a compound average rate* of 24 percent per year between 2005 and 2011.⁵⁸ In 2010, China overtook the United States as the largest single-country market for new passenger cars, and by 2020 is expected to surpass both North America and Europe to become the biggest regional market.⁵⁹ As a result, the auto parts manufacturing industry in China is thriving: in 2015, industry revenue is expected to reach \$567 billion, a 9.7 percent increase from the previous year.⁶⁰ Due to faster growth in domestic demand—China’s vehicle ownership is projected to rise from 58 per 1,000 people in 2010 to 269 by 2030—most cars manufactured in China sell to domestic consumers.⁶¹ Slowing economic growth and stock market volatility in China, however, have dampened auto sales growth in 2015. August passenger car sales fell 3.4 percent year-on-year, according to the China Association of Automobile Manufacturers, while future growth is projected to slow to approximately 5 percent annually over the next several years.⁶²

Foreign automakers have been permitted to participate in this enormous market only through forming JVs—each no more than 50 percent controlled by the foreign manufacturer—with local partners, oftentimes state-owned enterprises (SOEs).⁶³ Since the opening of China’s economy in the 1980s, foreign investment in auto manufacturing was limited to JVs under an informal auto development policy, which employed high tariffs and import quotas to protect the domestic market.⁶⁴ Restrictions on foreign ownership of JVs were maintained in the 1994, 2004, and 2009 versions of the Policy on Development of the Automotive Industry.⁶⁵ These industrial policies also mandated the creation of domestic R&D centers and transfer of technology to Chinese partners with the goal of generating indigenous IP.⁶⁶ According to U.S.-based industry group Information Technology Innovation

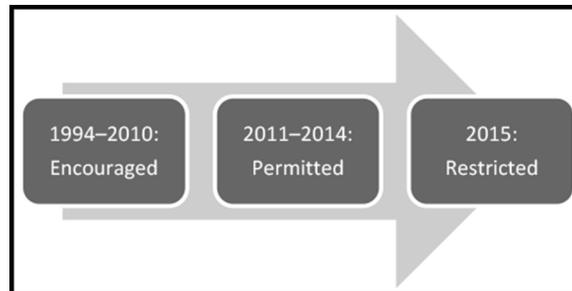
*Compound average growth rate is the mean annual growth rate over a specified period of time.

Market Access Barriers in China's Automotive Industry— *Continued*

Foundation, these policies fail to deliver on China's WTO commitments not to condition market access on whether a company transfers technology or conducts R&D in China.⁶⁷

China has also pursued policies designed to promote the development of a domestic new energy vehicle (NEV) market.⁶⁸ After production of NEVs was identified in the 12th Five-Year Plan (2011–2015) as a “strategic emerging industry,” foreign manufacturers were told by NDRC officials that approval to manufacture electric vehicles in China would be granted only if they assume a minority stake in a JV, transfer certain core technology, and agree to local branding for the vehicles.⁶⁹ Moreover, only domestic NEVs qualify for consumer subsidies and other incentive programs maintained by the Chinese government, raising national treatment concerns.⁷⁰ Correspondingly, the whole auto manufacturing industry* changed from “encouraged” for foreign investment in 2007 to “permitted” in the 2011 Catalogue, and in 2015 is now categorized as “restricted” (see Figure 6), with limitations on the number of JVs one foreign investor can participate in—except where the foreign investor acquires or merges with a Chinese partner.⁷¹

Figure 6: Foreign Investment Catalogue Classification of Whole Auto Manufacturing



Despite policy uncertainty and discrimination, foreign auto manufacturers have still managed to dominate China's domestic auto sales and manufacturing markets. In 2014, foreign brands accounted for 62 percent of passenger vehicle sales in China, with international JVs comprising the top five carmakers by sales in China (see Table 4).⁷² General Motors China (GM China) alone has 11 JVs and two wholly-owned foreign enterprises † in China; in 2014, GM China's domestic sales of all vehicles rose 12 percent to 3.5 million units, or 15 percent of the 23.7 million vehicles sold in China in 2014.⁷³

* On an industry basis, the manufacturing of whole automobiles is separate from the manufacturing of auto parts.

† One of GM's two wholly foreign-owned enterprises is an investment company, and the other is a parts distribution center. As neither produces automobiles or parts, they are not subject to foreign equity restrictions.

**Market Access Barriers in China's Automotive Industry—
Continued**

Table 4: Top Passenger Car Sales in China by Carmaker, 2014

Rank	Carmaker	Foreign Company	Chinese Company	Sales (by unit)	Market Share
1	FAW Volkswagen	Volkswagen	FAW	1,780,888	9.04%
2	Shanghai Volkswagen	Volkswagen	SAIC	1,725,006	8.75%
3	Shanghai GM	General Motors	SAIC	1,723,940	8.75%
4	SAIC-GM- Wuling	General Motors	SAIC and Wuling	1,586,383	8.05%
5	Beijing Hyundai	Hyundai	BAIC	1,120,048	5.68%
6	Changan	n/a	Changan	975,431	4.95%
7	Dongfeng Nissan	Nissan	Dongfeng Motor	951,710	4.83%

Note: FAW is First Automobile Works; SAIC is Shanghai Automotive Industry Corporation; BAIC is Beijing Automotive Industry Corporation. These figures cover two- or three-box sedans, multipurpose vehicles, micro vans, and sport utility vehicles. Pickup trucks, buses, and other commercial vehicles are not included.

Source: China Passenger Car Association via ChinaAutoWeb, "2014 Passenger Car Sales by Maker," January 12, 2015.

China's auto policies nonetheless pose risks to foreign automakers. According to the Office of the U.S. Trade Representative (USTR) 2014 report to Congress on China's WTO compliance efforts, China's auto sector industrial plans—including discrimination based on the country of origin of IP, forced technology transfer, R&D requirements, investment restrictions, and discriminatory treatment of foreign brands and imported vehicles—include guidelines that "appear to conflict with its WTO obligations."⁷⁴ In response to China's 2004 and 2005 industrial policies in the automotive industry, the United States, the EU, and Canada initiated dispute settlement proceedings against China at the WTO* in 2006, charging that China unfairly discriminated against imported automotive parts.⁷⁵ The WTO panel ruled in favor of the complaining parties in March 2008; China's appeal of the decision was rejected later that year. In 2009 China repealed its discriminatory rules on automobile parts, but "more work remains to be done" to address the full host of concerning policies, according to the USTR's 2015 *National Trade Estimate Report on Foreign Trade Barriers*.⁷⁶

These fluctuations in China's foreign investment restrictions reflect a pattern whereby the government welcomes FDI into sectors

* Upon accession to the WTO in 2001, China committed to lift restrictions on vehicle manufacturers regarding categories, types, or models of vehicles permitted for production, and to increase limits within which investment in motor vehicle manufacturing could be approved by provincial governments, within two years. U.S. Department of State, *2015 Investment Climate Report—China*, May 2015, 20.

designated as strategic for China's national economic development in order to extract technology, IP, and know-how from foreign firms. However, after domestic industry is deemed sufficiently developed, policies welcoming investment are gradually withdrawn and new policies restricting investment are put in place to free up market space for domestic firms and push out foreign firms. Within a legal framework subject to opaque rule-making procedures and designed to serve CCP interests, U.S. investors seemingly have little to no recourse to protect their rights or effectively resolve disputes.⁷⁷ Moreover, because "there are no accepted techniques for estimating the impact of [investment barriers] on U.S. investment flows," according to the USTR, it is difficult to quantify the effect of China's restrictive investment policies.⁷⁸

Despite these concerns, few foreign companies report that they plan to reduce or stop a planned investment in China. Only 14 percent of USCBC survey respondents in 2014 indicated they canceled a planned investment in the previous year, most citing better business prospects in another country; increasing market access restrictions and reduced capital investment globally were the next most cited reasons for decreased China investments.*⁷⁹ Among AmCham China survey respondents whose planned increase in investment in 2015 is lower than it was in 2014, the primary causes of their decision were expectations of slower growth in China compared with faster-growing markets elsewhere and market access barriers or government policies that disadvantage foreign companies.⁸⁰ On the whole, European companies exhibited growing unwillingness to expand current China operations in 2015—those not considering expansion grew from 6 percent in 2013 to 31 percent in 2015. However, on a sectoral basis, the majority of surveyed European companies in the professional services, automotive and auto components, and medical devices industries are considering expanding current China operations in 2015.⁸¹

China's Inconsistent and Opaque Anti-Monopoly Law Enforcement

Discretionary, unclear legal and regulatory interpretation and weak or inconsistent enforcement have consistently ranked among the top business challenges for U.S. companies in China.⁸² European Chamber companies likewise cited the discretionary enforcement of regulations as one of the top regulatory obstacles to doing business in China.⁸³ In recent years, a broad range of Chinese regulatory activities seem to have focused disproportionately on foreign investors across various industries of strategic importance to China's national economy. AmCham China's 2015 member survey indicated that 57 percent (271 companies) of 477 respondent companies believe foreign firms are being singled out in the government's recent campaigns; of those 271 companies, 65 percent are concerned that such campaigns will have a detrimental impact on their companies, while 52 percent report these campaigns have a negative impact on their companies' intent to invest.⁸⁴

In 2013 and 2014, China's increased enforcement of the AML, in particular against high-profile foreign companies, garnered inter-

*Information regarding planned investments was not published in the USCBC's 2015 survey.

national attention from industry, government, and media actors. According to the U.S. Chamber of Commerce, although China's AML has been used to foster competition in line with international legal practices, "China has also employed [the AML] both domestically and extraterritorially to pursue [industrial policy] objectives that have no place in a free, open, and fair market-based economy."⁸⁵ Further, Chinese enforcement agencies appear to use the threat of AML investigations against foreign actors to control price and supply of goods to the benefit of Chinese market participants.⁸⁶ Due to a lack of transparency in China's investigation and enforcement decisions, it is not possible to conclusively assess whether foreign companies have been targeted in these campaigns; however, they do appear to have been subject to unequal treatment.

History of China's AML

Compared with other advanced economies, China's competition regime is relatively nascent. Its AML came into force in 2008 after Chinese authorities spent more than a decade drafting the law and consulting with foreign competition authorities from the United States, the EU, and other jurisdictions. The AML draws from elements of both the U.S. and EU competition laws, though it is more closely tied to the EU model,* and contains some elements unique to China.⁸⁷

China's AML allows for the consideration of noncompetitive factors, namely industrial policy, in its application and enforcement. Examples include articles that emphasize the need to harmonize competition policy with the specific needs of China's socialist market economy (Articles 1 and 4), encourage mergers and acquisitions (M&As) as a means to achieve economic scale (Article 5), institute national security reviews of Chinese M&A transactions with foreign companies (Article 31), and prohibit the abuse of IP † to eliminate or restrict market competition (Article 55).⁸⁸

Three government agencies are primarily responsible for AML enforcement in China. The NDRC handles price-related conduct, including investigations of pricing practices by companies, price-related aspects of monopoly agreements, and company abuse of dominant market position to set or control prices, via its Price Supervision and Anti-Monopoly Bureau. MOFCOM reviews M&A transactions and other types of proposed business concentrations via its antimonopoly bureau. The State Administration for Industry and Commerce (SAIC) investigates non-price-related monopolistic be-

*Following the EU model, China's AML purports to develop a healthy economy, prioritize economic integration, promote fairness for business operators of varying sizes, and support technology development alongside consumer interests. US-China Business Council, "Competition Policy and Enforcement in China," September 2014, 3–4.

†Chinese regulators seek to prevent IP rights holders with dominant positions in relevant markets from misusing these rights or engaging in abusive practices in the name of exercising their IP rights. These behaviors constitute abuse of dominance only where they eliminate or restrict competition in the relevant market. However, the AML does not clearly define the relevant markets involving IP rights, nor does it define the standards for determining abuse of dominance. As a result, Chinese regulators reportedly have pressured foreign firms in some sectors to disclose IP content or license it to domestic competitors at below-market rates, under threat of "abuse of intellectual property" allegations. For an example of the application of this article of the AML, see the Qualcomm textbox later in this section. Hao Zhan, "Abuse of Dominance in Relation to Intellectual Property: The Chinese Perspective," *AnJie Law Firm*, October 9, 2014.

havior, including monopoly agreements, abuse of market dominance, and monopoly control, via its Anti-Monopoly and Anti-Unfair Competition Bureau.⁸⁹

U.S. Business Concerns Regarding China's AML Enforcement

In its 2014 member company survey, the USCBC found over 86 percent of companies surveyed indicate they are somewhat or very concerned* about China's increased AML enforcement activity, with 56 percent of companies indicating enforcement is a primary concern regarding China's competition policy.⁹⁰ U.S. companies are most concerned about the following issues:

- *Fair treatment and nondiscrimination:* While it is not clear that enforcement activities target foreign companies, consideration of nonmarket factors (industrial policy), legal ambiguity and the discretionary legal framework, and the lack of transparency in pricing decision procedures lead some analysts to conclude that Chinese authorities emphasize industrial policy priorities over free market and competitive considerations.⁹¹
- *Lack of due process and regulatory transparency:* Throughout Chinese antitrust enforcement activities in 2013 and 2014, U.S. companies have reported the following procedural shortcomings:
 - Pressure to admit guilt without the ability to see and respond to evidence;
 - Restricted access to legal representation at unannounced on-site investigations;
 - Restricted access to foreign outside legal representation at ongoing proceedings;
 - Insufficient transparency during competition reviews;
 - Insufficient transparency in publishing case decisions;
 - Lack of effective appeal process; and
 - Threats to personal safety.⁹²
- *Use of noncompetitive factors in enforcement:* U.S. companies are concerned enforcement agencies use the AML to protect Chinese companies, industries, and policy goals such as innovation, patent creation, and technology licensing from foreign competition.⁹³
- *Broad definition of monopoly agreements:* U.S. companies complain that China's competition enforcement deviates from international best practices. For example, Article 14 of the AML appears to prohibit manufacturers from signing specific kinds of pricing agreements and "other monopoly agreements" with distributors.⁹⁴ However, the interpretation of "other monopoly agreements" is to be determined by the NDRC or the SAIC. As a result, companies fear agreements they sign could be arbitrarily construed as monopolistic.

* Surveyed companies described their level of concern as either "very concerned" (25 percent), "somewhat concerned" (61 percent), or "not concerned" (14 percent). US-China Business Council, "USCBC 2014 China Business Environment Survey Results: Growth Continues amidst Rising Competition, Policy Uncertainty," 2014, 20.

MOFCOM's AML Enforcement Activities: Reviews of Mergers and Acquisitions

In its reviews of proposed M&As, China's MOFCOM has exclusively blocked or modified transactions involving foreign companies, and imposed remedies that tend to protect and promote domestic industry and cap commodity prices and IP royalties.⁹⁵ According to its year-end work report, MOFCOM's antitrust enforcement sharply intensified in 2014: it reviewed 245 cases, the highest number of cases reviewed by MOFCOM in a single year since the law's implementation in 2008.⁹⁶ From August 2008 through the first quarter of 2015, MOFCOM unconditionally approved 97.5 percent of the 1,062 total transactions it reviewed (see Table 5). All of the 26 transactions that were either rejected or conditionally approved involved foreign firms; 21 of the 26 cases involved foreign-to-foreign transactions (see Addendum I).⁹⁷ The two transactions rejected by MOFCOM were in the beverage manufacturing and transportation shipping industries. Among the 24 conditionally approved transactions, 25 percent involved the manufacturing of high-technology goods like electronics components, computer components, or mobile devices, while the remainder involved a variety of different industries.

Table 5: Merger Reviews Completed by MOFCOM, 2008–2015

Year	Approved		Rejected	Total Reviewed
	Unconditionally	Conditionally		
2008	16	1	0	17
2009	72	4	1	77
2010	113	1	0	114
2011	164	4	0	168
2012	158	6	0	164
2013	211	4	0	215
2014	240	4	1	245
2015Q1	62	0	0	62
Total	1,036	24	2	1,062

Source: US-China Business Council, "Update: Competition Policy & Enforcement in China," May 2015, 9; China's Ministry of Commerce, *MOFCOM's 2014 Year-End Roundup: Rolling out Antimonopoly Work in Accordance with the Law to Protect Fair Market Competition*, January 29, 2015. Staff translation.

*For comparison, only one-third of conditional approvals and rejections issued by the United States between 2008 and 2012 involved foreign-to-foreign transactions; in the EU, only 54.3 percent of such decisions between 2008 and 2013 involved non-EU companies. U.S. Chamber of Commerce, "Competing Interests in China's Competition Law Enforcement," September 2014, 31.

While all M&A transactions, foreign or domestic, that satisfy the applicable monetary threshold must be reported to MOFCOM,^{*} evidence suggests most qualifying domestic M&A transactions are not reported. Domestic-to-domestic transactions account for approximately 80 percent of M&A deals with a Chinese target, but from August 2008 to 2014, only 7.6 percent of the transactions decided by MOFCOM were domestic-to-domestic, suggesting the majority of such transactions were not submitted to MOFCOM for review.⁹⁸ By not reporting to MOFCOM, many domestic-to-domestic transactions were effectively exempted from AML requirements and rigorous review.⁹⁹ Even though most M&A transactions reviewed by MOFCOM are approved, the imbalance in reporting expectations across domestic and foreign M&A transactions puts foreign companies at a disadvantage by unfairly and disproportionately exposing them to increased scrutiny, regulatory uncertainty, approval delays, and associated costs. In December 2014, MOFCOM announced its first published decision penalizing a prominent SOE for failing to report a merger.¹⁰⁰ The company in question, Tsinghua Unigroup, was fined \$48,300 (RMB 300,000) for completing its \$907 million acquisition of RDA Microelectronics in November 2013 without reporting the merger to MOFCOM, in violation of Article 21 of the AML.¹⁰¹

NDRC's AML Enforcement Activities: Pricing Investigations

The NDRC's Price Supervision and Anti-Monopoly Bureau investigates pricing-related anticompetitive conduct. Between 2008 and 2012, the NDRC conducted nearly 20 pricing-related investigations, according to media reports.¹⁰² Starting in 2013, the NDRC's enforcement activities increased sharply: the agency investigated more than 80 companies in 2013, and more than 150 companies and branches in 2014.¹⁰³

Throughout China's intensification of AML enforcement efforts in 2013 and 2014, U.S. business groups have found the NDRC enforces the AML disproportionately against foreign companies to achieve industrial policy goals unrelated to the protection of competition.¹⁰⁴ The NDRC's antitrust enforcement officials, however, deny these allegations. On the sidelines of the Summer Davos Forum in September 2014, Xu Kunlin, then head of the NDRC's Price Supervision and Anti-Monopoly Bureau, asserted "there is no selective law enforcement" between foreign and domestic firms or private and SOEs, despite the CCP's dual role as both SOE owner and regulator.¹⁰⁵ According to Mr. Xu, as of September 2014, only 10 percent of the 335 enterprises and industry associations investigated by the NDRC for monopolistic conduct were foreign firms.¹⁰⁶ In a joint statement, the three Chinese antitrust enforce-

^{*}Normally, cases are reviewed if global turnover or Chinese turnover in the previous year surpasses certain thresholds. In 2014, MOFCOM promulgated two regulations to simplify premerger filing procedures. To determine whether a proposed transaction can be filed under simplified procedures, MOFCOM adopts both "market share thresholds"—to determine whether an enterprise has a dominant position in a certain market—and nonmarket share tests to determine whether the transaction will affect the Chinese economy. These regulations can be seen as a positive development in China's AML enforcement in that simplified filing requires less paperwork and takes less time for approval, but there is still a degree of uncertainty in the exceptions for simplified filing procedures. For more specific details on MOFCOM filing procedures, see Amigo Lan Xie, Cecilia Dai, and Aqua Huang, "What Is Simplified under Anti-Monopoly Filing Procedures for Simple M&A Cases?" *K&L Gates*, February 12, 2015.

ment agencies argued that large market positions make multinational corporations “inevitably the main object of market regulators” in recent campaigns, resulting in the appearance of targeted enforcement.¹⁰⁷

Based on a number of industry, legal, and academic reports, news articles, and Chinese government websites, announcements, and press conferences, research by Commission staff into the NDRC’s enforcement activities as of September 2014 found foreign-invested firms constituted approximately 19 percent of the roughly 276 enterprises or associations implicated in price-related antimonopoly investigations—9 percentage points higher than the figure cited by Mr. Xu (see Addendum II). Across a case sampling expanded to include all known completed cases through September 2015, approximately 26.3 percent of entities subject to NDRC penalty decisions for price-related AML violations were foreign-invested entities. This updated case sampling covers a total of 36 completed price-related cases in which at least 269 enterprises and trade associations in total were penalized.* Foreign-invested enterprises also feature prominently in the NDRC’s ongoing cases, but the lack of detail provided in investigation announcements makes the proportion of cases involving foreign-invested firms difficult to assess.

On an industry basis, the nearly \$300 million in fines imposed by the NDRC in major antitrust cases in 2014 were most concentrated in four sectors: the automotive industry (cases involving 12 Japanese auto parts and bearing manufacturers, Audi, and Chrysler), the insurance sector (a case involving 23 Zhejiang insurance companies), the cement sector (a case involving three Jilin cement companies), and the eyeglass and contact lens market (a case involving seven foreign manufacturers).¹⁰⁸ On average, fines imposed by the NDRC in pricing investigations are higher for foreign companies (3.3 percent of previous year’s sales revenue in China) than for domestic companies (2.5 percent of previous year’s sales revenue in China).¹⁰⁹

China’s AML is ambiguous in its application of jurisdiction, definition of key terminology, and determination of penalty amounts; offers poor procedural protection; and provides for very limited disclosure of decisions.¹¹⁰ Because the law employs vague legal terms and leaves broad space for enforcement agencies to exercise discretionary power, the agencies, especially the NDRC and local development and reform commissions, have not exercised their power in a fair, equal, and transparent way.¹¹¹ Moreover, the administrative decisions of the NDRC and local commissions are short on evaluation of the effect of a certain behavior on competition, and lacking in evidence of why an actor should be exempted from punishment or receive a heavier or reduced fine.¹¹² The lack of an effective mechanism for controlling the overly broad discretion granted by the AML to enforcement agencies results in inconsistent decisions and unequal treatment: analysis of the NDRC’s publicly available investigation and penalty decisions suggests the NDRC “failed to

*Additional information on monopoly offenses investigated by the NDRC but not disclosed on the NDRC’s website can be found in Zhang Xingxiang, “China’s Anti-Monopoly Law Enforcement: A Quest for Transparency, Consistency and Fairness,” *Indiana University Research Center for Chinese Politics and Business Working Paper #37*, April 2015, Appendix 2, 12–13.

treat [the] same or similar cases[s] equally,” resulting in more leniency toward SOEs, more rigorous enforcement against foreign companies, and substantially varied penalties imposed on companies, regardless of nationality of the controlling shareholder, in similar circumstances.¹¹³

SAIC’s AML Enforcement Activities: Non-Pricing Monopoly Investigations

The SAIC and its local branches handle non-pricing-related monopoly conduct and behavior constituting unfair competition, such as abuse of dominant market position and horizontal monopoly agreements. According to the agency’s official website, the SAIC had launched 45 monopoly investigations as of January 28, 2015, and had completed 20 of those cases.¹¹⁴ In 2014, the SAIC investigated 15 new monopoly cases, one-third of all its monopoly cases since 2008, pointing to an intensification of AML enforcement activity.¹¹⁵ In addition to monopoly cases, the SAIC investigated more than 34,000 cases of unfair competition in 2014 alone.¹¹⁶ None of the known completed cases involved foreign companies, but two ongoing investigations were launched into Swedish company Tetra Pak in July 2013 and Microsoft in July 2014, both alleging abuse of market dominance (see Addendum III).

Additional Factors Contributing to China’s Uneven AML Enforcement

At the Commission’s January hearing, three experts testified that while industrial policy is a consideration in China’s AML enforcement, the extent of its role in investigation and penalty decision making is not known due to a lack of transparency on the part of authorities. Because China’s AML regime is nascent compared with other established antitrust regimes, however, a number of structural and political factors skew its AML enforcement outcomes. Scholars of Chinese antitrust law generally agree the following additional factors contribute to China’s uneven AML enforcement:

- *Competition between agencies:* Because antitrust enforcement is split among the NDRC, the SAIC, and MOFCOM, the agencies compete with each other for antitrust policy control.¹¹⁷ Moreover, each agency’s mandate underlies its style of AML enforcement. The NDRC is responsible for macroeconomic management and industrial policy, and so tends to rely on government intervention to solve economic problems.¹¹⁸ MOFCOM is responsible for formulating trade and investment policies, and so is perceived to be friendlier to free-market policies. The SAIC is smaller and focuses on administration of enterprises and consumer protection, and so tends to play a smaller role in antitrust enforcement.
- *Poor coordination and unclear jurisdiction across agencies:* There is a risk of conflicting or diverging interpretations between the NDRC and the SAIC. For example, while both agencies may pursue investigations of alleged IP abuses, the dis-

inction between price-related and non-price-related conduct in such cases is not always clear.¹¹⁹ In at least one instance where an antitrust violation came under the jurisdictions of both the NDRC and the SAIC, the NDRC exercised jurisdiction, even though the offense was not price related.¹²⁰

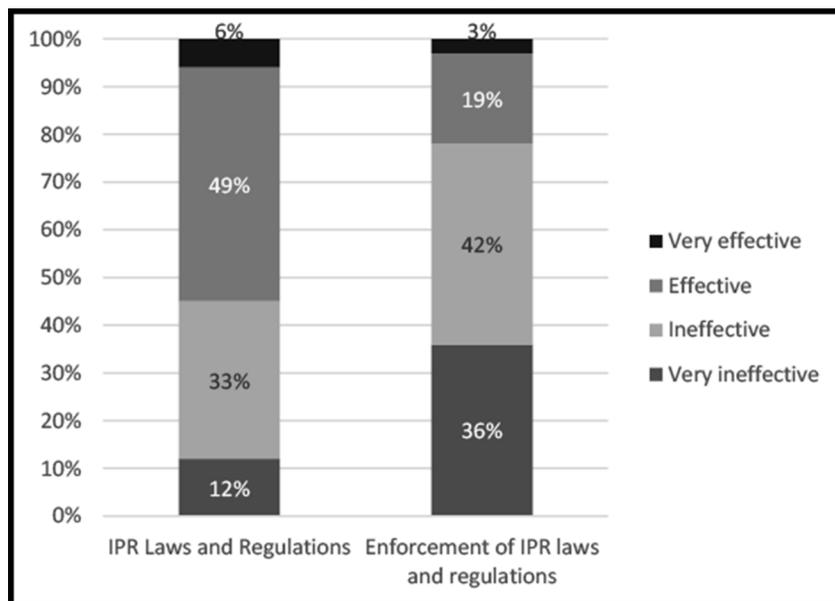
- *Lack of resources:* MOFCOM is understaffed compared to other merger review antitrust agencies in large jurisdictions elsewhere in the world. In 2012, MOFCOM's antimonopoly bureau was staffed with only 35 people to review hundreds of transactions, resulting in heavy delays for M&A reviews.¹²¹ As of February 2014, the NDRC and the SAIC had about 15 and 8 staff members working on antitrust enforcement, respectively.¹²² Local- and provincial-level bureaus are better staffed, as investigation and enforcement work tends to fall to local agencies.
- *Discrepancies between national- and local-level agencies:* Both the NDRC and the SAIC have extensive networks of corresponding bureaus at various levels of regional government, and so can delegate their enforcement responsibilities to local authorities. In both agencies, the majority of cases were initiated and enforced by local antitrust agencies.¹²³ Local authorities face pressure from local governments and local SOEs, while national-level authorities tend to intervene in high-profile cases to achieve broader policy objectives.¹²⁴
- *Lack of judicial oversight:* Since the AML went into effect, no defendant has appealed any administrative decision made by the enforcement agencies for three main reasons: (1) fear of backlash from the enforcement agencies and other ministries; (2) "miniscule" likelihood of winning such a case; and (3) the NDRC's practice of granting leniency or complete immunity to companies that admit their guilt, creating a race to confess among firms.¹²⁵
- *Lack of transparency:* To date, the NDRC has not published the rationale for any of its investigations, penalties, or other determinations in the context of AML enforcement.¹²⁶ In the last year, MOFCOM and the SAIC have stepped up efforts to publish relevant decisions on their official websites.

Antitrust and Intellectual Property

In 2015, U.S. companies surveyed by AmCham China reported an overall improvement in the effectiveness of China's intellectual property rights (IPR) laws and regulations, but more than 75 percent rated China's IPR enforcement thereof as either ineffective (42 percent) or very ineffective (36 percent), as shown in Figure 7.¹²⁷ Likewise, 56 percent of European Chamber members rated China's IPR law enforcement as "inadequate."¹²⁸

* Survey respondents could choose to describe enforcement as excellent, adequate, inadequate, or not applicable.

Figure 7: Effectiveness and Enforcement of China's IPR Laws and Regulations
(surveyed U.S. companies)



Source: American Chamber of Commerce in China, "2015 China Business Climate Survey Report," February 2015, 29.

U.S. companies are particularly concerned about the application of the AML in the field of IP. According to the U.S. Chamber of Commerce, the NDRC appears to have used the threat of AML investigations against at least two U.S. companies, InterDigital and Qualcomm (see Addendum II), to attempt to lower the licensing fees charged to would-be Chinese licensees, usually telecommunications and electronic equipment producers like Huawei, effectively giving these Chinese firms a competitive advantage in the domestic and global telecommunications markets.¹²⁹ Moreover, the NDRC appears to have imposed higher fines on alleged AML violations related to IP than other types of cases: typically, AML fines are a percentage of sales within China, but IP-related AML fines have been based on percentage of global sales revenue.¹³⁰

The discrepancy between high fines for IP-related AML violations and low awards for IPR violations harms the ability of foreign companies to commercialize, license, or enforce patents or other IP rights in China.¹³¹ According to a private database* of about 31,000 cases, average damages awarded in patent infringement cases in China range from \$10,000 to \$20,000.¹³² These damages are considerably less than average damages in either Europe or the United States,[†] and "too low to compensate most innovations," ac-

*The Ciela database is maintained by Rouse, a global IP consultancy. The data come from judgments published by the major IP courts around China.

†By comparison, the overall median damages award in IP infringement cases in the United States between 1995 and 2013 was \$5.5 million, and the median award in 2013 was \$5.9 million. PricewaterhouseCoopers, "2014 Patent Litigation Study," July 2014, 6.

ording to Mark Cohen, senior counsel at the U.S. Patent and Trademark Office.¹³³ Fines lodged in China against foreign companies for alleged IP-related antitrust violations, on the other hand, average in the millions of dollars. As noted in the following text box, U.S. chipmaker Qualcomm was fined \$975 million in February 2015 for its patent licensing practices—the highest antitrust penalty yet, registering more than 60,000 times the average damages awarded to foreign IP holders for patent infringement by Chinese companies.¹³⁴ In light of this disparity, prospective licensees in China are incentivized to continue infringing and risk an adverse Chinese judicial decision “while at the same time proactively launch[ing] a Chinese antimonopoly law case for even greater damages than royalties that are being asked of by the prospective licensor,” casting further doubt on how much the Chinese government values a sound IP enforcement system, according to Mr. Cohen.¹³⁵

The NDRC’s Qualcomm Decision: Chipping Away at Patent Protection and Licenses

On November 25, 2013, Qualcomm—the world’s largest smartphone chipmaker—disclosed it was being investigated under China’s AML by the NDRC for price-related violations after several Chinese telecommunications firms alleged the company was overcharging Chinese mobile device makers on patent fees and boosting sales by bundling patent licenses with chip sales, among other alleged behaviors.¹³⁶ During the investigation, one AML regulator made several public remarks prejudging the outcome against Qualcomm, raising procedural irregularity concerns.¹³⁷

On February 9, 2015, Qualcomm announced the NDRC’s finding that the company exploited its dominant market position in several key telecommunications standard-essential patents (SEPs)—patents that are incorporated in setting technical standards, allowing for the interoperability of various technical devices—and chips to charge “unfairly high” royalty rates, tie wireless and nonwireless patents, and attach conditions to chip sales.¹³⁸ Qualcomm did not appeal the decision, and agreed to pay the \$975 million fine levied by the NDRC, representing 3.7 percent of its total earnings in 2014 and 8 percent of its revenue from China sales in 2013.¹³⁹ In a press release, the company expressed disappointment with the results of the investigation.¹⁴⁰ The penalty levied on Qualcomm was the largest ever AML fine in China, though many telecommunications industry analysts described the fine as “modest,” given the size of Qualcomm’s China profits.¹⁴¹

In addition, the company agreed to implement a “rectification plan” to modify its business practices in China.¹⁴² The key terms of the rectification plan include:

- Qualcomm will offer licenses to its current 3G and 4G Chinese SEPs separately from licenses to its other patents.

The NDRC's Qualcomm Decision: Chipping Away at Patent Protection and Licenses—Continued

- For 3G devices using Qualcomm's Chinese SEPs, the company will charge 5 percent in royalties; for 4G devices, the company will charge royalties of 3.5 percent. Both will use a royalty base of 65 percent of the selling price of the device, a lower figure than the wholesale price of the device ordinarily used by Qualcomm.
- Qualcomm agreed not to condition the sale of baseband chips on the chip customer signing a license agreement with terms considered unreasonable by the NDRC.

Four months after Qualcomm's historic settlement, the company announced a new JV with China's largest chip maker, Semiconductor Manufacturing International Corporation (S.M.I.C.), Huawei Technologies, and a Belgian microelectronics research center, reportedly to focus on R&D of new integrated circuit technology "to boost China's semiconductor capabilities."¹⁴³ According to a statement released by the companies, S.M.I.C. will have the rights to license the IP created by the new JV.¹⁴⁴ In an interview with Reuters, Harvard Business School professor Willy Shih assesses Qualcomm is taking this step to be able to remain competitive in China. He explained, "The logic is if they help S.M.I.C. manufacture Qualcomm chips in China that improves their ability to sell those chips there."¹⁴⁵

The significance of the NDRC's Qualcomm decision lies foremost in its application to holders of SEPs: under the NDRC's interpretation, holding an SEP constitutes having a dominant market position, so licensing of technologies through SEPs may constitute monopolistic conduct.¹⁴⁶ Therefore, all SEP holders are potentially at risk of being investigated for imposing unreasonable and unfair licensing terms. New regulations issued by the SAIC in April 2015 target non-pricing IP-related antitrust violations (see discussion of the rules below). Without its own formal rules for IP-related antitrust violations, the NDRC may rely on the Qualcomm decision as a model for its IP-related AML enforcement, posing danger for U.S. companies going forward, particularly in R&D-intensive industries.

The conflict between IPR protection and AML enforcement over technology licensing and standards setting in China could intensify starting in August 2015, when the SAIC's new regulations on the use of IPR to eliminate or restrict competition—China's first comprehensive guidelines to regulate IP practices under the AML—went into effect. (Neither MOFCOM nor the NDRC is required to follow the rules, but they are expected to do so.)* The rules intend to "protect fair market competition and encourage innovation" by

* Because the SAIC only has AML enforcement authority over conduct that is not related to pricing or to M&As, the rules do not address issues such as the charging of "unfairly high" royalties, which was the focus of the NDRC's Qualcomm investigation. Covington & Burling LLP, "China Issues Final IP/Antitrust Rules," April 21, 2015, 1–2.

prohibiting firms with a dominant* share of sales in a product or market from “abusing” their IPRs to eliminate or restrict competition.¹⁴⁷ The rules will regulate the following forms of abusive conduct, among others:

- Refusal to license IPRs that amount to “essential facilities”;†
- Imposing certain exclusivity restrictions;
- Imposing unjustified tying and bundling requirements;
- Attaching unreasonable trading conditions to an IP agreement;
- Engaging in discriminatory conduct; and
- Engaging in practices that are inconsistent with “fair, reasonable, and non-discriminatory” (FRAND)‡ treatment in relation to the licensing of SEPs.¹⁴⁸

These rules could have a significant impact on the licensing of IP in China, particularly by firms that account for a large share of sales in the technology market or hold patents that are essential to an industry standard—as several prominent U.S. tech firms do.¹⁴⁹ For one, the essential facilities doctrine—possibly the most controversial aspect of the regulations—states that refusal to license IP will violate the AML if the IPR holder is dominant, if the refusal to license “eliminate[s] or restrict[s] competition,” and if the technology is “essential for production and business operations.” § 150

Application of the essential facilities doctrine has faced serious criticism ¶ in the U.S. Supreme Court because the doctrine fails to provide clear guidance as to what constitutes a facility, what makes a facility essential, and what constitutes a denial of access, while courts in Europe have applied this doctrine in a few exceptional and controversial decisions to facilities involving IP.¹⁵¹ In the context of patent licensing, the essential facilities doctrine has never been used anywhere in the world.¹⁵² In other countries, courts and agencies have found the application of the doctrine to

*According to the SAIC rules, the threshold for dominance is met for a company that (1) has a 50 percent or greater share of the relevant technology or product market, (2) together with one other company has a 66 percent or greater share of the market, or (3) together with two other companies has a 75 percent or greater share of the relevant market. Covington & Burling LLP, “China Issues Final IP/Antitrust Rules,” April 21, 2015, 2.

†In general, the essential facilities doctrine prohibits anticompetitive conduct where a dominant firm prevents other competitors in the downstream market from acquiring and using certain essential facilities. The doctrine is traditionally applied in natural monopoly sectors such as railways, telecommunications, and electricity power generation and transmission. Michael Gu, “Brief Comments on China’s First Anti-Monopoly Regulation in the IP Field,” *AnJie Law Firm*, April 29, 2015, 3–4; Steve Harris, Mabel Lui, and Jingwen Zhu, “China’s New Rules on Antitrust and Intellectual Property Intersected Issues,” *Winston & Strawn LLP*, April 2015, 1.

‡In the Qualcomm case, the NDRC decision did not explain an accepted approach for calculating FRAND royalties.

§A dominant company is prohibited from refusing to license its IPRs on FRAND terms if (1) the IP is not “reasonably substitutable” and is essential for other business undertakings to compete in the relevant market; (2) refusal to license IP in the relevant market will adversely impact competition, innovation, and consumer interests; and (3) the obligation to license the IP will not cause unreasonable damage to the licensor. Michael Gu, “Brief Comments on China’s First Anti-Monopoly Regulation in the IP Field,” *AnJie Law Firm*, April 29, 2015, 4; Nicolas French et al., “A New Dawn? China Introduces First Antitrust Guidelines in Relation to Intellectual Property Rights,” *Freshfields Bruckhaus Deringer*, April 2015, 3.

¶In *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004), the Court rejected the notion that Verizon (then AT&T) was obligated by the 1996 Telecommunications Act to share infrastructure elements with competitors under antitrust law. U.S. Department of Justice, *Hearings on Single-Firm Conduct*, testimony of R. Hewitt Pate, July 18, 2006.

IPR may substantially harm incentives to innovate, and by extension, technological advancement.¹⁵³ While IP-specific guidance on the SAIC's AML enforcement is a positive development, the lack of specific and objective criteria leaves companies "unable to reliably predict whether refusing to grant a license in particular circumstances or on particular terms or conditions may be considered to be 'not justified,' and thus a violation of the AML, potentially resulting in an order compelling it to grant a license under terms and conditions imposed by the court or agency."¹⁵⁴

Likewise, the SEP rules on standards setting represent a departure from international norms. Typically, a standards-setting organization coordinates across its members to disclose patents that may be essential to a standard, and requests the disclosing member to commit to license those patents that are essential on a royalty-free basis or on FRAND terms.¹⁵⁵ In the United States and the EU, participation in standards setting is voluntary, and SEP holders are free to exclude some or all of their technology from the standards-setting process.¹⁵⁶ In contrast, the SAIC's new IP rules could be interpreted to apply to the licensing practices of any holder of SEPs, regardless of whether the SEP holder participated in the standards-setting organization or committed to license its patents on FRAND terms at all.¹⁵⁷ In the Chinese legal context, these provisions could be used to extract or impose better terms for licensees under FRAND, creating significant uncertainty for licensing in China.¹⁵⁸ Consequently, FRAND developments in China potentially will have global impact on FRAND rates: if China sets lower rates on patent licensing under FRAND terms, other jurisdictions will be inclined to follow.¹⁵⁹ For example, based on the FRAND principle, Qualcomm will likely be expected to extend lower license rates to licenses in other jurisdictions, given its commitment to do so in China under its rectification plan.¹⁶⁰ The SAIC's IP rules will directly affect AML cases allegedly involving IP abuse—including the SAIC's ongoing investigations into Microsoft and Tetra Pak.

The U.S. government response to this growing threat to IPR holders in China primarily has consisted of multitiered engagement. The U.S. Federal Trade Commission (FTC) has been particularly active in engaging China's enforcement agencies in rectifying the practice of threatening AML investigations or penalties to procure cheaper licensing fees for domestic companies. FTC and U.S. Department of Justice (DOJ) officials have held several high-level meetings with Chinese antitrust officials since the two countries signed a memorandum of understanding on July 27, 2011, to promote communication and cooperation among the agencies.¹⁶¹ FTC Chairwoman Edith Ramirez and FTC Commissioner Maureen Ohlhausen have delivered speeches expressing "serious concern" that China's approach to the AML suggests "an enforcement policy focused on reducing royalty payments for local implementers as a matter of industrial policy, rather than protecting competition and long-run consumer welfare."¹⁶² Likewise, China's antitrust enforcement activities in IP-intensive industries have attracted a stream of criticism from U.S. officials. Jack Lew, U.S. Secretary of the Treasury, reportedly raised U.S. concerns to China's Vice Premier Wang Yang in September 2014.¹⁶³ In December 2014, White House

National Security Council Spokesman Patrick Ventrell said, “The United States government is concerned that China is using numerous mechanisms, including anti-monopoly law, to lower the value of foreign-owned patents and benefit Chinese firms employing foreign technology,” and President Barack Obama raised this issue with Chinese President Xi Jinping when they met in Beijing in November 2014.¹⁶⁴

U.S. officials have also expressed concerns about China’s AML enforcement in bilateral fora. At the 2014 S&ED, China said it recognized that its competition law enforcement should be fair, objective, transparent, and nondiscriminatory, and committed to provide any party under investigation with information about concerns with the conduct in question, as well as an effective opportunity to present evidence in its defense.¹⁶⁵ At the 2014 Joint Commission on Commerce and Trade (JCCT), China committed to increase the ability of non-Chinese counsel to attend meetings with the AML enforcement agencies, and to make more transparent penalty procedures and competition-based remedies.¹⁶⁶ In 2015, the ability of non-Chinese counsel to attend meetings with Chinese enforcers has improved significantly, according to FTC Commissioner Ohlhausen, with no reports of exclusion; but it is unclear “whether this improvement is a result of the JCCT commitment or reflects a broader recognition by China’s AML enforcers that participation of counsel is an important and beneficial element of best competition enforcement practices.”¹⁶⁷ Building on China’s 2014 JCCT commitments, at the 2015 S&ED Chinese officials provided clarity on the scope of jurisdiction in administrative appeals and confirmed that all parties to AML proceedings are entitled to seek administrative consideration in accordance with Chinese laws.¹⁶⁸ While administrative appeals are permissible under Chinese law, no foreign enterprise has appealed an enforcement decision.

Reforms of China’s Foreign Investment Framework

During the Third Plenum in November 2013, the CCP leadership indicated support for a wide range of structural and economic reforms that could potentially bring China’s foreign investment rules closer to international standards. Incremental progress has been made in some of these areas within the boundaries of China’s free trade zones (FTZs), while the forthcoming proposed foreign investment law (FIL) would lay the groundwork for streamlining government approvals and clarifying the regulatory environment. Overall, however, China’s reform efforts have yet to substantially address core issues like foreign investment restrictions and preferential policies toward domestic industry.¹⁶⁹

Draft Foreign Investment Law

In January 2015, MOFCOM and the NDRC jointly circulated a draft of the new FIL, which will abolish the three existing laws governing foreign investment in China when it goes into effect.*

*As a procedural matter, the adoption of the draft FIL would require the approval of the National People’s Congress. Given the priority of the draft FIL in relation to the other pending legislation as well as the legislative process of the National People’s Congress, it is unlikely the FIL will come into effect until 2018. Anna Elshafei, “China’s Draft Foreign Investment Law Could Be a Game Changer?” *Miller Canfield*, June 8, 2015.

Some elements of the draft FIL reflect key principles of the U.S. model Bilateral Investment Treaty (BIT), including the use of a negative list to identify instances in which FDI is to be treated differently than domestic investment.¹⁷⁰ In its current form, the draft FIL would significantly improve the legal and regulatory regime for a majority of foreign investment in China by eliminating approval requirements in unrestricted sectors.¹⁷¹ Other aspects of the draft FIL, however, threaten to expand the scope of foreign investments subject to the increased discretionary power of approval authorities. For example, FIEs in restricted sectors will still need foreign investment approval and will continue to face numerous market access barriers such as foreign equity caps, geographic limitations, and local hiring minimums, as well as the current MOFCOM review and approval process.¹⁷²

Under the draft FIL, the definition of a “foreign investor” has been expanded to include instances where the person or entity with ultimate “control”* over the company making the investment is foreign, even if the company itself is domestic.¹⁷³ For example, a domestic, Chinese-owned company structured to allow foreign strategic investors to operate in a sector with foreign equity restrictions—also known as a variable-interest entity (VIE)—would be considered a foreign investor. The scope of MOFCOM’s approval authority will also be expanded to cover offshore investments—any transaction outside of China that results in the de facto control of a Chinese entity by an FIE will be considered a foreign investment—marking a significant shift from the current practice, where only onshore investments are subject to MOFCOM approval.¹⁷⁴ This shift in focus from foreign equity to foreign control will allow Chinese authorities to treat VIEs, a prevalent investment structure used by foreign investors to access restricted sectors of China’s economy, with increased scrutiny and administrative discretion.¹⁷⁵ The VIE structure is also used by some prominent Chinese companies, like Internet giants Alibaba and Baidu, to access foreign capital by listing on foreign stock exchanges while operating in China.¹⁷⁶

The draft FIL offers China’s first formal regulation on VIE structures; currently, the legal standing of VIEs is ambiguous, causing uncertainty among foreign investors.† As for preexisting VIEs in restricted or prohibited industries, MOFCOM offers three possible approaches: (1) the VIE can continue to operate under the same structure if it notifies MOFCOM it is controlled by Chinese investors; (2) the VIE can continue to operate under the same structure if MOFCOM verifies its Chinese-controlled status at the entity’s re-

*The draft FIL defines “control” as follows: (1) directly or indirectly holding 50 percent or more of the shares, equity, property shares, voting rights, or other similar rights and interests of an enterprise; (2) despite holding less than 50 percent of the shares, equity, property shares, voting rights, or other similar rights and interests of an enterprise, (a) being entitled to directly or indirectly appoint at least half of the members of the board or a similar decision-making body, (b) being able to ensure that its nominees obtain at least half of the seats on the board or a similar decision-making body, or (c) being able to exert a material impact on the resolutions of the shareholders’ meetings or the directors’ meetings; or (3) being able to exert a decisive influence on such matters as the operations, finance, personnel, and technology of an enterprise through contracts, trusts, or other means. Joseph W.K. Chan, Ling Chen, and Calamus Huang, “China Set to Overhaul Foreign Investment Law,” *Sidley Austin LLP*, February 26, 2015.

†For more information on the legal risks associated with VIEs, see Kevin Rosier, “The Risks of China’s Internet Companies on U.S. Stock Exchanges,” *U.S.-China Economic and Security Review Commission*, June 18, 2014.

quest; and (3) the VIE can apply to MOFCOM for foreign investment approval, and MOFCOM's approval decision would reference various factors, including the VIE's de facto controller in its approval decision.¹⁷⁷ As these guidelines suggest, preexisting VIEs in restricted or prohibited industries not controlled by Chinese investors are at risk of being denied investment approval or ultimately terminated.¹⁷⁸ For preexisting Chinese companies listed on U.S. stock exchanges utilizing the VIE structure, however, MOFCOM would have the discretion to determine de facto Chinese control and allow the entity to continue operations, even if the majority of shareholders are foreign.

National Security Review

Although the adoption of a negative list in the new FIL will likely be a positive development for FIEs, the national security review process proposed in the draft FIL and subsequently detailed in an April 2015 State Council announcement could worsen the foreign investment climate in China. Under the new negative list approach, the Foreign Investment Catalogue in use under the current regime will be abolished, though the negative list itself will still categorize sectors as either "prohibited" or "restricted."¹⁷⁹ Foreign investment in restricted sectors will be subject to a formal national security review, while foreign investors in unlisted industries will enjoy "pre-establishment national treatment": in lieu of applying for approval from MOFCOM as a prerequisite for market entry, FIEs would be able to establish businesses in China in the same way as domestic firms—namely, by applying directly to the SAIC.¹⁸⁰ Prior to the introduction of the review this year, foreign acquisitions of a controlling stake in Chinese companies in certain industries were subject to review under informal State Council regulations.¹⁸¹

The draft FIL broadens the scope of China's national security review to include "any foreign investment which damages or may damage the national security of China."¹⁸² The review will be conducted by the NDRC and MOFCOM, and will take the following factors into consideration: (1) impact on national security, including China's capacity to provide essential goods and services to that end; (2) impact on the stability of the economy; (3) impact on basic social order; (4) impact on culture and social morality; (5) impact on Internet security; and (6) impact on sensitive technology for use in national defense.¹⁸³ Certain kinds of foreign investment, including investment into sensitive agricultural products, key natural resources and energy, strategic infrastructure, transport capabilities, technology and information technology, and investment near military facilities, will trigger review.¹⁸⁴ In effect, Chinese authorities will have broader discretion to review incoming foreign investments for perceived national security threats.

Three prominent U.S. business associations—the U.S. Chamber of Commerce, AmCham China, and AmCham in Shanghai—expressed their "deep concern" about the implications of China's "overly broad" definition of national security, which they describe as "heavily skewed in favor of protecting national interests that fall outside the widely accepted scope of essential national security concerns" and "likely to have a significant adverse impact on the flow

of foreign investment into China.”¹⁸⁵ Specifically, China’s national security definition includes economic security criteria that raise “fundamental questions about whether future commitments by China to open its markets to foreign investment will produce the intended results,” and “may also be inconsistent with principles of non-discrimination, fairness, and openness that are embodied in a high-standard BIT,” at the risk of undermining ongoing U.S.-China BIT negotiations.¹⁸⁶

Free Trade Zones

China’s FTZs were designed to test reforms aimed at promoting further financial liberalization, reforming the foreign investment management system, and supporting outbound investment for potential application nationwide.* Some relevant financial reform measures have been carried out in the FTZs, but the promised liberalization has not materialized, much to the disappointment of foreign investors there.¹⁸⁷ One estimate shows that of the 12,600 companies registered in the Shanghai FTZ in its first year of operation, only 13.7 percent were FIEs.¹⁸⁸ Excluding Hong Kong and Taiwan companies, however, foreign companies comprised just 6 percent.¹⁸⁹

The Shanghai FTZ, established in 2013, was specifically designed to test and accelerate national-level financial reforms including implementation of renminbi (RMB) capital account convertibility, market interest rates, and cross-border RMB handling. In 2015, Chinese Premier Li Keqiang approved the creation of three additional FTZs—in Guangdong, Tianjin, and Fujian—and subsequent expansion of the Shanghai FTZ to include Lujiazhai, the city’s financial district.¹⁹⁰ According to Wang Shouwen, China’s Assistant Minister of Commerce, the three new FTZs will play different strategic roles:

The one in Guangdong will focus on promoting the in-depth economic cooperation between the Chinese mainland, Hong Kong, and Macao, especially in the services sector. At the same time, the Guangdong FTZ shoulders the responsibility of upgrading China’s manufacturing industry. The one in Tianjin will emphasize the joint development of Beijing, Tianjin, and Hebei. The one in Fujian deepens cross-Straits economic cooperation and will support the [“One Belt, One Road”] initiative.¹⁹¹

All four FTZs adopted a unified negative list approach to foreign investment in April 2015.¹⁹² Compared with the initial FTZ negative list promulgated in 2013, the 2015 FTZ negative list appears to feature many changes: the number of sectors restricted to foreign investment decreased from 190 in 2013 to 122 in 2015.¹⁹³ In practice, however, U.S. officials are concerned that China’s negative list offer is not liberal enough to show a decisive commitment to “seriously and significantly” opening up to foreign investment.¹⁹⁴ Though the size of the FTZ negative list has been reduced, “many

*More detailed discussion of China’s FTZs and related reforms can be found in U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, May 5, 2015.

industries and sectors have been merely re-grouped,” according to the European Chamber.¹⁹⁵ U.S. business groups believe the revisions reflect “a streamlining of the negative list with other national regulations guiding foreign investment rather than a significant liberalization of the investment environment.”¹⁹⁶ The 2015 FTZ negative list largely maintains restrictions in certain sectors in which the United States maintains a competitive advantage with China, including publishing, news, Internet content, films, law practices, and banking and asset management.¹⁹⁷ Foreign investment remains prohibited in sectors including rare earth mining, air traffic control system management, postal enterprises, and radio and television broadcasters.¹⁹⁸ Foreign investment in industries including oil and natural gas exploration and development, general-purpose airplane design, manufacturing, maintenance, and rare earth smelting will be restricted to JVs with Chinese companies.¹⁹⁹ In a positive development, foreign investors can now set up e-commerce companies* in all four FTZs.²⁰⁰

U.S.-China Bilateral Investment Treaty

At the June 2015 S&ED, the United States and China reaffirmed their commitment to prioritize negotiation of a high-standard, mutually beneficial BIT that “embodies the principles of non-discrimination, fairness, openness, and transparency.”²⁰¹ In September 2015, ahead of President Xi’s visit to Washington, DC, BIT negotiations entered their 21st round since commencing in 2008, and the two parties exchanged “improved” negative lists.²⁰² U.S. Trade Representative Michael Froman said China’s newest negative list is “better than its original” and “represents serious effort by senior Chinese leaders,” but that BIT negotiations are “a substantial distance from the kind of high standard agreement necessary to achieve our mutual objectives.”²⁰³ Proponents argue the BIT presents an opportunity to address and ban Chinese investment practices that are out of line with international business and legal standards, including unclear regulatory and legal enforcement, forced technology transfer, preferential policies for SOEs, and long-standing market access barriers.²⁰⁴ Moreover, for China, the BIT could serve to “force domestic reform” of the investment framework by imposing “external obligations.”²⁰⁵ Critics of the BIT worry that, given the experience of China’s WTO accession, even a high-standard agreement will not be meaningfully enforceable as it conflicts with Beijing’s stated development path.²⁰⁶

Implications for the United States

U.S. businesses play a critical role in China’s economic development. As of 2014, cumulative U.S. FDI in China surpassed \$65 billion, according to official U.S. data.²⁰⁷ U.S. companies have not only contributed capital, but also advanced management practices, technological innovation, and access to global distribution channels

*Excluding any value-added technology, media, and telecommunications business, which remains restricted and subject to at least 50 percent Chinese ownership requirement in accordance with the Ministry of Industry and Information Technology’s Telecommunications Catalogue.

for Chinese products and services.²⁰⁸ As recently as 2010, FIEs* employed 15.9 percent of China's urban workforce and accounted for about 26 percent of China's industrial output.²⁰⁹ In 2014, according to official Chinese data, FIEs in China produced 45.9 percent of China's exports, down from 58.2 percent in 2006.²¹⁰ FIEs in China also accounted for 46.4 percent of Chinese imports, meaning they imported components into China for use in final products.²¹¹

Despite these achievements, foreign investors in China are still operating under a separate and less favorable set of rules designed to give domestic competitors an advantage. In addition to rising labor costs, surveyed foreign businesses also cite market access limitations and unclear and inconsistent enforcement of laws and regulations as the main challenges to establishing and operating businesses in China.²¹² Recent threats of regulatory campaigns have also appeared to discriminate against FIEs in China, further contributing to the perception of a less welcoming operating environment.

While the laws governing foreign investment and forthcoming changes to the foreign investment framework are publicly touted as relaxing restrictions as China pursues its economic reform goals, in reality these policy changes expose U.S. companies in some of the United States' strongest export sectors—especially R&D-intensive industries—to increased regulatory scrutiny and administrative discretion. For example, although the number of sectors restricted or prohibited under China's updated Foreign Investment Catalogue has decreased, restrictions in industries that traditionally face heavy controls remain largely intact, while several new constraints (e.g., restrictions on foreign investment in auto manufacturing and medical institutions) have been introduced. Likewise, despite claiming to promote fair market competition, China's AML enforcement authorities appear to have used the threat of investigations to coerce FIEs into making concessions, giving Chinese competitors an advantage domestically and abroad. China's commitments in the draft FIL and FTZs to liberalize foreign investment rules by adopting a simplified negative list are overshadowed by the potentially discriminatory national security review procedures being tested for implementation nationwide, as well as by a new series of security-related laws.

In response to these threats, the U.S. government continues to raise concerns about China's investment restrictions and discriminatory policies at the highest levels, including in bilateral fora such as the JCCT and the S&ED.²¹³ Regarding China's AML enforcement, U.S. officials from the FTC and DOJ have consistently engaged in consultation, training, and exchanges with Chinese anti-trust officials. One FTC commissioner testified that Chinese enforcers have responded seriously to U.S. government engagement, signaling improvement in their approach to AML enforcement—for example, at the 2014 JCCT, U.S. official engagement resulted in Chinese commitments of increased ability of counsel to attend meetings with the AML enforcement agencies, more transparent penalty

* Includes Sino-foreign contractual JVs, Sino-foreign equity JVs, and foreign-owned enterprises.

procedures, and competition-based remedies.²¹⁴ China's commitments at the JCCT and S&ED have not fundamentally allayed concerns about its competition policy enforcement, leading some experts to suggest that a number of current U.S. laws could be amended to better target procedural shortcomings and uneven enforcement.²¹⁵

Foreign business groups have also been active in bringing attention to discriminatory policies and lobbying the Chinese government for much-needed regulatory clarity—for example, after detailed reports on China's competition policy were published by such groups, China's AML enforcement activity sharply declined. Experts at the Commission's January 2015 hearing testified that united efforts from government officials, business groups and industry associations, and expert practitioners are the most effective recourse for pushing China on liberalization.

Hopes for expanded bilateral investment continue to hinge on China's implementation of its reform commitments in a transparent and nondiscriminatory way. The U.S. government emphasizes the need for China to open new sectors to foreign investment, increase transparency, and improve the enforcement of existing laws to protect investors' rights.²¹⁶ If implemented, China's Third Plenum initiatives, FTZ reforms, and revised FIL could lead to improvements in the overall investment climate.

Conclusions

- U.S. companies continue to invest in China despite an increasing number of challenges on the ground and declining profitability. Chinese government measures, policies, and practices contributing to the deteriorating foreign investment climate include inconsistent and unclear legal and regulatory enforcement, increasing Chinese protectionism, and other preferential policies benefiting domestic companies.
- Across industries, market access barriers continue to top the list of Chinese government measures that limit the ability and willingness of U.S. companies to invest in China. As a means to protect its domestic companies and industries, China restricts foreign investment in sectors in which the United States maintains competitive advantage, including research and development-intensive and value-added information services sectors.
- Fluctuations in China's foreign investment restrictions reflect a pattern whereby the government welcomes foreign direct investment into sectors deemed strategic for China's national economic development in order to extract technology, intellectual property, and know-how from foreign firms. However, after domestic industry is deemed sufficiently developed, policies welcoming investment are gradually withdrawn and new policies restricting investment are put in place to free up market space for domestic firms and push out foreign firms.
- China's Anti-Monopoly Law enforcement agencies—the Ministry of Commerce, the National Development and Reform Commission, and the State Administration of Industry and Commerce—have failed to treat identical or similar violations of the law

equally, resulting in more leniency toward state-owned enterprises, more rigorous enforcement against foreign companies, and substantially varied penalties imposed on companies in similar circumstances, regardless of nationality of the controlling shareholder. The enforcement practices of the National Development and Reform Commission in particular are lacking in transparency, consistency, and fairness.

- The imbalance in expectations between domestic and foreign firms for reporting mergers and acquisitions to China's Ministry of Commerce in accordance with the Anti-Monopoly Law puts foreign-invested enterprises at a disadvantage by unfairly and disproportionately exposing them to increased scrutiny, regulatory uncertainty, approval delays, and associated costs.
- Chinese Anti-Monopoly Law enforcers' legal interpretations of monopolistic abuse of intellectual property by "dominant" firms could have a significant impact on the licensing of intellectual property in China, particularly by firms that account for a large share of sales in the technology market or hold patents that are essential to an industry standard—as several prominent U.S. tech firms do.
- China's commitments to seriously and significantly open up to foreign investment are overshadowed by new measures that reinforce longstanding market access barriers and discriminatory treatment toward foreign investors.
- Some aspects of China's proposed foreign investment law—such as streamlined approval processes and the negative list approach—are encouraging, and signal a move toward fulfilling economic reform goals set forth in the Third Plenum and converging with international investment practices. Yet, some troubling provisions remain, including a broadly discretionary and expanded national security review mechanism and targeting of companies, commonly foreign, using particular investment structures to access the market.

Addendum I: M&As Rejected or Conditionally Approved by MOFCOM*

Date Announced	Industry	Parties	Remedy	Case Duration
November 2008	Beverage Manufacturing	InBev, Anheuser-Busch	Conditionally approved	70 days
<i>March 2009</i>	<i>Beverage Manufacturing</i>	<i>Coca-Cola, Huiyuan</i>	<i>Rejected: MOFCOM asserted the proposed acquisition would enable Coca-Cola to leverage its dominant position in the carbonated soft drinks market to dominate the juice market, raising entry barriers and limiting the ability of small- and medium-sized juice companies to compete.</i>	<i>182 days</i>
April 2009	Chemical Manufacturing	Mitsubishi Rayon, Lucite	Conditionally approved	124 days
September 2009	Auto/Equipment Manufacturing	General Motors, Delphi	Conditionally approved	42 days
September 2009	Pharmaceuticals	Pfizer, Wyeth	Conditionally approved	113 days
October 2009	Battery Manufacturing	Panasonic, Sanyo	Conditionally approved	283 days
August 2010	Healthcare	Novartis, Alcon	Conditionally approved	116 days
June 2011	Chemicals/ Fertilizer	Uralkali, Silvinit	Conditionally approved	81 days
October 2011	Textile Machine Manufacturing/ Private Equity	Alpha V, Savio	Conditionally approved	110 days
<i>November 2011</i>	<i>Energy</i>	<i>General Electric, Shenhua (formation of a JV)</i>	<i>Conditionally approved</i>	<i>212 days</i>
December 2011	Computing Components	Seagate, Samsung	Conditionally approved	208 days

* Italicized rows denote a proposed transaction involving both domestic and foreign-invested entities; all other listed transactions involve only foreign-invested entities.

**Addendum I: M&As Rejected or Conditionally Approved by MOFCOM*—
Continued**

Date Announced	Industry	Parties	Remedy	Case Duration
<i>February 2012</i>	<i>Chemical Manufacturing</i>	<i>Henkel Hong Kong, Tiande (formation of a JV)</i>	<i>Conditionally approved</i>	<i>186 days</i>
March 2012	Electronics Components	Western Digital, Hitachi	Conditionally approved	336 days
May 2012	Mobile Phone Manufacturing	Google, Motorola Mobility	Conditionally approved	233 days
April 2013	Natural Resources/Mining	Glencore, Xstrata	Conditionally approved	381 days
April 2013	Agricultural Products	Marubeni, Gavilon	Conditionally approved	308 days
August 2013	Medical Devices	Baxter, Gambro	Conditionally approved	221 days
August 2013	Electronics Components	Mediatek, Mstar	Conditionally approved	417 days
January 2014	Biotechnology	Terumo Fisher, Life Technologies	Conditionally approved	196 days
April 2014	IT/Software/Mobile Equipment Manufacturing	Microsoft, Nokia	Conditionally approved	208 days
May 2014	Mobile Device Manufacturing	Merck, kGaA, AZ Electronic Materials	Conditionally approved	106 days
June 2014	Transportation Shipping	Maersk, MSC, CMA CGM	Rejected: MOFCOM rejected plans by three leading European shipping companies to form a shipping alliance that would allow the companies to share ships and port facilities, noting the three companies already held a 46.7 percent market share in the Asia-Europe container shipping line market.	273 days

* Italicized rows denote a proposed transaction involving both domestic and foreign-invested entities; all other listed transactions involve only foreign-invested entities.

**Addendum I: M&As Rejected or Conditionally Approved by MOFCOM*—
Continued**

Date Announced	Industry	Parties	Remedy	Case Duration
<i>July 2014</i>	<i>Battery Manufacturing</i>	<i>Primearth EV Energy, Toyota Motor China Investment, Toyota Tsusho, Hunan Corun New Energy, Changshu Sinogy Venture Capital (formation of a JV)</i>	<i>Conditionally approved</i>	<i>184 days</i>

* Italicized rows denote a proposed transaction involving both domestic and foreign-invested entities; all other listed transactions involve only foreign-invested entities.

Source: Adapted from US-China Business Council, "Update: Competition Policy & Enforcement in China," May 2015, 11–17.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
March 2010	Rice Noodle Manufacturing	Guangxi Price Bureau	Juezhishi, Xianyige, Liuzhou Brothers, Yongcai, and other rice noodle manufacturers	Starting in 2010, 18 rice noodle manufacturers colluded to discuss profit sharing and business integration and to set market prices in violation of the Price Law and the AML. The bureau fined the three leading companies \$14,648 apiece, and ordered fines ranging from \$4,394 to \$11,718 for others according to their behaviors.	
August 2010	Paper Making	Zhejiang Price Bureau	Fuyang Paper Manufacturing Industry Association	In 2010, the association held meetings with member companies to discuss the sales price for white paperboard. The bureau ruled this behavior violated the Price Law and the AML, and fined the association \$73,437.	
November 2010	Household Products	Hubei Price Bureau	Wuchang Salt Company	In July and August 2010, the company required distributors to purchase both salt and Huolierba detergent powder. The bureau announced the company had violated two articles of the AML, but the company had voluntarily returned illegal revenue to distributors.	

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
May 2011	Household Products	Shanghai/NDRC	<i>Unilever</i>	In March 2011, Unilever released information to the media that it might raise detergent and soap prices because of raw materials costs, causing “panic buying” in customers. The NDRC ruled the behavior violated the Price Law, ordered Unilever to cancel the price hike, and fined the group \$307,978.	
November 2011	Pharmaceuticals	Shandong/NDRC	Weifang Shuntong, Huaxin	The NDRC found the companies had signed an exclusive distribution agreement with the only two domestic producers of a key raw material commonly used in high blood pressure treatments, thus eliminating competition. The NDRC found these behaviors violated the AML and the Price Law, and fined Weifang Shuntong \$1.1 million and Huaxin \$23,505 under the AML.	
February 2012	Chemicals	Hubei/NDRC	Hubei Yihua Group	The NDRC and its Hubei branch found Yihua had worked with other companies to fix prices, and subsequently imposed those prices on its customers, causing the price of sodium hydro-sulphite to increase by 300 percent in 2011. The authorities fined Yihua \$1.6 million for violation of the AML.	

March 2012	Sea Sand	Guangdong Price Bureau	Guangdong Sea Sand Association and its members	Several companies took steps to set and manipulate resource fees for mining sea sand under the umbrella of the association in violation of the AML. Three members of the association were collectively fined \$120,565, and others were issued warnings.
January 2013	LCD Panels	Nationwide	<i>Samsung, LG, Chimei, AUO, Chunghwa Picture Tubes (CPT), HannStar Display Corporation</i>	The NDRC found these six foreign LCD manufacturers met repeatedly between 2001 and 2006 to exchange information on the LCD panel market and set or manipulate LCD panel prices in China in violation of the Price Law. The NDRC ordered the parties to return the overcharged funds to Chinese television enterprises (\$27.6 million), confiscated other illegal gains (\$5.9 million), and fined the companies \$23.1 million. The NDRC also ordered the companies to take other corrective measures.
February 2013	Liquor (<i>baijiu</i>)	Guizhou Price Bureau	Kweichow Moutai Group	The bureau found Moutai had sought to fix the minimum resale price to third-party distributors since 2012, taking punitive measures against those who did not implement the price, in violation of the AML as a resale price maintenance agreement. The bureau fined the company \$39.6 million, or 1 percent of the relevant sales revenue in the previous year.

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
February 2013	Liquor (<i>baijiu</i>)	Sichuan DRC	Wuliangye Group	The Sichuan DRC found Wuliangye signed agreements with over 3,200 dealers from 2009 to 2013 to limit the lowest resale price for its products, taking punitive measures against those who did not implement the price, in violation of the AML. The DRC fined Wuliangye \$32.4 million, or 1 percent of the relevant sales revenue in the previous year.
July 2013	Insurance	Xinjiang	Xinjiang Insurance Industry Association and 15 branches of national property insurance group companies	Six insurance companies were punished for horizontal monopoly agreements; it is unclear whether the other nine companies have yet been punished.
August 2013	Gold Jewelry	Shanghai Price Bureau	Shanghai Laofengxiang, Yuyan Plaza	The Shanghai Price Bureau ruled that the company and other gold jewelry stores sought to set retail prices under the umbrella of the Shanghai Gold & Jewelry Trade Association in violation of the AML. The bureau fined the association \$81,743 and the five stores a total of \$1.6 million, or 1 percent of their previous year's sales.

August 2013	Concrete Manufacturing	Jiangsu Price Bureau	Nanjing Concrete Industry Association and 37 concrete manufacturers	<p>After an August 2013 investigation, the bureau found the association and 37 companies engaged in anticompetitive pricing violations, and imposed a collective \$6.2 million fine on all parties. The association and one other company refused to follow the administrative decision, and were ordered by the Nanjing Intermediate Court on December 8, 2014, to pay the fine. Four other firms filed administrative lawsuits against the bureau's decision, but were rejected.</p>
August 2013	Milk Powder	Nationwide	<i>Biostime, Mead Johnson Nutrition, Dumex, Abbott, Friesland Campina, Wyeth, Fonterra, Beingmate, Meiji</i>	<p>The NDRC found nine milk powder companies guilty of fixing resale prices for distributors and retailers in violation of the AML. The NDRC fined six of these producers a total of \$109.3 million, with fines ranging from 3 to 6 percent of the previous year's revenue.</p>
September 2013	Tourism	Hainan Price Bureau	Sanya Platinum Crystal Crafts, Crystal Source, Good Royal Crystal	<p>The bureau ruled that these three companies formed a cartel, holding coordination meetings and signing a formal agreement in June 2012 to fix prices, commission rates, and market share for crystal products in violation of the AML. Sanya and Crystal Source were fined \$588,134 (4 percent of the previous year's revenue) and \$220,550 (2 percent of the previous year's revenue), respectively, for monopoly agreement, with additional fines for concealing, transferring, or destroying financial evidence. Good Royal was exempt from punishment for cooperating with authorities.</p>

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
September 2013	River Sand	Guangdong Price Bureau	Two domestic river sand companies	The two companies, owned by the same individual, held a 75 percent share of the local sand mining and processing market. The companies were accused of hoarding large amounts of sand, leading to a price increase of up to 54.5 percent over two years. The bureau fined the companies 2 percent of their previous year's sales revenue (approximately \$86,000).	
September 2013	Milk Processing	Qinghai Price Bureau	Qinghai pasteurized milk producer	The bureau found the company to have a monopoly in the local market, which it exploited to increase the sales price by 267 percent, constituting excessive pricing. The company voluntarily committed to correct the pricing and not raise prices for four months; the bureau subsequently terminated the investigation.	
September 2013	Tourism	Hainan, Yunnan Price Bureaus	Tourist shops selling crystal and spirulina products including Sanya Dijia Trade and Development Company, Sanya Zhongyu Crystal Company, and Lijiang Kangnuo Biological Development Company ¹	Tourist-oriented shops selling crystal products and spirulina were accused of using discounts on artificially inflated prices for these products to lure in customers. Local pricing agencies found these practices violated the Price Law, and fined each shop \$49,011.	

September 2013	Tourism	Yunnan DRC	Eight travel agencies in Yunnan, including the Lijiang branch of Ctrip, Lijiang Tourism Association Travel Agency Division	The Yunnan DRC ruled that eight travel agencies, operating under the umbrella of the Lijiang Tourism Association's Travel Agency Division, signed agreements in 2008 and 2010 to set prices for tour groups, sharing \$37.1 million in profits over two years, in violation of the AML as a price monopoly agreement. The agency was fined \$81,685, and the travel agencies were collectively fined \$547,291, or 5 percent of the previous year's revenue.
September 2013	Tourism	Hainan Price Bureau	Travel agencies in Hainan, including Hainan Haikou Civil Tourism Agency, the Yangguang Chunjing Travel A5 Tian Tour Group, and the Hainan Tongxing Tianxia Travel Agency	The bureau ruled that several travel agencies used bait-and-switch tactics to lure customers, pricing tours at or below cost to attract tourists and then charging high commissions from shopping activities organized by the tour groups. The bureau ruled that such behavior violates the Price Law, and fined each agency \$49,011.
December 2013	Insurance	Hunan Price Bureau	Hunan Loudi City Insurance Industry Association and 12 domestic insurance-related companies	The association organized companies to set prices for new car insurance discount rates, divided up the market, and engaged in other anticompetitive behaviors in violation of the AML. The bureau fined the association and six of the companies \$361,746. The other five companies were exempt from penalties for cooperating with authorities.

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
February 2014	Banking	Nationwide	Domestic commercial banks (unnamed)	Chinese banks were accused of imposing arbitrary charges and fees on customers. In February 2014, the NDRC announced it had ordered 64 branches of different banks to return \$66.5 million in fees from those charges, and imposed fines of \$67.7 million.	
May 2014	Telecommunications	Nationwide	<i>InterDigital</i>	The company was accused of abuse of market dominance, charging discriminatory high-price patent license fees for China's communications equipment manufacturers, and issuing bundled licenses for nonstandard essential patents and standard essential patents. In June 2014, the NDRC announced the investigation was suspended.	
May 2014	Vision Care	Nationwide	<i>Essilor, Zeiss, Nikon, Bausch & Lomb, Johnson & Johnson, Hoya, Weicon</i>	Seven manufacturers of eyeglasses and contact lenses were accused of setting minimum resale prices and running promotions that effectively served as resale price maintenance arrangements. The NDRC found their actions in violation of the AML and fined five manufacturers a total of more than \$3 million, with rates of either 1 or 2 percent of the previous year's sales.	

July 2014	Brick Manufacturing	Hainan	Five domestic manufacturers of aerated bricks	In October 2012, five manufacturers of bricks with holes to allow airflow established without authorization an industry association to harmonize sales price; supervision and control; and statistics for production, sales, and shipments. The five companies agreed upon and coordinated price increases and signed monopoly agreements to divide sales. Three companies were fined \$85,879, or 1 percent of the previous year's sales, and the others were exempted for co-operation.
August 2014	Automotive	Nationwide	<i>Hitachi, Denso, Aisan, Mitsubishi Electric, Mitsubishi, Yazaki, Furukawa Electric, and Sumitomo Electric; (separate case) NACHI-FujiKoshi, NSK, JTEKT, and NTN</i>	The NDRC announced that eight auto parts manufacturers and four bearings manufacturers had held frequent consultations to set and influence pricing of vehicles, auto parts, and bearings. Fines for companies that did not cooperate were \$135.1 million for the seven auto parts companies and \$65.5 million for three bearings companies, ranging between 4 and 8 percent of each company's previous year's sales.
August 2014	Automotive	Hubei Price Bureau	<i>Four Mercedes-Benz dealerships</i>	The bureau announced that four dealerships had overcharged customers for the predelivery inspection of purchased automobiles, and had colluded to set prices. The bureau fined the dealerships a collective total of \$264,666.

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
September 2014	Insurance	Zhejiang	Zhejiang Insurance Industry Association and 23 property insurance companies	The NDRC announced the association and 23 companies held frequent consultations to set and influence discount rates of new vehicles and unified commercial commissions for auto insurance agencies in violation of the AML, fining the association \$81,457 and the companies a total of \$18 million, or 1 percent of the previous year's sales revenue. Fines were waived or reduced for three companies that cooperated with investigating authorities.	
September 2014	Cement	Jilin Price Bureau	Three domestic cement companies: Yatai, Northern, and Jidong	The bureau announced the companies had held several consultations to agree to set cement price and implementation policies in violation of the AML, and fined Yatai and Jidong 2 percent of their 2012 sales revenues, and fined Northern 1 percent of its 2012 sales revenue. Collectively, fines totaled \$18,636.	

September 2014	Automotive	Shanghai Price Bureau	<i>Chrysler China Automotive Sales Company; (separate case) three Chrysler Shanghai dealerships</i>	The bureau found Chrysler and its three dealerships engaged in concluding and implementing price monopoly agreements by signing dealership maintenance terms. Chrysler was fined approximately \$5 million; the three dealers were collectively fined more than \$300,000.
September 2014	Automotive	Hubei Price Bureau	<i>FAW-Audi Sales, and ten Audi dealers in Hubei</i>	The bureau announced the company and ten dealers had reached monopoly agreements to set and influence vehicle sale and maintenance prices in violation of the AML. The bureau fined FAW-Audi Sales \$40.4 million, or 6 percent of its previous year's sales revenue, and fined eight of the dealers a total of \$4.9 million; seven were fined 1 to 2 percent of the previous year's sales revenue; one was fined 0.5 percent of its previous year's sales revenue; and two were exempted from penalties.
February 2015	Telecommunications	Nationwide	<i>Qualcomm</i>	The NDRC fined Qualcomm \$971.7 million, or 8 percent of its sales revenue in China in 2013, for violation of the AML. The NDRC argued Qualcomm holds a dominant market position in several key telecommunications standard-essential patents and in chips, and had used that position to charge high royalty rates, tie wireless and nonwireless patents, and attach conditions to chip sales.

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Completed Cases [36 known cases involving approximately 269 entities or associations, of which 71 are foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
April 2015	Automotive	Jiangsu Price Bureau	<i>Mercedes-Benz and its dealers in Nanjing, Wuxi, and Suzhou</i>	The bureau announced Mercedes-Benz reached a monopoly agreement with its dealers in Jiangsu Province by enforcing minimum prices for dealers to charge for its products, and implemented fixed-price agreements for part of the components in violation of the AML. The bureau fined Mercedes-Benz \$56.4 million, or 1 percent of its sales revenue of the previous year. The dealers were fined \$1.27 million in total.
September 2015	Automotive	Guangdong Price Bureau	<i>Dongfeng Nissan and 17 of its car dealerships in Guangzhou</i>	The bureau announced in September that Dongfeng Nissan and its 17 dealers in Guangdong Province carried out price control through its sales and service agreements. The bureau fined Dongfeng Nissan \$19.7 billion (RMB 123.3 billion), and collectively fined the dealerships \$3.1 billion (RMB 19.1 billion).
Ongoing Cases [nine known cases involving at least 70 entities or associations, of which at least 12 are foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
November 2011	Telecommunications	n/a	China Mobile, China Unicom	Alleged abuse of market dominance through price discrimination

August 2012	E-Commerce	n/a	360 Buy, Gome, Suning	Alleged illegal and fraudulent behavior while engaging in low-cost competition
March 2013	Cement	n/a	Cement companies nationwide	Alleged supply restrictions
July 2013	Pharmaceuticals	n/a	<i>GlaxoSmithKline, Merck, Astellas, Novartis, Boehringer Ingelheim, Baxter International, Fresenius, UCB, and others</i>	Alleged unfair import pricing (33 companies); internal cost structure (transfer pricing) (27 companies)
August 2013	Automobile	n/a	<i>Imported cars and domestic auto JVs (no specific companies named)</i>	Alleged excessive pricing
April 2014	Pharmaceuticals	n/a	Nine unnamed pharmaceutical companies across six provinces, including Jiangsu, Anhui, Zhejiang, Hebei, Liaoning, and Shanghai	Alleged monopolistic pricing practices
July 2014	Automobile	n/a	<i>Luxury car makers, including Mercedes-Benz, Audi, Toyota, Land Rover, and others</i>	Alleged abuse of dominant market position; imposition of horizontal and vertical restraints on competition (fines not yet announced)
August 2014	Express Delivery	n/a	Domestic express delivery companies in Chongqing and Xiangtan, Hunan	Alleged illegal pricing behavior, including collusion

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Addendum II: Pricing Investigations Conducted by the NDRC and Provincial Development and Reform Commissions, 2008–2015*—Continued

Ongoing Cases				
[nine known cases involving at least 70 entities or associations, of which at least 12 are foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
August 2014	Real Estate	n/a	Real estate brokers in Tianjin (no specific companies named)	Alleged monopolistic pricing practices

* Italicized cells indicate the involvement of a foreign-invested enterprise.

¹At least three individual companies were named in the penalty decision, but the total number of shops operating in violation of the AML was not published. China's National Development and Reform Commission, "Case Involving a Group Illegally Manipulating Market Prices in Tourism Thoroughly Investigated," September 29, 2013. Staff translation.

Source: US-China Business Council, "Update: Competition Policy & Enforcement in China," May 2015, 19–26; Zhang Kingxiang, "China's Anti-Monopoly Law Enforcement: A Quest for Transparency, Consistency and Fairness," *Indiana University Research Center for Chinese Politics and Business Working Paper #37*, April 2015, Appendix 1, 1–5; Christoph Barth and Qiuying Zheng, "NDRC Issues Decision in Landmark Case against Qualcomm and Imposes Record Fine of RMB 6.088 Billion," *Linklaters LLP*, February 2015; China's National Development and Reform Commission, *Case Involving a Group Illegally Manipulating Market Prices in Tourism Thoroughly Investigated*, September 29, 2013. Staff translation; Xinhuanet, "Auto Industry Anti-Monopoly Guide Draft To Be Finished This Year," September 17, 2015. Staff translation.

Addendum III: Monopoly Investigations Conducted by the SAIC and its Provincial Branches, 2008–Present *

Completed Cases				
[21 known cases involving approximately 78 enterprises or associations, none of which is foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
August 2010	Concrete	Jiangsu Administration of Industry and Commerce (AIC)	Lianyungang Construction Material and Machinery Association and 16 member companies	The Jiangsu AIC found the association and 16 member companies signed an illegal monopoly agreement prohibiting all involved from independently signing contracts with buyers. The AIC confiscated illegal profits of more than \$20,046, and fined five participants in the cartel a combined total of \$77,950.
April 2011	Liquefied Petroleum Gas (LPG)	Jiangxi AIC	Taihe County Huawei LPG Station and six other gas companies	The Jiangxi AIC found the LPG Station signed an agreement with six other LPG companies in 2008 to monopolize and divide up the market in violation of the AML, and confiscated illegal gains of \$31,665. The AIC also fined Taihe County Huawei LPG Station \$20,063.
January 2012	Secondhand Automobiles	Henan/SAIC	11 secondhand car dealerships in Anyang, Henan	The SAIC ruled that the group of three secondhand auto dealerships formed a cartel and signed an agreement to set a uniform price and market share in 2007. By 2009, the cartel expanded to include 11 dealerships in violation of the AML. The SAIC confiscated \$232,691 in illegal profits and imposed a collective fine of \$42,005 on the participants.

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Addendum III: Monopoly Investigations Conducted by the SAIC and its Provincial Branches, 2008–Present*—Continued

Completed Cases				
[21 known cases involving approximately 78 enterprises or associations, none of which is foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
August 2012	Cement	Liaoning AIC	Liaoning Construction Material Industry Association and 12 member companies	The association's cement committee and 12 member companies signed agreements in 2010 to monopolize the market, control production, and set market share. The Liaoning AIC ruled their behavior constituted an illegal monopoly agreement under the AML and fined the association and the 12 member companies \$2.6 million collectively.
November 2012	Insurance	Hunan/SAIC	Yongzhou Insurance Association and ten member companies	The SAIC found the association and 12 insurance companies signed an agreement in 2011 establishing a new car insurance service center, which served as a window for setting up consumer purchases of new car insurance. The SAIC judged the agreement to be an illegal monopoly agreement, and fined the ten insurance companies \$64,194, and the 12 member companies a total of \$155,990.
December 2012	Insurance	Hunan/SAIC	Zhangjiajie Insurance Association and eight member companies	The SAIC found the association and eight insurance companies signed agreements in 2010 to establish a new car insurance service center as a window for consumer purchases of new car insurance, constituting an illegal monopoly agreement. The SAIC fined the association \$64,192.

December 2012	Insurance	Hunan/SAIC	Changde Insurance Association and nine member companies	The SAIC ruled the association and nine insurance companies signed agreements in 2006 to establish a new car insurance service center as a window for consumer purchase of new car insurance, constituting an illegal monopoly agreement. The association was fined \$72,216.
December 2012	Insurance	Hunan/SAIC	Chenzhou Insurance Association and 14 member companies	The SAIC found the association and ten insurance companies signed an agreement in 2007 to establish a new car insurance service center as a window for consumer purchases of new car insurance. The SAIC fined the association \$72,216.
December 2012	Concrete	Zhejiang AIC	Jiangshan Tiger Product Concrete, Jiangshan Yongcheng Concrete, and Jiangshan Hengjiang Product Concrete	The Zhejiang AIC ruled the three companies made an oral agreement in 2009 to divide up the city's concrete market, set prices, and eliminate competition, constituting an illegal monopoly agreement. The AIC fined the three companies a total of \$189,367.
March 2013	Construction Equipment	Zhejiang AIC	Cixi Construction and Engineering Testing Association, Cixi Building and Engineering Quality Supervision Station Energy Office, and three companies	The Zhejiang AIC found the parties signed an agreement in 2010 to divide market share and set ground rules for competition. The AIC suspended the investigation in 2012 based on submissions from the parties, and closed the investigation in March 2013 without punishments.

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Addendum III: Monopoly Investigations Conducted by the SAIC and its Provincial Branches, 2008–Present*—Continued

Completed Cases				
[21 known cases involving approximately 78 enterprises or associations, none of which is foreign]				
Date Announced	Industry	Location/Agency	Companies Involved	Description
March 2013	Bricks/Ceramics	Sichuan AIC	Yibin Building Material Industry Association Brick Committee, three of its member companies, and one individual	The Sichuan AIC ruled the three member companies of the committee signed a series of agreements in 2009 designed to limit the output of bricks in the market and control market share, constituting an illegal monopoly agreement. The companies were fined a total of \$161,093, and an involved individual was fined \$9,666.
April 2013	Tourism	Yunnan AIC	Xishuangbanna Tourism Association, Xishuangbanna Travel Agency Association	The Yunnan AIC found the tourism association launched a platform in 2003 and convinced more than 80 other groups to sign on, effectively promoting specific tours to specific stops with punitive actions for those who deviated. Concurrently, the travel agency association and 24 travel agencies signed agreements to set prices and itineraries for travel. The AIC fined each association \$64,859.
July 2013	Civilian Blasting	Guizhou/Anshun AIC	Qianzhong Civilian Blasting Equipment Operating Company	The AIC found a local subsidiary of the company was guilty of abuse of market dominance and excessive prices, and fined the company \$20,715.

December 2013	Water Supply Engineering	Guangdong AIC	Huizhou Daya Bay Yiyuan Purified Water	<p>The AIC found Yiyuan used its strong market position to require local real estate companies to sign agreements bundling water supply with other services, constituting a violation of the AML. The AIC required the company to halt operations, turn over illegal gains of \$142,056, and pay a fine of 2 percent of its previous year's revenue, or \$396,434.</p>
June 2014	Sports and Entertainment	Beijing AIC	Shankai Sports International	<p>The company—the authorized vendor of package tours to the 2014 FIFA World Cup in Brazil for China, Hong Kong, and Macau—was accused of bundling various products and services, and requiring customers to purchase set bundles, in violation of a March 2011 agreement with Beijing China Travel Service Company. The Beijing AIC suspended the investigation in June 2014, stating that Shankai admitted its violations and took undisclosed steps to address concerns. In January 2015, the SAIC announced its decision to terminate the investigation.</p>
July 2014	Fireworks	Inner Mongolia AIC	Six fireworks companies in Chifeng, Inner Mongolia	<p>The six companies that were designated locally as the sole wholesalers for various products were accused of abusing their dominant market position by requiring distributors to apply for fireworks purchases, among other requirements, or see their purchasing quotas cut. Four of the companies also signed an illegal monopoly agreement. The AIC fined the six companies \$94,580 total.</p>

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Addendum III: Monopoly Investigations Conducted by the SAIC and its Provincial Branches, 2008–Present*—Continued

Completed Cases					
[21 known cases involving approximately 78 enterprises or associations, none of which is foreign]					
Date Announced	Industry	Location/Agency	Companies Involved	Description	
October 2014	Sand and Gravel Mining	Chongqing AIC	Four quarry operators in Wuxi County, Chongqing	The quarry operators were accused of setting a verbal monopoly agreement in order to divide the sand and gravel sales required to construct the local portion of the Fengxi Highway. The AIC imposed fines of \$65,440 on the operators.	
October 2014	Tobacco	Jiangsu AIC	Pizhou Subsidiary of Xuzhou Tobacco Company	The head of the subsidiary was accused of abusing the company's dominant market position to unfairly determine supply allotted to different retailers without reasonable cause. The AIC fined the individual \$281,394, or 1 percent of the sales revenue made from selling cigarettes under limited supply conditions.	
November 2014	Natural Gas	Chongqing AIC	Chongqing Gas Group	The company overcharged its customers for natural gas using fee rates that were inflated. The AIC ruled the activity constituted abuse of market dominance in violation of the AML. Because the company cooperated, the AIC lightened its punishment, resulting in a fine of \$291,500, or 1 percent of its 2010 sales revenue.	

December 2014	Concrete	Zhejiang AIC	Zhejiang Shangyu Concrete Association and eight member companies	The association and eight member companies were determined to be using monopoly agreements to divide local market share, in violation of the AML. The AIC fined the association \$1,611 and imposed fines ranging from \$1,611 to \$64,477 on the eight firms.
February 2015	Water Supply	Hainan AIC	Hainan Dongfang Water Company	The company was accused of abusing its market dominance to impose conditions on new users when providing water supplying services, in violation of the AML. The AIC confiscated illegal gains of \$6,148 and fined the company \$94,683, or 2 percent of its sales revenue in the previous year.
July 2013	Food and Beverage Packaging	n/a	<i>Tetra Pak</i>	Alleged abuse of market dominance
July 2014	Information technology	n/a	<i>Microsoft</i>	Alleged abuse of market dominance

* Italicized cells indicate the involvement of a foreign-invested enterprise.

Source: US-China Business Council, "Update: Competition Policy & Enforcement in China," May 2015, 27-33; Zhang Xingxiang, "China's Anti-Monopoly Law Enforcement: A Quest for Transparency, Consistency and Fairness," *Indiana University Research Center for Chinese Politics and Business Working Paper #37*, April 2015, Appendix II, 6-11; Zhong Lun Law Firm Antitrust Practice Group, *Competition Law Bulletin* Issue 8 (April 2015), 2.

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SECTION 3: CHINA'S STATE-LED MARKET REFORM AND COMPETITIVENESS AGENDA

Introduction

Soviet-style, top-down planning remains a hallmark of China's economic and political system. Five-Year Plans (FYP)* continue to guide China's economic policy by outlining the Chinese government's priorities and signaling to central and local officials and industries the areas for future government support. The FYPs are followed by a cascade of sub-plans at the national, ministerial, provincial, and county level that attempt to translate these priorities into region- or industry-specific targets, policy strategies, and evaluation mechanisms.¹ While the past six FYPs successfully mobilized resources to spur three decades of double-digit economic growth, the large-scale infrastructure investment and export-led economic growth model they promoted is weakening. China's slowing economic growth combined with concerns over a deteriorating quality of life are threatening the Chinese Communist Party's (CCP) ability to deliver prosperity—the basis of its legitimacy since the Tiananmen Square Massacre of 1989.

To preserve CCP power, the newly installed CCP General Secretary and President Xi Jinping outlined an ambitious economic reform agenda at the Third Plenary Session of the CCP's 18th Central Committee (the Third Plenum)† in November 2013. The Chinese government is using or attempting to use centrally directed reforms to fulfill its stated goals to sustain economic growth, improve capital allocation and industry efficiency through state-set market incentives, and ensure a higher quality of life for its citizens. While these reforms aim to make China's economy more efficient, the Chinese government does not mean to give up control; rather, the intent is for the state to retain a central role in the economy.

This agenda requires significant political commitment to overcome entrenched interests—such as China's powerful state-owned enterprises (SOE) and its bloated, export-dependent industries—that doomed reforms under the 11th (2006–2010) and 12th (2011–2015) FYPs.² The 13th (2016–2020) FYP, to be released in March

*The National Development and Reform Commission coordinates the drafting process with input from State Council ministries, oversight by the Chinese Communist Party Politburo, and final ratification by the National People's Congress. Subordinate plans are devised for each province and for specific sectors of the economy. Katherine Koleski and Joseph Casey, "Background: China's 12th Five-Year Plan," *U.S.-China Economic and Security Review Commission*, June 24, 2011; U.S.-China Economic and Security Review Commission, *Hearing on China Ahead of the 13th Five-Year Plan: Competitiveness and Market Reform*, written testimony of Oliver K. Melton, April 22, 2015, 1–7; and Sebastian Heilmann and Oliver Melton, "The Reinvention of Development Planning in China, 1993–2012," *Modern China* 39:6 (August 2013): 580–628.

†For an in-depth analysis of the Third Plenum's proposed economic reforms, see Nargiza Salidjanova and Jacob Koch-Weser, "Third Plenum Economic Reform Proposals: A Scorecard," *U.S.-China Economic and Security Review Commission*, November 19, 2013.

2016, will build upon the Third Plenum agenda to accelerate reforms and transition China's economy toward greater domestic consumption and higher-value-added manufacturing. However, current market conditions and the government's actions have called into question China's commitment to reforms. In response to slowing economic growth and higher market volatility this year, senior leadership is increasingly stalling or rolling back reforms and returning to investment and export-led economic growth.

This section carries on the Commission's long examination of China's industrial policies and assesses the likelihood President Xi's agenda in sustaining economic growth will succeed.* Building upon expert testimony received at the Commission's hearing on April 22, 2015, and additional research throughout the year, this section examines the status of the Chinese government's reforms and explores their impact on the competitiveness of U.S. companies and the U.S. economy.

China's Economic Challenges

Traditional drivers of China's economic growth—fixed asset investment, exports, and cheap labor—are becoming less relevant.³ At the 2015 National People's Congress (NPC), Premier Li Keqiang reiterated this concern, describing China's economic growth as “unbalanced, uncoordinated, and unsustainable.”⁴ Minister of Finance Lou Jiwei warned that China faces a 50 percent chance of sliding into a middle-income trap in the next five to ten years.⁵ This middle-income trap would ensnare the Chinese economy in a cycle of low growth because its growing wages are unable to compete against low-cost countries, and high-value-added manufacturing is not yet fully developed. The 11th and 12th FYPs largely failed at reorienting China's economy away from unsustainable sources of growth.⁶ Witnesses at the Commission's April hearing outlined the challenges the Chinese government is facing:⁷

- *Smaller returns from fixed asset investments:* State-led economic planning has directed cheap capital to SOEs, large-scale infrastructure projects, and state-designated industries. This allocation of capital has contributed to industrial overcapacity and enormous growth in local government and SOE debt.
- *Lower labor productivity gains:* Higher wages, an emerging labor shortage, and lack of labor mobility are eroding China's

*For additional information on China's industrial policies, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 99–111; U.S.-China Economic and Security Review Commission, *2013 Annual Report to Congress*, November 2013, 113–152; U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, 47–81, 393–423; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress*, November 2011, 40–50, 70–106; U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress*, November 2010, 187–190, 199–210; U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress*, November 2009, 56–89; U.S.-China Economic and Security Review Commission, *2008 Annual Report to Congress*, November 2008, 69–82; U.S.-China Economic and Security Review Commission, *2007 Annual Report to Congress*, November 2007, 48–62; U.S.-China Economic and Security Review Commission, *2006 Annual Report to Congress*, November 2006, 30–32, 34–35, 167–181; U.S.-China Economic and Security Review Commission, *2005 Annual Report to Congress*, November 2005, 27–45, 67–75; U.S.-China Economic and Security Review Commission, *2004 Annual Report to Congress*, November 2004, 49–54, 177–192; and U.S.-China Economic and Security Review Commission, *2002 Annual Report to Congress*, November 2002, 43–44, 47–50.

labor productivity, China's residency permit system, or *hukou*,* tightly controls labor mobility and employment opportunities for all its citizens.⁸ The absolute number of working-age people in China peaked in 2012, so cheap labor is no longer as readily available.⁹ This shortage and the annual 14 percent average wage hikes from 2000 to 2013 have increased overall labor costs.¹⁰ Growing competition from countries (such as Vietnam) with lower labor costs is squeezing profit margins for low-end manufacturing.¹¹ Moreover, low-end manufacturing is not creating the types of jobs demanded by China's growing number of university graduates.¹²

- *Dwindling contribution of exports to gross domestic product (GDP)*: China's National Bureau of Statistics found the contribution of exports of goods and services to GDP has shrunk from 8 percent in 2008 to 3 percent in 2014.¹³ Slower global growth is not able to absorb ever more Chinese exports, necessitating the expansion of domestic consumption as a new engine of economic growth.† In addition, higher labor costs are raising the price of Chinese exports, further weakening global demand for them.¹⁴ In the first eight months of 2015, China's global exports dropped 1.5 percent year-on-year, signaling contraction.¹⁵ Despite the slowing growth of China's exports, the U.S. trade deficit in goods with China grew 9.7 percent over last year to reach \$237.3 billion in the first eight months of 2015.¹⁶
- *Severe environmental degradation*: Official reports found that 20 percent of China's arable land, more than 60 percent of its underground water, and 33 percent of its surface water are polluted.¹⁷ The World Bank and the State Council's Development Research Center estimated the costs of this environmental degradation reached approximately 10 percent of GDP in 2008, representing a significant drag on the economy.‡ Furthermore, air pollution contributed to 17 percent of all deaths, or 1.6 million people, in China between April 2014 and March 2015, according to estimates by the U.S.-based research nonprofit Berkeley Earth.¹⁸ In early March, *Under the Dome*, an independent documentary—produced by Chai Jing, previously an investigative reporter for the official government network China Central Television (CCTV)—about the gravity of China's

*The hukou establishes eligibility for employment opportunities, compensation, education, and access to government services for all Chinese citizens based on the status of one's parents and place of birth. Since the hukou is tied to a citizen's place of birth, the holder of a given hukou can only receive government services and benefits where the citizen is registered, particularly disadvantaging the 270 million rural residents who have migrated to cities. For more information on the hukou, see U.S.-China Economic and Security Review Commission, Chapter 2, Section 5, "China's Five-Year Plans and Technology Development and Transfers to China," in *2011 Annual Report to Congress*, November 2011, 88–106.

†In July 2015, the International Monetary Fund (IMF) revised its global economic forecasts downward as global economic growth slowed 0.8 percent below expectations in the first quarter of 2015. In October 2015, the IMF lowered its global growth expectations 0.2 percent below its July 2015 projections. International Monetary Fund, "World Economic Outlook," July 2015, 1; International Monetary Fund, "World Economic Outlook," October 2015, 1.

‡These figures incorporate the environmental externalities of pollution-related health damages, property damages, soil erosion, deforestation, fisheries loss, biodiversity loss, water pollution, and watershed degradation. World Bank and Development Research Center of the State Council of the People's Republic of China, *China 2030: Building a Modern, Harmonious, and Creative Society*, 2013, 39, 233.

air pollution was released online and seen by more than 200 million people in China before it was taken down by government censors.¹⁹ Reflecting this rising public awareness, the rate of reported environmental protests more than tripled from just 47 incidents in 2013 to 152 incidents in 2014, based on figures from the U.S. government's Open Source Center.*

China's New Normal

At the Third Plenum, President Xi and Premier Li announced an ambitious economic reform agenda they claimed would allow the “market to play a decisive role in allocating resources.”²⁰ The Third Plenum established a 60-point reform blueprint that broadly seeks to liberalize the financial sector; realign fiscal authority; accelerate urbanization; relax requirements on inbound and outbound foreign direct investment and restrictions on market access in finance, education, culture, and medical care; increase the efficiency and competitiveness of SOEs; and protect the environment.²¹ As China registered its slowest economic growth in 24 years, China's senior leadership began to promote the “new normal” principle that focuses on slower economic growth. This principle also attempts to shift the drivers of economic growth toward innovation and high technology.²² (For additional discussion of the “new normal,” see Chapter 1, Section 1, “Year in Review: Economics and Trade.”). President Xi and Premier Li are likely to seize upon the 13th FYP to push through their objectives.

While the Third Plenum agenda and promotion of the “new normal” principle largely repeat the objectives of the 11th and 12th FYPs, they are designed to signal a strong political commitment to address the underlying structural problems that previously delayed economic reform.²³ The establishment of a new Central Leading Group on Comprehensively Deepening Reform led by President Xi at the Third Plenum appears to strengthen high-level control over the content and pace of these reforms.²⁴ In addition, over the last two years, President Xi has weakened political opposition that hindered reform under the 12th FYP. Shortly after taking office in 2012, he launched an anticorruption drive that conducted at least 77,606 investigations and disciplined 102,168 officials by the end of 2014.† This campaign has attempted to uproot vested interests within the CCP and SOEs, while simultaneously eliminating potential political threats to President Xi's leadership.²⁵

Assessing the Progress of China's Reforms

State intervention remains a cornerstone of China's economic policy, despite announcements of market-oriented reforms. Eswar S. Prasad, professor of trade policy at Cornell University, cautioned in his testimony to the Commission that these market-oriented reforms will differ from Western notions of free market because they

*The Open Source Center data on unrest are based on domestic and international media reports. Since unrest is largely unreported in rural areas and censored by local governments, these figures underestimate the scale of overall unrest. Open Source Center, “Reported Civil Disturbances in 2014,” September 1, 2015. ID: CHN2015090102912195.

† In 2014 alone, the Central Commission for Discipline Inspection disciplined 71,748 cadres and conducted 53,085 investigations. Shujie Leng and David Wertime, “China's Anti-Corruption Campaign Ensnarers Tens of Thousands More,” *Foreign Policy*, January 9, 2015.

will occur “in a manner consistent with a dominant role for the state.”²⁶ However, slowing economic growth and rising unemployment have increased public unrest and weakened senior leadership’s resolve to implement needed reforms, leading the government to once again stall or roll back reforms while resuscitating old levers of economic growth.* David Shambaugh, director of George Washington University’s China Policy Program, noted this tension in August 2015, arguing, “The leadership is so paralyzed and pre-occupied by even a modest downturn that it reacts with the same old fiscal tools of investment and pump-priming.”²⁷

Through its announced state-led reforms, the Chinese government is seeking to ensure the permanent rule of the CCP by improving domestic consumption, capital allocation, industry competitiveness, and quality of life (see Table 1). First, the Chinese government is seeking to boost domestic consumption as a new driver of economic growth through expansion of the social safety net, urbanization, hukou reform, and support for the service sector. Second, fiscal and financial reforms are aimed at improving allocation of capital and resources. Third, the Chinese government is seeking to enhance China’s industrial competitiveness by pursuing SOE reform, higher-value-added manufacturing, and innovation. Finally, the Chinese government set a goal of ensuring a higher quality of life for its citizens by providing a livable environment for its population. These reforms will require significant political commitment and financial capital to succeed (see the text box, “China’s Ability to Finance Its Reform Agenda”). The rest of the section outlines the steps undertaken by the government to address these four key priorities, assesses the progress of these reforms, and evaluates the potential implications for the United States.

Table 1: China’s Reform Priorities

Priorities	Reforms
Domestic Consumption	<ul style="list-style-type: none"> • Expanding urbanization, the social safety net, and hukou reform • Building a strong service sector
Capital Allocation	<ul style="list-style-type: none"> • Restructuring local government debt • Opening China’s bank-driven financial sector • Loosening capital controls while maintaining strong state control
Industry Competitiveness	<ul style="list-style-type: none"> • Reforming SOEs • Increasing higher-value-added manufacturing • Enhancing indigenous innovation • Reducing industrial overcapacity
Quality of Life	<ul style="list-style-type: none"> • Increasing energy conservation and environmental preservation

Source: Compiled by Commission staff.

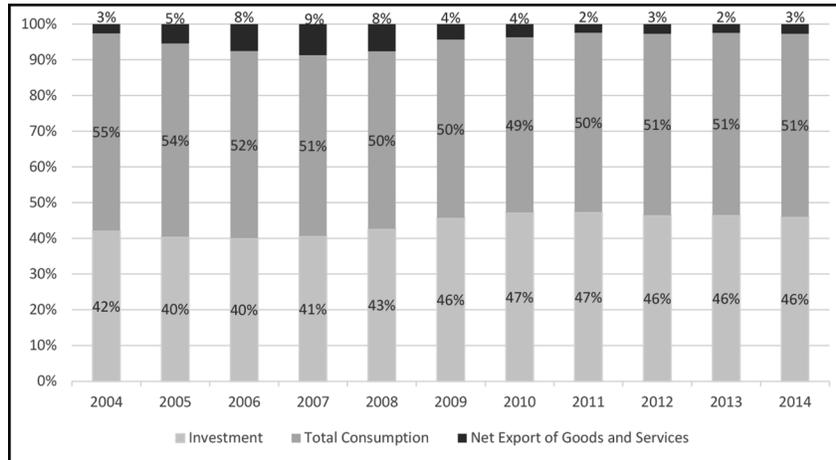
*For additional information on unrest in China, see U.S.-China Economic and Security Review Commission, Chapter 2, Section 3, “China’s Domestic Stability,” in *2014 Annual Report to Congress*, November 2014, 347–407.

China's Ability to Finance Its Reform Agenda

Estimated costs for urbanization and environmental clean-up and protection alone total \$8.3 trillion (renminbi [RMB] 65 trillion).²⁸ Yet China's government, particularly local governments, is increasingly indebted and unable to take on significant additional financial obligations (see "Restructuring Local Government Debt," later in this section, for more information).²⁹ According to the global management consulting firm McKinsey & Company, since 2007 and the rollout of its \$586 billion (RMB 4 trillion) stimulus program in 2009, China has accumulated \$20.8 trillion of new debt, accounting for more than a third of global growth in debt.³⁰ Oliver Melton, an analyst for the U.S. Department of State, testifying in his personal capacity, noted that under the 12th FYP "debt-fueled investment in industry, real estate, and infrastructure remained a major source of growth, and has started to slow only in the face of substantial excess capacity and a mounting debt repayment burden for firms and local governments."³¹ McKinsey & Company estimated that China's total debt reached 282 percent of GDP by the end of the first half of 2014 compared with 269 percent in the United States.³² According to the global investment banking firm Goldman Sachs, China's debt-to-GDP ratio grew from 153 percent in 2008 to approximately 230 percent in 2013, representing the largest debt build-up in the world in absolute terms.³³ While China's strong credit and significant foreign exchange reserves would be able to support existing debt obligations, the enormous growth of debt raises concerns about China's ability to finance its ambitious and costly reforms.³⁴

Domestic Consumption

In the 11th, 12th, and likely 13th FYPs, the Chinese government has sought to increase the consumption power of Chinese households by expanding the social safety net, increasing urbanization, reforming the hukou, and opening the service sector to competition from private domestic and foreign firms.³⁵ Higher domestic consumption will offset the eroding returns on fixed asset investment and leverage the market power of the world's second-largest economy. In 2014, China's domestic consumption totaled 51.2 percent of GDP (see Figure 1).³⁶ Although domestic consumption has grown roughly two-fold from \$2.5 trillion (RMB 15.8 trillion) in 2008 to \$5.2 trillion (RMB 32.8 trillion) in 2014, investment in fixed assets grew even more following the global financial crisis, increasing from 41 percent of GDP expenditures in 2007 to 46 percent in 2014.³⁷ In his testimony to the Commission, Nicholas Consonery, director of Asia at the political risk consulting firm Eurasia Group, noted the composition of GDP under the 12th FYP has shifted moderately toward consumption but has "not materially changed," indicating fundamental problems remain unaddressed.³⁸

Figure 1: GDP by Expenditure, 2004–2014

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

Expanding Urbanization, the Social Safety Net, and Hukou Reform

Over the last three decades, an estimated 270 million rural residents moved to Chinese cities, enabling China's double-digit economic growth by boosting consumption and shifting labor into manufacturing and services.³⁹ The Chinese government is seeking to repeat this success by moving an additional 100 million people, or approximately 6 percent of its population, to cities by 2020.⁴⁰ This migration should significantly raise incomes of rural migrants (the income gap between urban and rural residents currently stands at more than 3:1) and enhance productivity.⁴¹ McKinsey & Company forecasts consumption by urban Chinese households will increase from \$1.6 trillion (RMB 10 trillion) in 2012 to nearly \$4.3 trillion (RMB 27 trillion) in 2022.⁴² While China's economic growth has decelerated in part due to a slowdown in fixed asset investments, "consumption growth remained steady," according to the International Monetary Fund (IMF).⁴³ Andy Rothman, an investment strategist for Matthews Asia, highlighted the continued strength of Chinese consumption with double-digit year-on-year economic growth of retail sales, real estate sales, and express parcel deliveries in July at 10.4 percent, 21 percent, and 47 percent, respectively.⁴⁴ However, further productivity and domestic consumption gains are hindered by the hukou residency system. Although nearly 54 percent of China's population resides in cities, under the hukou system only 36 percent of China's population has access to urban healthcare, housing, employment, and education opportunities.⁴⁵

As part of the 12th FYP, the Chinese government expanded the social safety net by raising provincial and city-set minimum wages, providing low-cost housing, increasing rural and urban healthcare coverage, strengthening the pension system, and creating more educational opportunities in rural areas.⁴⁶ As the government assumes responsibility for long-term costs of healthcare, retirement,

and education, Chinese citizens are expected to save less and consume more. In his testimony before the Commission, Stephen Roach, senior fellow and senior lecturer at Yale University, noted the Third Plenum addressed the significant funding shortfall for social services under the 12th FYP, and the 13th FYP is likely to provide additional provisions for China's social safety net.⁴⁷ In late August 2015, the State Council announced it will allow up to \$96 billion (RMB 600 billion) of its pension funds* to be invested in the stock market, in part to prop up the stock market and offset a roughly \$16 billion (RMB 100 billion) depreciation of its pension funds over the last two decades.⁴⁸ (For a discussion of China's stock market collapse and the government's response, see Chapter 1, Section 1, "Year in Review: Economics and Trade.") Beyond expanding social services, the Chinese government is promoting higher-value-added manufacturing and encouraging urbanization to raise wages and spark consumption.

In March 2014, the Chinese government released the National Plan on New Urbanization (2014–2020), which outlines plans to (1) move an additional 100 million rural residents to cities in central and western provinces, (2) develop affordable housing for 100 million current urban residents, (3) improve access to public services and social security by expanding urban hukou registration for 100 million rural migrants currently residing in cities,[†] and (4) enhance the environmental sustainability of cities by 2020.⁴⁹ The government hopes this migration will unleash additional economic growth by creating a new consumer base and working class.⁵⁰ In July 2015, Guangdong Province published guidelines to grant local hukou registration to approximately 13 million migrant workers in the province by 2020; however, this reform affects only 37 percent of the estimated 35 million migrant workers, and maintains restrictions on migration to its major cities of Guangzhou and Shenzhen.⁵¹ Similarly, strict controls on migration to China's megacities such as Beijing or Shanghai will remain in place, limiting access to the most lucrative employment and educational opportunities.⁵²

The continued rise in urbanization will require major investments in transportation, public utilities, healthcare facilities, and environmental infrastructure. While returns on fixed asset investments are shrinking in China, the central government is attempting to redirect its significant capital resources and construction capabilities toward more sustainable, profitable investments—such as hospitals and urban transportation—that will soften the transition to long-term, consumption-led growth. In 2014, China's Ministry of Finance estimated this transition will cost \$6.8 trillion (RMB 42 trillion), involving funding from municipal bond markets, local government revenue channels, and public-private partnerships.⁵³ In April 2014, the State Council widened the potential sources of funding for these projects by pledging to open 80 major public infrastructure projects to private and foreign investment.⁵⁴ The scale

*At the end of 2014, pension funds were worth \$560 billion (RMB 3.5 trillion). Hou Limei, "China to Invest 2 Trillion Pension Funds in Stocks and Other Assets," *CRIEnglish*, August 28, 2015.

†Collectively, these three policies are known as the "three 100 million people." *People's Daily*, "Government Work Report: The 'Three 100 Million People' Principles Expound New-Type Urbanization," March 5, 2014. Staff translation.

and number of these proposed projects creates new opportunities for both domestic and, potentially, foreign firms, including:

- *Transportation:* Additional roads, railways, airports, and urban transit systems are needed to connect the millions of people within cities and the surrounding areas with their homes, work, and schools. For example, in 2014, only 22 of the 150 Chinese cities with over one million people had urban rail transit systems.⁵⁵ To expand urban transit systems to 50 cities by 2020, the total investment in these systems will surpass \$320 billion over the next five years, according to estimates by the market research firm China Research and Intelligence.⁵⁶ Additionally, China is augmenting its general aviation infrastructure to meet expected growth in air travel demand.* In 2015, China led global airport construction, with 56 ongoing projects worth nearly \$60 billion in investment.⁵⁷
- *Healthcare:* China's rapidly aging population is demanding access to better-quality healthcare.† Accounting for this major demographic transition, McKinsey & Company estimated China's healthcare spending will increase from \$357 billion in 2011 to \$1 trillion in 2020.⁵⁸ In the pharmaceutical industry, the National Bureau of Asian Research projected China's over-the-counter and branded generic pharmaceutical market will grow from \$23 billion in 2010 to \$369 billion in 2020.⁵⁹
- *Housing:* Approximately 62 million urban Chinese residents live in substandard housing,‡ and an estimated 14 million low-income households are financially strained by housing costs, creating enormous demand for affordable housing, according to McKinsey & Company.⁶⁰ McKinsey & Company also estimates that further rural-to-urban migration could increase the number of low-income urban households by an additional 56 million by 2025.⁶¹ To fill this gap, the Chinese government built an estimated 13.4 million housing units from 2012 to 2014, and its National Plan on New Urbanization (2014–2020) outlines plans to build affordable housing for 100 million current urban residents.⁶²

Building a Strong Service Sector to Meet Demand and Create Jobs

Greater urbanization, higher wages, and an aging population are increasing demand for the service sector in areas such as healthcare and retail. In 2014, according to China's National Bureau of Statistics, services accounted for 48.2 percent of GDP and rose to

*For analysis on China's aerospace industry, see Roger Cliff, Chad J.R. Ohlandt, and David Yang, "Ready for Takeoff: China's Advancing Aerospace Industry," prepared for the U.S.-China Economic and Security Review Commission, March 1, 2011.

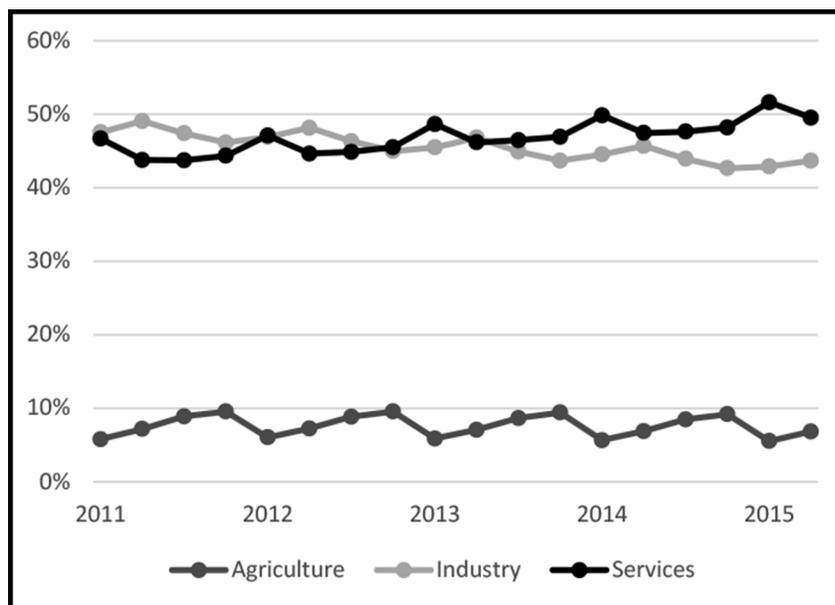
†For an in-depth background on China's healthcare industry, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, "China's Health Care Industry, Drug Safety, and Market Access for U.S. Medical Goods and Services," in *2014 Annual Report to Congress*, November 2014, 127–182.

‡Substandard housing is defined as dwellings that lack durability, sufficient living space, access to safe water, sanitation, and security against eviction. Jonathan Woetzel et al., "A Blueprint for Addressing the Global Affordable Housing Challenge," *McKinsey & Company*, October 2014, 27.

§ Research by Rhodium Group and the Center for Strategic and International Studies (CSIS) suggests flaws in official accounting methods underestimated the size of China's service sector.

50.2 percent of GDP in the first half of 2015 (see Figure 2).⁶³ In his testimony before the Commission, Dr. Roach argued the development of China's service sector could provide higher-paying jobs for China's recent college graduates and meet growing public demand for retail, healthcare, tourism, and public services. He calculated that services employ 30 percent more workers per unit of GDP than manufacturing or construction, creating more jobs despite slower growth.⁶⁴ In addition, research by Bloomberg found an annual shift of 1 percent of GDP from the energy-intensive heavy industry to the service sector over the next five years would decrease emissions by about 8 percent relative to the no-reform baseline scenario, meeting China's environmental reform priorities.⁶⁵

Figure 2: Service Sector Composing Greater Share of GDP, 2011–2015H1
(Quarterly)



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

To accelerate service sector growth, the Third Plenum pledged to open a number of largely state-dominated service sectors, such as financial services, education, healthcare, e-commerce, and logistics, to competition from private domestic and foreign firms.⁶⁶ Progress, however, has been slow. Mr. Consonery said in his testimony that “each sector will have a distinct story about how the government balances the need for new investments against the desire to protect

The Rhodium-CSIS recalculation of China's 2008 GDP revises the value of the service sector upward by 22.2 percentage points and finds the services share of GDP was already larger than the manufacturing share in 2009. Dan Rosen and Beibei Bao, “Broken Abacus? A More Accurate Gauge of China's Economy,” *Center for Strategic and International Studies*, September 2015, 158–160.

local firms.” He remarked that “sectors that see greater openings will be those where the government sees continued need for foreign expertise, and those that have been classified as ‘market competitive’ and where Beijing is more interested in reducing the state’s role,” but in strategic sectors such as finance, resistance from vested interest groups will remain substantial.⁶⁷

In August 2013, the State Council created the Shanghai Free Trade Zone (FTZ) to serve as a pilot program for national implementation of financial sector reforms and opening China’s service industries to foreign investment.⁶⁸ In December 2014, Premier Li announced the expansion of the Shanghai FTZ area and creation of three new FTZs in Tianjin municipality, Guangdong Province, and Fujian Province.⁶⁹ While some restrictions are being lifted gradually, significant limitations still remain.⁷⁰ As of April 2015, the negative list,* which designates the sectors restricted or prohibited to foreign investment, has only been trimmed down to 119 sectors from the initial 190.⁷¹ Furthermore, the U.S.-China Business Council found the 2015 *Catalogue for the Guidance of Foreign Investment Industries*, which guides national foreign investment policies, removed few restrictions and ownership caps on priority areas for foreign companies in areas such as agriculture, automotive, and banking.⁷² (For more information on China’s treatment of foreign investment, see Chapter 1, Section 2, “Foreign Investment Climate in China.”)

Capital Allocation

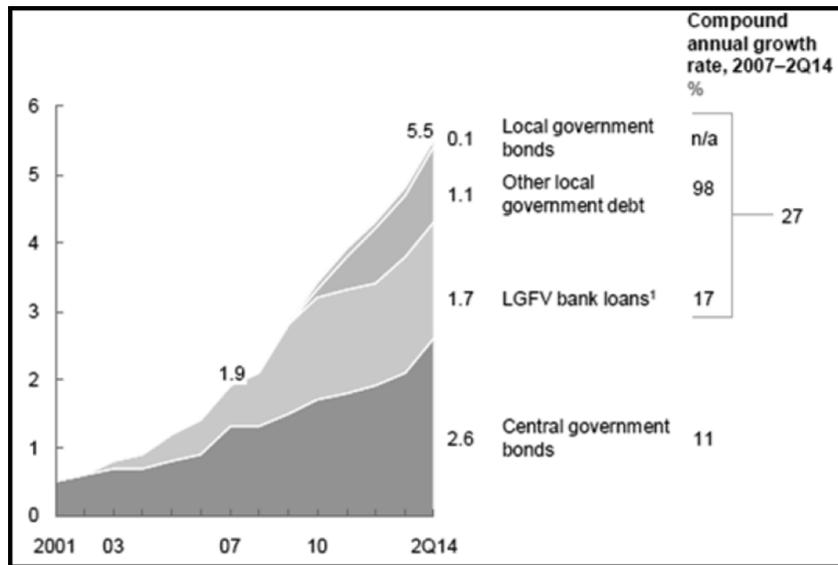
China’s fiscal system has saddled local governments with high levels of debt that is increasingly costly to pay off. Without fiscal reform, local governments will be challenged in financing China’s other reform objectives, such as urbanization, expansion of social and healthcare benefits, and infrastructure projects (see the text box, “China’s Ability to Finance Its Reform Agenda” earlier in this section). A 2015 World Bank report analyzed the status of China’s financial reform and found distorted incentives, poor governance structures, and pervasive implicit government guarantees have exacerbated China’s inefficient allocation of financial resources.⁷³ Subsequently, the World Bank redacted the section on China’s financial reform, allegedly due to Chinese government interference.⁷⁴ Significant reforms are needed to realign lending incentives, introduce risk and market competition, and reduce the role of the government within the financial sector. However, the Chinese government’s continued intervention in the market weakens the impact of these stated reforms.

*China traditionally has used purchasing catalogues such as the annual *Catalogue for the Guidance of Foreign Investment Industries* to designate the products, services, and investments approved for market access. Sectors not listed in the catalogs are restricted from foreign competition. In contrast, a negative list designates only those sectors that face market access restrictions; sectors not listed are considered open. The use of a negative list represents a shift toward a more widely used global approach.

Restructuring Local Government Debt

China’s fiscal system* allocates only 53 percent of tax revenue to local governments, while placing on local governments the responsibility for funding 85 percent of centrally mandated programs.⁷⁵ Prevented from issuing bonds as U.S. municipalities do, local governments in China largely rely on land-use sales, commonly seized from local farmers at below-market prices,[†] and off-balance-sheet local government financing vehicles (LGFV), which use land and other government assets as collateral to raise funds for major infrastructure and real estate projects.⁷⁶ The 2009 stimulus program exacerbated the debt crisis as the central government encouraged local governments to take on substantial high-cost LGFV debt to finance infrastructure projects. According to McKinsey & Company, LGFV debt nearly tripled from \$600 billion in 2007 to \$1.7 trillion by the second quarter of 2014, accounting for 58.6 percent of total local government debt (see Figure 3).⁷⁷ With falling land prices and lower growth in tax revenues from slower economic growth, it is becoming more difficult for local governments, particularly those in poorer provinces, to service these debts.⁷⁸

Figure 3: Outstanding Balance of China’s Government Debt by Source
(US\$ trillions; constant exchange rate, 2013)



Note (1): LGFV refers to local government financing vehicles.
Source: McKinsey Global Institute, “Debt and (Not Much) Deleveraging,” February 2015, 81.

*China’s fiscal system determines tax revenue allocation and funding responsibilities for central and local governments. For additional information on China’s fiscal system and local government challenges, see Jacob Koch-Weser, “China Fiscal Policy Revamp Faces Hurdles,” *U.S.-China Economic and Security Review Commission*, September 30, 2014.

†These land seizures are a leading cause of domestic unrest in China. For additional information, see U.S.-China Economic and Security Review Commission, Chapter 2, Section 3, “China’s Domestic Stability,” in *2014 Annual Report to Congress*, November 2014, 352.

In 2014, the State Council outlined its fiscal restructuring plan to reduce the risk of local government default and create more affordable revenue sources by taking steps to calculate the magnitude of debt, rein in lending, remove the heavy debt burden, and introduce new sources of local government revenue.⁷⁹ However, fiscal reforms have been subject to numerous reversals as the central government struggles to maintain employment and growth. An analysis on the status of reforms finds that:

- *The magnitude of local government debt is unknown:* In 2013, the National Audit Office assessed the scale of local debt and found local government debt and liabilities totaled \$2.9 trillion (RMB 17.9 trillion), with nearly half in costly LGFVs.⁸⁰ Private estimates highlight the unreliability of these government figures. McKinsey & Company estimated total local government debt at \$2.9 trillion at the end of the first half of 2014.⁸¹ BCA, an independent investment research house, estimated \$3.2 trillion (RMB 20 trillion) at the end of 2014,⁸² and Goldman Sachs estimated LGFV debt alone reached \$3.4 trillion (RMB 21 trillion) by the end of 2014.⁸³ To address this ambiguity, China's Ministry of Finance required provincial governments to update their debt figures by January 2015. Implementation, however, has been exceedingly difficult because provincial governments are incentivized to overstate their debt figures to qualify for better loan concession and a higher bank debt ceiling. The subsequent inability of provincial governments to submit revised figures by a March 2015 deadline led the Ministry of Finance, National Development and Reform Commission (NDRC), People's Bank of China (PBOC), and China Banking Regulatory Commission (CBRC) to establish a centrally controlled audit system that will rely less on local government figures.⁸⁴ This system assigned the NDRC to audit enterprise debt and LGFV debt, the PBOC and CBRC to jointly audit bank loans and short-term commercial debt, and local governments to audit payments and accounts payable for buy-transfer projects* and project financing.⁸⁵
- *Local government borrowing continues:* In October 2014, the Chinese government outlawed the expansion of LGFV borrowing to rein in runaway local debt.⁸⁶ But in May 2015 the central government reversed course in the face of faltering economic growth and rising unemployment.⁸⁷ The State Council reopened LGFVs' access to short- and medium-term bond markets and relaxed previous restrictions on LGFV-financed infrastructure spending. That same month, the Ministry of Finance, PBOC, and CBRC explicitly required financial institutions to extend existing loans for insolvent infrastructure projects that were started before January 2015, resuming the very lending practices reforms were meant to reverse.⁸⁸ According to Deut-

*Buy-transfer is a type of financing model used in China for public infrastructure projects. Investors bid for government projects then the winning investor provides the financing and constructs the project. Once complete, the government pays for the cost of construction as agreed upon in the contract through installment payments. Liu Hongyong and Deng Li, "Study on the BT Financing Model of Non-business Public Building in the Post-Disaster Reconstruction—Case Study of Guangyuan," *Proceedings of 2011 International Symposium—Geospatial Information Technology & Disaster Prevention and Reduction*, May 2011.

sche Bank economists Zhang Zhiwei and Audrey Shi, this policy change represented “a 180-degree reversal of the fiscal policy from tightening to loosening.”⁸⁹

- *Central intervention ensures debt-for-bonds swap succeeds:* To prevent defaults and reduce the burden of repayments, the Ministry of Finance in March 2015 issued a \$161 billion (RMB 1 trillion) quota to convert roughly half of the nearly \$296 billion (RMB 1.85 trillion) of local governments’ high-risk debt due this year into lower-yielding, longer-maturity municipal bonds.⁹⁰ Expected purchasers of these new bonds—primarily state-owned commercial banks—delayed the launch of the pilot program until the PBOC intervened to offer more favorable terms, such as higher yield rates and access to low-interest loans.⁹¹ According to the central government, state banks will buy 70–80 percent of these local government bonds.⁹² In April 2015, the State Council widened the pool of purchasers by permitting its nearly \$200 billion (RMB 1.24 trillion) national state-security fund to invest up to 20 percent of its portfolio in local government debt and corporate bonds.⁹³ In May 2015, Jiangsu Province sold \$8.4 billion (RMB 52.2 billion) worth of bonds, the first provincial government in China to do so. The provinces of Hebei, Shandong, Hubei, and Guangxi, as well as the Chongqing and Tianjin municipalities, have followed suit.⁹⁴ In June 2015, the Chinese government doubled the bond quota to turn over the rest of the local government debt due this year.⁹⁵ While these policies significantly reduced local government financing costs, Barry Naughton, professor of economics at the University of California, San Diego, cautioned that because the costs for reckless borrowing were negligible and central intervention reaffirmed central government backing for bonds, “the debt swap failed to achieve its most essential objectives as market-oriented reform.”⁹⁶
- *New sources of local government revenue introduced:* The Chinese government is attempting to create more transparent and affordable revenue streams by increasing the amount of central proceeds reallocated to local authorities, reinstating the provincial bond issuance system* in 2014, and restructuring the tax system.⁹⁷ The Chinese government is in various stages of rolling out value-added, resource, and property taxes.⁹⁸
 - *Value-added tax:* The State Administration of Taxation and Ministry of Finance are in the process of phasing out the “business tax”† that disadvantages the service sector, and expect to fully replace it with a value-added tax (VAT)‡ by the end of 2015.⁹⁹ This transition in part spurred the growth of newly registered businesses by 46 percent in 2014, according to the written testimony of Dali

* The local government bond issuance was outlawed in 1994 after local governments built up enormous debt in the early 1990s.

† Business tax is calculated based on the gross revenue of a business.

‡ VAT is calculated based on the difference between a good’s price before taxes and its cost of production.

Yang, professor of political science at the University of Chicago.¹⁰⁰

- *Resource tax:* The Ministry of Finance has also been rolling out a resource tax based on prices rather than volumes, raising costs of these resources for producers and consumers from virtually nonexistent levels.¹⁰¹ The Ministry of Finance imposed a 2–10 percent tax on coal in October 2014, increased its fuel-consumption tax for the first time in five years in November 2014, and expanded the resource tax structure for rare earths and metals in May 2015.¹⁰² According to Dr. Yang, these taxes create new revenue streams while curbing resource use. The increase of China’s fuel-consumption tax raises revenue, marking the largest growth in tax revenue this year.¹⁰³ These taxes also keep the costs of fuel high—despite the significant drop in oil prices over the last year—and discourage additional consumption.¹⁰⁴
- *Property tax:* In 2011, Chongqing and Shanghai municipalities launched pilot property tax programs, but these programs generated low levels of revenue due to lax enforcement and widespread exemptions.¹⁰⁵ Despite these issues, in March 2015, the Ministry of Land and Resources launched a nationwide property registration system that sets the stage for a nationwide property tax and expanded crackdown on official corruption.¹⁰⁶ Jia Kang, director of the Ministry of Finance’s Research Institute on Fiscal Science, expects that the property tax will be implemented in 2017, but Dr. Yang remains skeptical, citing a history of inaction on property tax reform and the recent failures of the Chongqing and Shanghai pilot programs.¹⁰⁷

Opening China’s Bank-Driven Financial Sector

China’s financial system is “repressed, unbalanced, costly to maintain, and potentially unstable,” according to a joint report released in 2013 by the World Bank and the State Council’s Development Research Center.¹⁰⁸ State-set interest rates, tight regulations on capital flows, and de facto state control of 95 percent of commercial bank assets have led to politically driven capital allocation and a burgeoning shadow banking* sector.¹⁰⁹ High levels of savings by the Chinese public and extremely low interest rates offered to depositors have created approximately \$21.5 trillion of cheap capital for China’s state-dominated banking sector. These banks lend to SOEs over more efficient private firms based on the implicit government guarantees on SOE debt and explicit government pressure on state-owned banks to lend to their government cousins.¹¹⁰ Small- and medium-sized enterprises (SME) receive only 20 percent of bank lending despite holding 65 percent of patents and contributing 70 percent of employment, 60 percent of GDP, and 50 percent

*Shadow banking is lending—to include wealth management products, credit guarantees, entrusted loans, and peer-to-peer lending—that occurs outside of the official banking system. For more information on China’s shadow banking sector, see U.S.-China Economic and Security Review Commission, Chapter 1, Section 3, “Governance and Accountability in China’s Financial System,” in *2013 Annual Report to Congress*, November 2013, 113–152.

of tax revenue.¹¹¹ This inefficient allocation of capital has contributed to “wasteful investments, excess capacity, and weaker loan capacities,” forcing SMEs to seek credit in the unofficial shadow banking sector.¹¹²

To address these issues, the Chinese government is taking small steps toward loosening its interest rate controls, increasing competition in the banking sector, reducing moral hazard, and enhancing capital convertibility. Thus far, financial reforms have made the most headway, but policymakers have begun to reassert control in light of the market volatility these reforms create.¹¹³ Anemic economic growth in 2015 led the PBOC to ease financial constraints by lowering interest rates five times in 2015.¹¹⁴ The PBOC also cut reserve requirements four times in 2015.¹¹⁵

At the same time, the Chinese government supported the rapid growth of its stock markets to accelerate economic growth. According to BCA, the financial sector accounted for close to 30 percent of GDP growth this year compared with only 10 percent previously—driven primarily by the growth of equity trading in the stock market.¹¹⁶ The subsequent collapse of the stock market this summer despite significant government intervention has shaken the faith of investors in the Chinese government’s ability to manage the economy. (For a discussion of China’s stock market and the government’s response, see Chapter 1, Section 1, “Year in Review: Economics and Trade.”)

Initial Steps toward Market-Set Interest Rates and Opening Banking Sector to Competition

The Chinese government is slowly loosening control over interest rates and opening the state-controlled banking sector to new entrants. Reforms have:

- *Partially deregulated interest rates:* In November 2014, the PBOC lowered the benchmark interest rate, but permitted banks to offer deposit rates up to 20 percent above the benchmark, allowing banks to compete for depositors within a set range.¹¹⁷ In August 2015, the PBOC further loosened interest rates by allowing banks to set savings rates for deposits that are longer than a year and offer short-term deposit rates up to 150 percent above the benchmark.¹¹⁸ According to Le Xia and Jinyue Dong, economists from the Spanish-based multinational banking firm Banco Bilbao Vizcaya Argentaria S.A., these reforms will foster competition between banks for depositors and borrowers; banks are increasing returns for ordinary depositors to attract them, but will need to offset these higher costs by seeking higher returns from their loans. In addition, Dr. Xia and Dr. Dong found “the lift of the deposit rate cap also means that the PBOC will lose one of its important monetary policy tools.”¹¹⁹ The PBOC previously leveraged its ability to cut interest rates to channel China’s cheap capital toward government priorities such as financing SOEs and to spur investment-led economic growth.¹²⁰
- *Loosened market access restrictions for Chinese firms in banking:* In January 2015, China launched its first fully online private bank. Several Chinese Internet companies, including

JD.com, Alibaba, and Tencent, have since entered the financial service industry.¹²¹ This entry of new competitors into the previously state-controlled sector could foster additional competition between banks for depositors interested in higher returns, and between borrowers for banks' capital, thus encouraging the flow of capital to higher-return private firms.

Steps to Reduce Moral Hazard

The Chinese government is making small changes to alter the perception that it will bail out any company in danger of default. In May 2015, the PBOC introduced a deposit insurance program and set upper limits on insurance coverage for bank deposits at \$80,000 (RMB 500,000) to introduce risk and erode the view that all deposits at state-owned banks are implicitly guaranteed by the Chinese government.¹²² In addition, over the past year, the government has allowed the domestic bond market to experience its first defaults.¹²³ In April 2015, the Chinese government stood by while state-owned Baoding Tianwei Group Co. defaulted on its \$13.8 million interest payment.* Nor did the government prevent the \$1 billion default of Kaisa Group Holdings Ltd. later that month, marking the first defaults in the offshore bond market.¹²⁴ More defaults are likely as overcapacity, particularly in the property sector, squeezes profitability and cash flows.¹²⁵ Although limited defaults have been tolerated, the Chinese government's strong history of intervention and recent steps to prop up the stock market demonstrate that the government is unlikely to allow more substantial losses or defaults.

Loosening Capital Account Controls but Maintaining Strong State Control

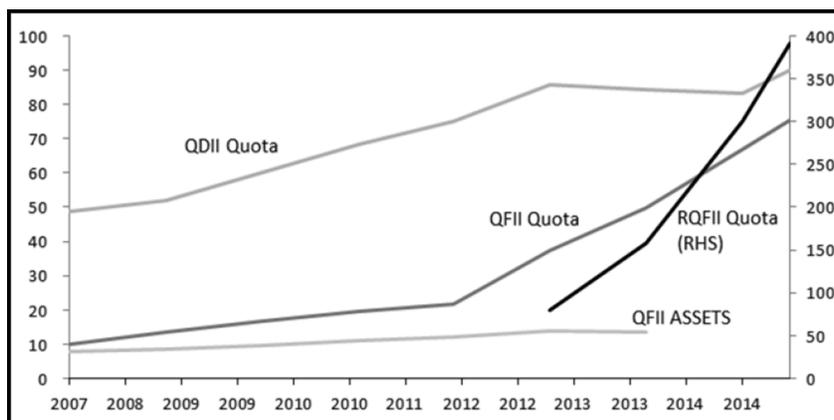
Over the last two decades, the Chinese government has gradually loosened its tight capital controls to allow greater flow of RMB across borders. These small steps serve to promote the RMB as an international currency and set the stage for China's emergence as a key player in the global financial markets.¹²⁶ Since 2010, the China Securities Regulatory Commission and State Administration of Foreign Exchange have incrementally expanded the Qualified Domestic Institutional Investor (QDII) and Qualified Foreign Institutional Investor (QFII) schemes† that allow greater capital flows while maintaining government control through quotas, approvals, and ceilings (see Figure 4).¹²⁷ The QFII scheme remains underutilized; however, signaling that though controls are loosening, additional reforms are necessary to entice greater foreign investment.¹²⁸

* For more information about the April 2015 defaults, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, May 5, 2015, 7–9.

† For background on the QDII and QFII schemes, see Nargiza Salidjanova, "The RMB's Long Road to Internationalization," *U.S.-China Economic and Security Review Commission*, September 22, 2014.

Figure 4: Quotas for the Qualified Domestic and Foreign Institutional Investors, 2007–2014

(RMB billions [LHS]; number [RHS])



Source: Sean Miner, “Equity Series Part 6: The Equity Market’s Role in Cross-Border Capital Flows,” *China Economic Watch* (Peterson Institute for International Economics blog), July 23, 2015.

In November 2014, the Shanghai-Hong Kong Stock Connect opened, allowing for greater usage of the RMB across previously closed borders and removing the arbitrage gaps between the two stock markets.¹²⁹ (For a discussion of the Shanghai-Hong Kong Stock Connect, see Chapter 3, Section 4, “Hong Kong.”) China has also expanded offshore RMB trading centers beyond Hong Kong and Taiwan to a number of international financial centers, such as Frankfurt, London, and Singapore.¹³⁰ In July 2015, the London Metal Exchange, the world’s largest trading venue for metals, announced it would accept the RMB as collateral for trades on its platform by banks and brokers.¹³¹ That same month, the PBOC announced that central banks, sovereign wealth funds, and international financial institutions will have immediate open access to China’s interbank debt market worth \$6.1 trillion.¹³² The RMB became the fourth-most-active currency for global payments in August 2015, according to data from the Society for Worldwide Interbank Financial Telecommunications, the global leader in processing payments.¹³³

Despite these limited steps forward, PBOC Governor Zhou Xiaochuan noted in April 2015 that the Chinese government will maintain control over cross-border financial transactions, external debt, short-term capital flows, and temporary capital control measures.¹³⁴ In June 2015, U.S.-based stock market index provider MSCI yet again delayed the inclusion of China’s “A” shares into its Emerging Markets Index, citing the continued use of opaque and unequal investment quotas and concerns regarding the recognition of foreign ownership under Chinese law.¹³⁵ The IMF extended the current special drawing rights (SDR) basket of currencies until September 30, 2016, and will decide on whether to add the RMB to the composition of its SDR basket by the end of this year.¹³⁶ The IMF’s decision to include the RMB would legitimize China’s man-

aged convertibility approach.¹³⁷ (For a discussion of China's exchange rate management, see Chapter 1, Section 1, "Year in Review: Economics and Trade.")

Industry Competitiveness

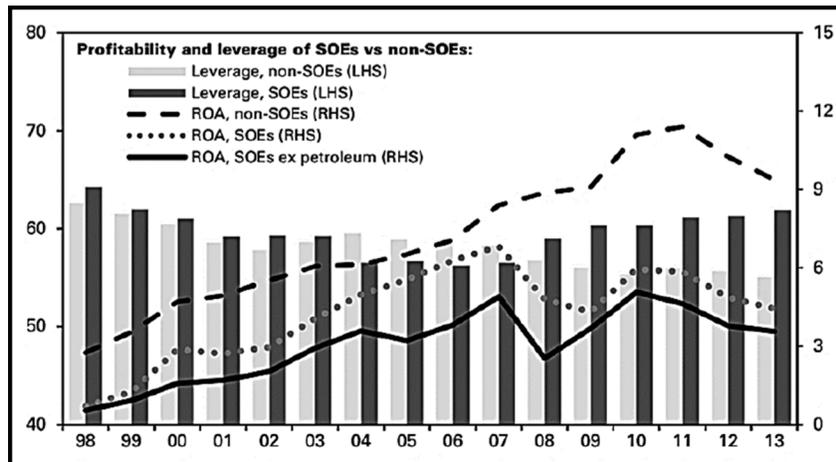
China's old industrial model created bloated, export-dependent industries, inefficient SOEs, and severe overcapacity. The 2008 stimulus exacerbated these issues. Reforms are seeking to revitalize China's industrial sector and boost innovation by restructuring SOEs, moving up the value-added chain, and minimizing overcapacity.

Reforming State-Owned Enterprises

Although they are less profitable than private Chinese companies, SOEs remain an important driver of economic growth due to preferential government treatment and subsidies.¹³⁸ Lack of competition, high operating costs, overstaffing, significant debt, and cronyism continue to erode SOEs' productivity and global competitiveness. A 2015 Goldman Sachs study found the return on assets (ROA) gap between private Chinese firms and SOEs widened in 75 percent of the 36 sectors surveyed, while the debt-to-equity ratio for SOEs increased faster than for private Chinese firms for 70 percent of the 36 sectors surveyed (see Figure 5).¹³⁹

Figure 5: SOEs Are Less Profitable and More Indebted than Private Chinese Firms

(percentage points [LHS]; ROA, percentage points [RHS])



Source: Yu Song et al., "Harnessing Global Capital to Drive the Next Phase of China's Growth," *Goldman Sachs*, February 2015, 27.

The dominance of SOEs in core strategic industries and the authority of SOE executives within the government hierarchy have created strong vested interests and endemic corruption.¹⁴⁰ President Xi's aggressive anticorruption drive that detained at least 124 high-level SOE officials has weakened but not fully eliminated re-

sistance to reform.¹⁴¹ Last year, reforms of the state sector stalled largely due to resistance from SOEs and struggles for control between the Ministry of Finance and the State-Owned Assets Supervision and Administration Commission of the State Council.¹⁴² The anticipated announcement of other major reforms in March this year was also pushed back until September.¹⁴³

In September 2015, the State Council and Central Committee of the CCP jointly released the *Guiding Opinion on Deepening the Reform of State-Owned Enterprises*.¹⁴⁴ These guidelines cemented the commitments the Chinese government has already made this year to improve SOEs' productivity and global competitiveness through mixed ownership and consolidation, but offered few concrete steps forward.¹⁴⁵ Andrew Batson, the China Research Director at the economics and market research firm Gavekal Dragonomics, described the guidelines as "an ungainly mishmash of bureaucratic compromises that sets no clear goals and is riven by internal contradictions."¹⁴⁶ Gordon Orr, senior advisor to McKinsey China, summed up the guidelines as "we still want to do what we said we were going to do before but haven't yet done."¹⁴⁷ Concurrently, these guidelines build upon President Xi's earlier calls for greater CCP leadership within SOEs, the very driver of inefficiency and cronyism.¹⁴⁸ As Dr. Prasad explained, SOE reforms do not "intend to upend state control of key enterprises but, rather, subject them to greater market discipline."¹⁴⁹ Announced reforms seek to:

- *Reinforce the CCP and state control over SOEs:* The guidelines specifically reinforce the importance of CCP control within SOE management and personnel, placing it at odds with the push for mixed ownership.¹⁵⁰ Zhang Yi, head of the State-Owned Assets Supervision and Administration Commission, emphasized the CCP's central role, stating, "In the process of deepening reforms of state-owned enterprises, the leadership of the party can only be strengthened, not weakened."¹⁵¹
- *Separate SOEs into commercial and public interest enterprises:* In his testimony before the Commission, Mr. Consonery argued that with SOE restructuring, the Chinese government is "doubling down and intensifying support for and control over some sectors, while opening others to more market competition and even foreign competition."¹⁵² The guidelines further clarified this distinction, stating that the Chinese government will separate SOEs into commercial and public interest enterprises (without providing any detail on which sectors or firms would be commercial or public interest).¹⁵³ Commercial SOEs will seek to maximize profits and incorporate both mixed-ownership and greater market competition; for strategically important SOEs, the state will maintain a controlling share. In contrast, public interest SOEs will remain wholly state-owned with a focus on delivering quality, efficient, and reasonably priced products and services to the Chinese public.¹⁵⁴
- *Increase private capital while preserving state control:* The Chinese government is continuing to increase the amount of non-state investment—private equity, social welfare funds, and private enterprises—in local and central SOEs' ownership structure by expanding mixed-ownership of SOEs.¹⁵⁵ Mixed-owner-

ship enterprises, with various combinations of state and private controls, already comprise 40 percent of China's industrial economy, and expansion of this ownership model would seek to increase technology transfer and managerial expertise and enhance productivity.¹⁵⁶ Marshall Meyer, emeritus professor of management at the University of Pennsylvania Wharton School of Business, explained that in practice, mixed ownership often means cross-ownership among SOEs.¹⁵⁷ In March 2015, the oil refiner Sinopec sold a 30 percent stake in its sales arm to 25 non-Sinopec entities, mainly SOEs and SOE subsidiaries.* In June 2015, the Bank of Communications announced it will sell minority stakes to private investors.¹⁵⁸ In addition, over 20 provinces have announced plans to list or sell off the assets of up to 70 percent of their provincially owned SOEs by 2017.¹⁵⁹ In May 2015, Shandong Province announced it will transfer equity shares in 471 of its provincially owned SOEs to its pension fund in order to pressure the companies to maximize profits and provide sufficient capital for its retirement fund.† In September 2015, Jiangxi Province sold a 47 percent stake in its local SOE Jiangxi Salt to other SOEs and SOE subsidiaries.‡ However, Dr. Meyer cautioned that “no matter how many shares are privately-owned, the decision lies with the state,” limiting the ability of non-state shareholders to influence corporate decision making.¹⁶⁰

- *Create global players through megamergers:* The State Council is seeking to capitalize on economies of scale and ample funding resources by consolidating (and in some cases reconsolidating) central SOEs into global competitors. This consolidation is a reversal of reforms in the 1990s that sought to increase SOE efficiency through managed competition.¹⁶¹ According to the German-based think tank Mercator Institute for China Studies (MERICS), the Chinese government is using megamergers to reduce overcapacities, enhance SOEs' international competitiveness, increase state control and oversight of SOE operations, and rectify the fierce price wars among Chinese SOEs in the global market.¹⁶² As one Chinese government official said, “They're [SOEs] increasingly fighting amongst each other. . . . That has led to lots of waste and ineffi-

*Six SOEs and 11 state-controlled asset management companies account for 16 of the 25 shareholders and control 20.2 percent of the 30 percent stake offered by Sinopec. Some of these state-controlled shareholders include Citic Securities, China Life Insurance Company, Bank of China, Cinda Asset Management, and China Post Life Insurance. Xinhua (English edition), “China to Tighten Supervision of State Assets,” May 26, 2015; Shirley Yam, “Sinopec Offers Master Class in SOE Mixed Ownership Reform,” *South China Morning Post*, September 20, 2014 (Updated April 28, 2015); and Neil Gough, “Sinopec Stake Sale Leaves Investors Unimpressed,” *New York Times*, September 15, 2014.

†This pension fund will act as a shareholder with profits invested by the National Council for Social Security Fund. Shi Rui, “In First, Shandong Has SOEs Hand Over Stakes to Its Social Security Fund,” *Caixin* (English edition), May 20, 2015.

‡These shareholders include: Cinda Asset Management Company (controlled by China's Ministry of Finance) at 22.8 percent, Zhongxinjian Merchants Investment (owned jointly by central SOE China Merchants Group and the Chinese government's quasi-military, quasi-commercial Xinjiang Production and Construction Corps) at 9.1 percent, Ximen ITG Group (owned by the Xiamen municipal government) at 7.6 percent, and Jianggangshan Investment (the private equity arm of the municipal SOE Beijing Automotive Industry Corporation) at 7.6 percent. Jiangxi Province's State-Owned Assets Supervision and Administration Commission retains 46.9 percent, and Jiangxi Salt management has 5.9 percent. David Keohane, “SOE You Think You Can Reform? Mixed-Ownership Edition,” *Financial Times*, September 28, 2015.

ciency.”¹⁶³ In April 2015, official Chinese media announced the government will consolidate the existing 112 centrally controlled SOEs into 40 large SOE conglomerates under the oversight of 16 ministries and authorities.¹⁶⁴ For example, the merger between China North Railway and China South Railway in December 2014 combined the world’s largest railway contractors in terms of sales. Their collective market capitalization totaled approximately \$130 billion—far ahead of its main competitors: the German firm Siemens AG with \$84.2 billion and French firm Alstom SA at \$8.7 billion.¹⁶⁵ Similarly, major mergers of China Power Investment with State Nuclear Power Technology and China Huafu Trade and Development Group with China National Cereals, Oils and Foodstuffs Corporation are creating firms as large as their leading global competitors.¹⁶⁶ While consolidation will increase economies of scale, it merely reinforces SOEs’ dominance of the state in key sectors of the economy. The guidelines provided little direction on how the Chinese government will manage these mega conglomerates, reflecting internal divides on how to balance its desire to supervise these merged firms while achieving more market-oriented operations.¹⁶⁷ The Ministry of Finance has advocated for Singapore’s Temasek model of governance, where the state collects dividends and operates as an asset manager allowing SOEs to largely operate unfettered, while the State-Owned Assets Supervision and Administration Commission prefers to maintain strong managerial oversight.¹⁶⁸

Increasing Higher-Value-Added Manufacturing

Chinese manufacturing is moving up the value-added chain, driven by fierce domestic and international competition, higher labor costs, and government incentives.¹⁶⁹ To accelerate its shift, China implemented an indigenous innovation policy in 2006* and established “strategic emerging industries” under the 12th FYP (see Table 2 for a list of these sectors). Strong state-directed subsidies for renewable energy—a strategic emerging industry—allowed China to achieve global dominance in the solar and wind sectors† in less than a decade.¹⁷⁰ Testifying before the Commission in his personal capacity, Mr. Melton, cautioned that despite producing successful Chinese companies and new technologies, such state-directed policies exacerbate corruption, misallocate resources, and distort the market.¹⁷¹

The 2015 NPC Government Work Report, which reviewed last year’s accomplishments and established tasks for 2015, announced two new initiatives, “Made in China 2025” and “Internet Plus,” to accelerate China’s transition to higher-value-added manufacturing (for additional discussion of the Internet Plus initiative, see Chapter 1, Section 4, “Commercial Cyber Espionage and Barriers to Dig-

*The indigenous innovation policy was first introduced in the National Medium- and Long-Term Program for Science and Technology Development (2006–2020) and later incorporated into the 12th FYP. Although the Chinese government no longer uses the term “indigenous innovation” after pressure from the United States to roll back those policies, its current innovation policy continues to reflect the spirit of indigenous innovation.

†For in-depth coverage of China’s wind and solar policies, see Jacob Koch-Weser and Ethan Meick, “China’s Wind and Solar Sectors: Trends in Deployment, Manufacturing, and Energy Policy,” *U.S.-China Economic and Security Review Commission*, March 9, 2015.

ital Trade in China”). These initiatives focus on innovation and upgrading key emerging industries, including high-end equipment, integrated circuits, biomedicines, cloud computing, mobile Internet, and e-commerce—sectors in which the United States currently enjoys technological advantages.¹⁷²

Dr. Prasad has warned that while U.S. companies in industries such as finance or insurance could leverage their “technological forte” to gain a foothold in the Chinese market, the Chinese government has made clear it will demand that foreign firms transfer technology and corporate governance know-how in exchange for market access.¹⁷³ Eurasia Group noted that in the high-value-added sectors outlined as priorities by the Chinese government, “foreign firms are likely to face a tougher competitive landscape in the coming years as the need for foreign know-how decreases.”¹⁷⁴ In August 2015, 19 U.S. technology and industry associations submitted a letter to President Barack Obama regarding China’s adverse policies toward U.S. information technology (IT) and communications firms.¹⁷⁵ For example, the letter highlighted China’s new program that attempts “to acquire or indigenize U.S. semiconductor technology,” a sector where U.S. multinational firms account for 11 of the top 20 global semiconductor suppliers and made up nearly 51 percent of the global market in 2014.* Such policies are seeking to dislodge established U.S. market leaders and replace them with domestic firms, to the detriment of U.S. businesses and workers.

Made in China 2025

In May 2015, the State Council released the Made in China 2025 action plan that outlines a ten-year strategy to build intelligent manufacturing capabilities, enhance innovation, and upgrade ten key sectors. These sectors are: (1) energy saving and new energy vehicles, (2) next-generation IT, (3) biotechnology, (4) new materials, (5) aerospace, (6) ocean engineering and high-tech ships, (7) railway, (8) robotics, (9) power equipment, and (10) agricultural machinery.¹⁷⁶ Many of these sectors are not new, and merely re-double government support for long-held strategic interests (see Table 2). In June 2015, the State Council announced that to support this plan, it will be creating a leading group headed by Vice Premier Ma Kai.¹⁷⁷ To build intelligent manufacturing capabilities and support the development of these ten sectors, Citigroup estimates China will invest \$1.3 trillion (RMB 8 trillion) in the next few years, while the consultancy PRC Macro forecasts funding will increase between \$64 billion (RMB 400 billion) and \$128 billion (RMB 800 billion) by the fall of 2016.¹⁷⁸

*For an overview of the semiconductor industry, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, August 5, 2015, 10–14; American Chamber of Commerce in China et al., “Letter to President Barack Obama,” August 11, 2015.

Table 2: China's Key Industries

Made in China 2025 (2015)	Strategic Emerging Industries (2010)	Strategic Industries (2006)	Heavyweight Industries (2006)
(1) Clean energy vehicles (2) Next-generation IT (3) Biotechnology (4) New materials (5) Aerospace (6) Ocean engineering and high-tech ships (7) Railway (8) Robotics (9) Power equipment (10) Agricultural machinery	(1) Clean energy technologies (2) Next-generation IT (3) Biotechnology (4) High-end equipment manufacturing (5) Alternative energy (6) New materials (7) Clean energy vehicles	(1) Armaments (2) Power generation and distribution (3) Oil and petrochemicals (4) Telecommunications (5) Coal (6) Civil aviation (7) Shipping	(1) Machinery (2) Automobiles (3) IT (4) Construction (5) Iron, steel, and non-ferrous metals

Source: State Council of the People's Republic of China, *Made in China 2025*, May 8, 2015; U.S.-China Economic and Security Review Commission, *Hearing on China's Five-Year Plan, Indigenous Innovation and Technology Transfers, and Outsourcing*, written testimony of Willy C. Shih, June 15, 2011; U.S.-China Economic and Security Review Commission, *Hearing on the Extent of the Government's Control of China's Economy, and Implications for the United States*, written testimony of George T. Haley, May 24–25, 2007; and U.S.-China Economic and Security Review Commission, Chapter 1, Section 1, "The Relationship's Current Status and Significant Changes during 2007," *2007 Annual Report to Congress*, November 2007, 38–39.

While the plan seeks to strengthen China's industrial base with automation and technological efficiency, it continues China's state-directed innovation policy with the establishment of 15 manufacturing innovation centers in the next five years, and an additional 25 by 2025.¹⁷⁹ Of concern to U.S. companies is the plan's goal of raising domestic localization of core components and materials for sectors such as railway, home appliances, aerospace, telecommunications, and power generation to 40 percent by 2020 and to 70 percent by 2025.¹⁸⁰ The presence of these absolutist requirements supports the view that China may be violating fair and equal treatment for domestic and foreign firms under the World Trade Organization (WTO).

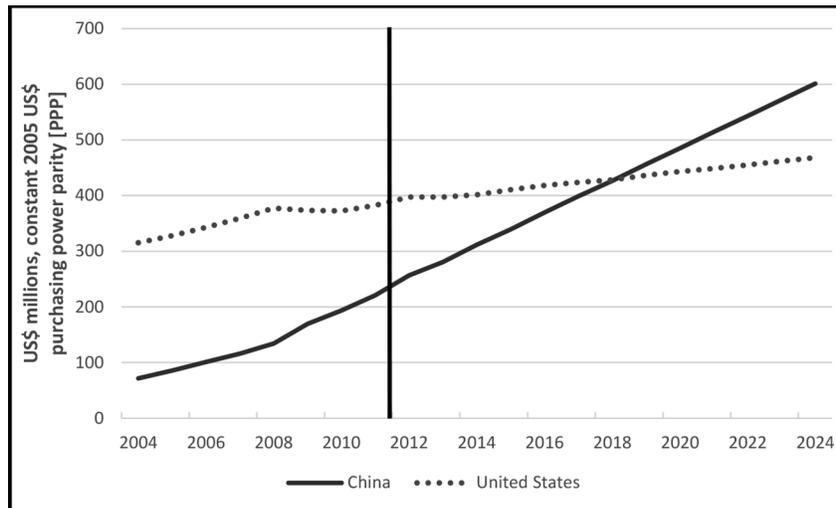
Enhancing Indigenous Innovation

The Chinese government has accelerated efforts to become a global center of innovation through its indigenous innovation policy. This policy is designed to ensure its future global competitiveness and technological edge. Created under the auspices of the 12th FYP, China's indigenous innovation policy has centered on research and development (R&D) funding, high-technology industrial clusters, and market creation. According to Mr. Melton, these policies seek to address its perceived shortcomings: "low R&D expenditure by firms, lack of marketable technologies from research institutes, insufficient financial resources for small technology firms, and the uneven performance of China's firms abroad."¹⁸¹ In his opinion, these shortcomings reflect China's legal and institutional failures rather than a need for greater government intervention; therefore, "less nationalistic innovation policies would have the same—or

greater—economic value at a much lower cost and fewer distortions in the economy.”¹⁸²

Over the past decade, China’s overall R&D spending increased an average of 23 percent per year, making it the world’s second-largest investor in R&D after the United States since 2011.¹⁸³ Spending on R&D as a share of GDP reached 2.1 percent in 2014 and is expected to grow at the same rate in 2015.¹⁸⁴ In comparison, Batelle, a nonprofit R&D organization, projected that the combined public and private spending on R&D in the United States would reach 2.8 percent of GDP in 2014.¹⁸⁵ While the United States is currently the world’s largest investor in R&D, the Organization for Economic Co-operation and Development (OECD) expects China will outspend the United States by 2019 (see Figure 6).¹⁸⁶

Figure 6: Current and Projected R&D Spending by China and the United States, 2004–2024



Note: These figures are based on gross domestic expenditure on R&D. Trends are projected after 2012 based on linear growth from U.S. and Chinese data since 2000.

Source: Organization for Economic Co-operation and Development, “Science, Technology, and Industry Outlook 2014,” November 12, 2014, 58.

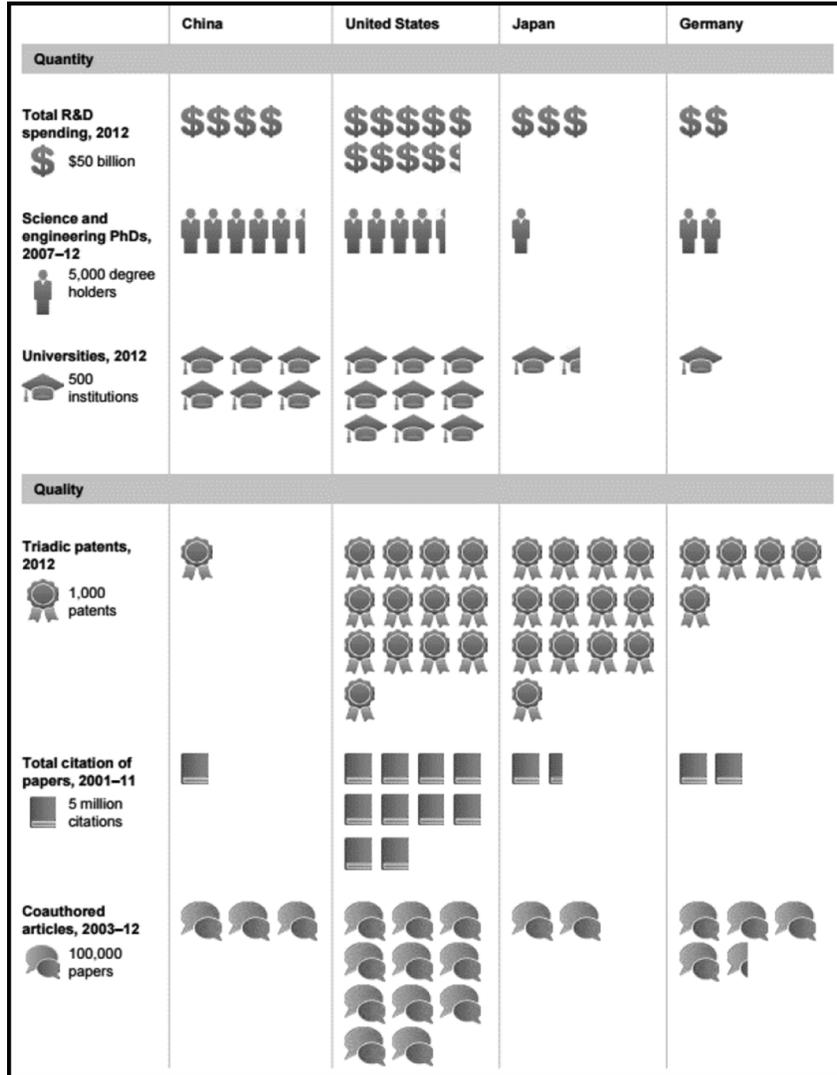
The Chinese government has set up hundreds of high-technology industrial clusters similar to Silicon Valley and uses a variety of tools to attract and expand foreign high-technology firms’ R&D operations in China in order to encourage technology transfer and create synergies with domestic firms.¹⁸⁷ These incentives include tax rebates, customs duty and VAT exemptions, or refunds for R&D purchases.¹⁸⁸ Chinese firms such as telecommunications firms Huawei and ZTE have successfully leveraged these foreign partnerships to build technological capability and gain access to external markets.¹⁸⁹ The Chinese government also created new markets to encourage innovation in designated sectors. For example, under the 12th FYP, the NDRC expanded feed-in tariffs, renewable portfolio standards, and capacity targets to incentivize renewable energy production.¹⁹⁰

Despite China becoming one of the largest R&D investors and leading applicants for patents in the world, Gary Jefferson, professor of international trade and finance at Brandeis University, argues that China's transformation is due less to a fundamental shift in innovation capability than it is to forces unrelated to innovation, such as increased filing for placeholder patents.* A comparison of the quality of China's innovation capability through proxies such as the number of triadic patents† and total citations of papers with the United States finds that China lags far behind (see Figure 7).¹⁹¹ According to testimony from Xiaolan Fu, professor and director of the Technology and Management for Development Center at Oxford University, state-led innovation in sectors such as solar and semiconductors has created a strong production capacity rather than the more profitable technology or innovation capacity.¹⁹² Mr. Melton found China's state-led industrial plan approach to innovation produced meaningless patents, excess capacity, and aggressive protectionist policies.¹⁹³ Jost Wübbeke, research associate at MERICS, further cautioned that China's innovation system remains plagued by inefficient allocation of funding, weak quality management, and plagiarism.¹⁹⁴

*Placeholder patents are provisional utility patents that are filed more for strategic value to extend the duration of a patent, reduce up-front costs, and provide the firm more time for more ground-breaking developments than to secure intellectual property rights. Gary Jefferson, "A Great Wall of Patents: What Is behind China's Recent Patent Explosion?" *Working Paper*, January 30, 2006; Albert G.Z. Hu, Zhang Peng, and Zhao Lijing, "China's Patenting Surge from 2007 to 2011: More Innovation or Just More Patents?" *Working Paper*, 2014; Gary Jefferson, Carl Marks Professor of International Trade and Finance, Brandeis University, discussion with the Commission, April 15, 2015; for more information on patent placeholder strategy, see John T. McNelis, "A Power Patent Strategy ... Provisionally," *Fenwick & West*, February 26, 2004; and for more information on China's utility model patent practices and procedures, see Thomas T. Moga, "China's Utility Model Patent System: Innovation Driver or Deterrent," *U.S. Chamber of Commerce*, November 2012.

†Triadic patents are patents that are simultaneously filed at the European Patent Office, U.S. Patent and Trademark Office, and the Japan Patent Office, and are considered a strong indicator of high-quality patents. These types of patents require lengthy processing in exchange for protection in three of the world's largest markets.

Figure 7: Comparison of China's Innovation Capability with the United States, Japan, and Germany



Note: The number of coauthored articles refers to the number of papers coauthored with foreign academics.

Source: McKinsey Global Institute, "The China Effect on Global Innovation," July 2015, 19.

Although they benefited from establishing over 1,200 R&D centers in China, in recent years U.S. businesses started to protest China's domestic procurement requirements, forced technology transfer policies, opaque standards-setting processes, and intellectual property theft.¹⁹⁵ In May 2015, the U.S.-China Business Council criticized local governments for favoring Chinese products in government procurement at the expense of U.S. firms. This practice

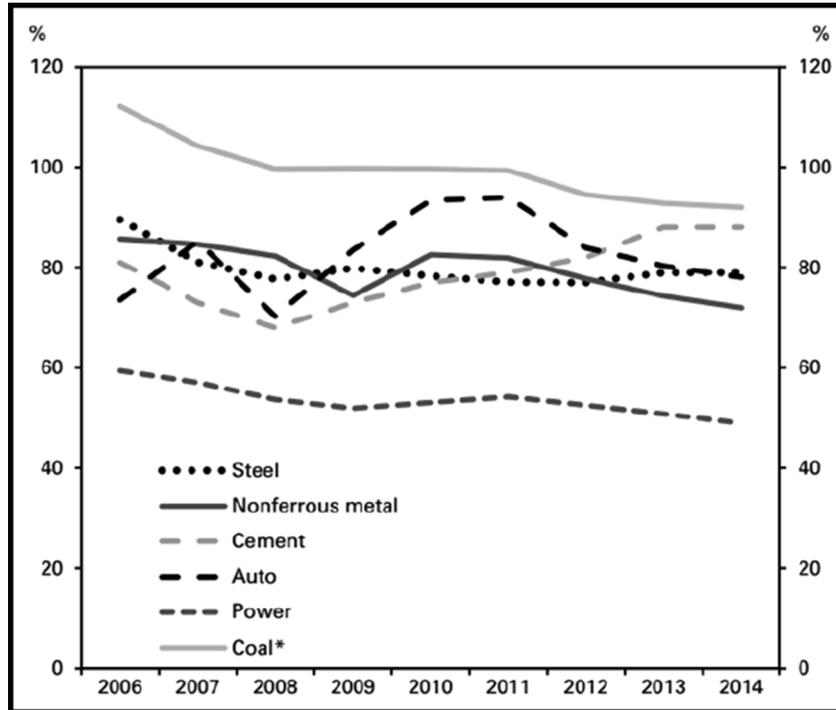
persists despite China's commitment to join the WTO Government Procurement Agreement, as well as repeated promises from senior Chinese leaders to eliminate the policy.¹⁹⁶ (For more information on China's investment climate, see Chapter 1, Section 2, "Foreign Investment Climate in China"; for more information on cyber theft, see Chapter 1, Section 4, "Commercial Cyber Espionage and Barriers to Digital Trade in China.")

Reducing Industrial Overcapacity

While housing, commercial real estate, and large infrastructure projects have contributed to job creation in the past two decades, China's subsidies to these sectors have created pervasive overcapacity in related sectors, particularly steel and cement (see Figure 8).¹⁹⁷ In 2013, the Ministry of Industry and Information Technology identified more than 1,400 companies in 19 industries that need to reduce their capacity.¹⁹⁸ For instance, an additional \$60 billion in annual demand is needed to absorb China's excess supply of steel.¹⁹⁹ Where oversupply in a market economy would cause firms to reduce production in order to minimize losses, continued subsidies in China have created cascading oversupply.²⁰⁰ This excess production has artificially lowered global prices below production costs and significantly reduced the industry's profitability.²⁰¹ In April 2015, industry estimates found nearly three-quarters of China's iron ore mines were unprofitable.²⁰² Rather than letting them close, the State Council reduced the iron ore resource tax from 80 percent to 40 percent to shore up struggling producers, thus exacerbating excess global production.²⁰³ In the steel sector, government subsidies have allowed Chinese steel firms to sell at below production costs despite falling prices, putting U.S. competitors at a disadvantage.²⁰⁴ While China's steel policies have bolstered domestic employment, they have also contributed to the decline in employment levels and profitability of steel firms in the United States* and other countries, resulting in antidumping and countervailing duty investigations.²⁰⁵

* For analysis on the steel industry, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, September 3, 2015, 8–10.

Figure 8: China's Capacity Utilization Rates in Selected Sectors



Note 1: Capacity utilization is the operating rate of a firm measured by the (actual output—potential output)/potential output. The gap between the sectors' rate and full utilization (100 percent) indicates a slump in demand.

Note 2: Coal industry utilization rate is shown as over 100 percent in past years because many coal mines' production was over their respective designed production capacity.

Source: Yu Song et al., "Harnessing Global Capital to Drive the Next Phase of China's Growth," *Goldman Sachs*, February 2015, 10.

The overcapacity issue remained largely unaddressed under former President Hu Jintao (2002–2012), but President Xi and Premier Li have publicly stated their desire to consolidate the industries by closing outdated facilities and creating new markets to soak up excess supply. In his 2015 NPC Work Report, Premier Li noted the closing of outdated facilities in 15 industries, but overcapacity persists.²⁰⁶ Continued local and central support for domestic industries—including lowering the iron ore tax in April 2015—have limited the effort's overall effectiveness.²⁰⁷

The Chinese government is also attempting to spark new demand for its overcapacity through urbanization and exports to emerging economies. Urbanization is providing an important domestic market for fixed asset investments in housing, transportation, and other sectors.²⁰⁸ The anticipated massive infrastructure projects in rail and ports emerging from the "One Belt, One Road"* initiative and the creation of the Asian Infrastructure Development

*President Xi's One Belt, One Road initiative seeks to facilitate access to natural resources and encourage economic development in China's poorer western provinces. This initiative is composed of a land-based road through Central Asia and a maritime counterpart that will run through Southeast Asia and the Indian Ocean to Africa and the Mediterranean Sea.

Bank and New Development Bank could spur new demand for the excess iron, steel, and cement capacity.²⁰⁹ As Guo Wensan, chairman of Anhui Conch Cement, noted, “The Silk Road initiative gives the cement industry a great opportunity to expand overseas.”²¹⁰ (For additional discussion of the One Belt, One Road initiative, see Chapter 3, Section 1, “China and Central Asia,” and Chapter 3, Section 2, “China and Southeast Asia.”)

Quality of Life

The Chinese government is attempting to improve the quality of life for its citizens by meeting public demands for greater prosperity and a safe, healthy environment. Urbanization, hukou reform, higher-value-added manufacturing, and innovation initiatives are attempting to increase wages and employment opportunities for the country’s citizens. At the same time, the Chinese government is seeking to address its severe environmental degradation.

Increasing Energy Conservation and Environmental Protection

At the March 2015 NPC meeting, Premier Li acknowledged the seriousness of air, water, and land pollution in China, describing it as a “blight on people’s quality of life.”²¹¹ Public anger over hazardous levels of air pollution in 2013 forced the Chinese government to redouble its efforts.* In the last two years, the Chinese government has pursued a multipronged approach, including:

- *Government spending:* The Chinese government spent approximately \$32.5 billion (RMB 203.3 billion) last year to build over 1,400 air monitoring stations, subsidize the purchase of energy-efficient vehicles, construct nearly 8,813 miles (14,100 kilometers) of pipelines to urban sewage water treatment facilities, and implement air pollution mitigation efforts in the Beijing-Tianjin-Hebei region.† In its 2015 budget, the Chinese government allocated \$21.9 billion (RMB 137 billion) for energy conservation and environmental protection, including \$14.1 billion (RMB 88.2 billion) to address air pollution and subsidize emissions reductions, \$2.8 billion (RMB 17.6 billion) in subsidies for forest protection, and \$4.9 billion (RMB 30.9 billion) to return cultivated land to forest.‡ An April 2015 report by more than 40 leading Chinese financial policy and regulation experts and government officials estimated that an annual investment of at least \$320 billion (RMB 2 trillion) § in

* For more information on environment-related unrest, see U.S.-China Economic and Security Review Commission, Chapter 2, Section 3, “China’s Domestic Stability,” in *2014 Annual Report to Congress*, November 2014, 357–358.

† The central government spent approximately \$5.5 billion (RMB 34.5 billion) while transfer payments to local governments totaled roughly \$27 billion (RMB 168.8 billion). China’s Ministry of Finance, *Report on the Implementation of the Central and Local Budgets for 2014 and on the Draft Central and Local Budgets for 2015* (Third Session of the 12th National People’s Congress, Beijing, China, March 5, 2015), 12.

‡ The central government appropriated \$4.7 billion (RMB 29.1 billion) and set aside \$17.3 billion (RMB 107.9 billion) in special transfer payments. China’s Ministry of Finance, *Report on the Implementation of the Central and Local Budgets for 2014 and on the Draft Central and Local Budgets for 2015* (Third Session of the 12th National People’s Congress, Beijing, China, March 5, 2015), 25–26.

§ A further breakdown of investment needs anticipates \$128 billion (RMB 800 billion) in environmental protection, \$80 billion (RMB 500 billion) to clean energy, \$80 billion (RMB 500 billion) to clean transportation, and \$32 billion (RMB 200 billion) to energy efficiency. People’s Bank of China and UN Environment Program, *Establishing China’s Green Financial System: Report of the Green Finance Task Force*, April 2015. 6.

environmental protection, energy efficiency, clean energy, and clean transportation is required over the next five years.* However, according to the same report, the Chinese government will only be able to fund between 10 and 15 percent or around \$48 billion (RMB 300 billion) of this needed annual investment due in part to slowing growth rates of fiscal revenue. Private capital will need to contribute the remaining 85 to 90 percent, estimated at \$272 billion (RMB 1.7 trillion).²¹²

- *Emissions and water quality targets:* At the March 2015 NPC meeting, Premier Li established additional reduction targets in chemical oxygen demand† and emissions of sulfur dioxide, ammonia nitrogen, and nitrous oxides.²¹³ China is also expanding its seven pilot carbon trading emissions projects under the 12th FYP to launch a national carbon trading market,‡ expected to be the world's largest carbon offset market, in 2017.²¹⁴ Similar adjustments are being made to improve the quality of water in Chinese cities. In 2011, around half of the 634 Chinese rivers, lakes, and reservoirs tested met drinking standards, and in April 2015, the government announced it would increase the amount of drinkable water for cities to 93 percent by 2020.²¹⁵ In June 2015, the Chinese government released its Intended Nationally Determined Contributions to combat climate change, in which it pledged by 2030 to both cut carbon dioxide emissions per unit of GDP by 60–65 percent of the 2005 level and expand the share in its non-fossil fuels for primary energy consumption from about 11 percent in 2014 to 20 percent.²¹⁶
- *Stronger regulations and harsher penalties:* In January 2015, new environmental regulations came into effect with harsher penalties and more stringent emissions caps.²¹⁷ Five months later, after nearly two years of delays, the State Council released a draft law on environmental taxes that would penalize heavily polluting industries, such as coal and steel, with taxes on water and air pollution.²¹⁸ In Hebei Province, which is one of China's most polluted provinces and responsible for a significant portion of Beijing's air pollution, the provincial government in 2014 spent an estimated \$1 billion on environmental protection, and is seeking to close small factories while forcing larger firms to adhere to regulations and upgrade equipment.²¹⁹ Already, steel facilities in Tangshan, China's largest steel-producing city, are either closing or undergoing upgrades to meet these regulations.²²⁰

*This estimate is based on the 12th FYP Environmental Protection Plan and the Ministry of Environmental Protection (final investment expected to exceed RMB 5 trillion under the 12th FYP); 2014 Plan on Water Pollution Prevention (RMB 2 trillion expected); 2014 Plan on Air Pollution Prevention and Control (RMB 1.7 trillion expected); *China Railway Annual Report* (RMB 800 billion allocated in 2014); Renewable Energy Policy Network (RMB 350 billion invested in 2013); and Bloomberg's estimate of renewable energy investment (RMB 420 billion invested in 2012). People's Bank of China and U.N. Environment Program, *Establishing China's Green Financial System: Report of the Green Finance Task Force*, April 2015. 5.

†Chemical oxygen demand indirectly measures water quality by determining the amount of oxygen-consuming capacity of organic and inorganic matter in the water. U.S. Environmental Protection Agency, *Terminology Services*.

‡The national carbon trading market was initially scheduled to begin in 2015. For additional analysis on China's cap-and-trade system, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, October 6, 2015, 4–5.

- *Environmental targets within CCP and Chinese government promotion structure:* In May 2015, the Chinese government attempted to strengthen the importance of its environmental targets in the evaluation and promotion process for local government officials, who were previously judged almost entirely on their ability to generate economic growth.²²¹ In August 2015, the State Council and the CCP Central Committee tightened accountability for CCP and government officials, restricting promotion based on achieving environmental targets and enacting retrospective punishment for environment harm. But Wang Yi, director of the Institute of Policy Management at the Chinese Academy of Science, cautioned that data collection and verification of environmental harm remains limited.²²²
- *Public interest lawsuits:* In October 2014, Taizhou City Environmental Protection Association* sued local factories for contaminating waterways, leading to a \$25.6 million (RMB 160 million) settlement, the largest environmental fine ever awarded in China.²²³ In May 2015, China's Supreme People's Procuratorate announced it would expand such public interest lawsuits into a two-year pilot program.²²⁴ While these steps create new opportunities, Scott Wilson, professor at The University of the South, found that state-backed nongovernmental organizations are crowding out grassroots participation and reasserting government control at the expense of public accountability.²²⁵ Elizabeth Economy, senior fellow and director of Asia Studies at the Council on Foreign Relations, also cautioned that President Xi's clampdown on civil society organizations and the Internet along with its proposed Overseas NGO Management Law † could significantly limit the ability of these organizations to push forward reform.²²⁶
- *Support for the development of the clean technology industry:* The International Energy Agency estimated China spent more than \$80 billion in new renewables-generating capacity in 2014—more than the United States and European Union combined.²²⁷ The Made in China 2025 action plan reaffirmed strong support for clean technology and green manufacturing through an increase in R&D spending, creation of thousands of green demonstration factories, reinforcement of energy intensity targets, and designation of clean energy vehicles as a key sector.²²⁸

* Taizhou City Environmental Protection Association is a local government-backed civil society organization, officially known as a government-organized nongovernmental organization. Taizhou City Environmental Protection Association's chairman is the local head of Taizhou's environmental protection bureau. Such types of organizations allow the Chinese government to tacitly control civil society organizations and protect its interests while providing a venue for expressing public outrage and holding firms accountable. Edward Wong, "Fines Total \$26 Million for Polluters in China," *New York Times*, December 31, 2014; Scott Wilson, "Mixed Verdict on Chinese Environmental Public Interest Lawsuits," *Diplomat* (Tokyo), July 20, 2015; and Jennifer YJ Hsu and Reza Hasmath, "The Local Corporatist State and NGO Relations in China," *Journal of Contemporary China* 23:87 (2014): 516–534.

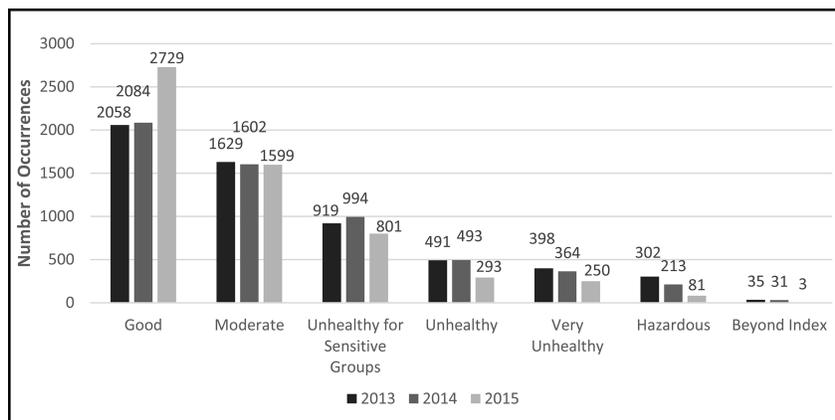
† This proposed law would further tighten restrictions on foreign nongovernmental organizations, such as foreign charities and international development organizations operating in China, and preclude Chinese nongovernmental organizations from accepting foreign funding. Stephen Noakes and Victoria Brownlee, "The Pacific Implementation of China's Proposed NGO Law," *Diplomat* (Tokyo), July 10, 2015.

Despite robust public spending and success in meeting most of its environmental targets, the Chinese government's efforts overall have fallen short in addressing the severity of existing environmental degradation.* Fundamental issues such as fragmented enforcement, conflicting legislation that can override the environmental protection law, lack of capacity, and competition between economic growth objectives and environmental protection interests remain largely unaddressed (see the text box, "Tianjin Chemical Explosion," for a recent example of these systemic challenges).²²⁹ Research by the environmental activist organization Greenpeace found that although China's strict pollution controls lowered particulate matter (PM2.5) † levels in the 189 cities analyzed in the study an average of 16 percent for the first half of 2015 compared with the same period last year, China's average annual PM2.5 level is five times the World Health Organization's recommended levels.²³⁰ A comparison of hourly PM2.5 levels from the U.S. Embassy in Beijing for the first eight months of the last three years similarly found improvements in the overall air quality in Beijing, though hazardous levels of air pollution still remain (see Figure 9).²³¹ Zhai Qing, China's Deputy Minister of Environmental Protection, noted the gravity of the pollution problem, stating, "Emissions will have to fall another 30–50 percent below current levels if we are to see noticeable changes in environmental quality."²³²

*China is on track to meet its 12th FYP targets to include meeting its 16 percent reduction in energy intensity, 17 percent reduction in carbon intensity from 2010, 11.4 percent composition of non-fossil fuel in primary energy, and 21.7 percent forest coverage. China has been able to meet these targets through a command-control approach of shutting down inefficient and polluting factories, but this approach is becoming less effective as the most egregious violators have already been shuttered and Chinese households become a larger share of energy consumption. For additional analysis of China's energy and environmental policy implementation under the 12th FYP, see Ranping Song et al., "Assessing Implementation of China's Climate Policies in the 12th 5-Year Period," *World Resources Institute, Working Paper*, September 2015; Damien Ma, "Rebalancing China's Energy Strategy," *Paulson Papers on Energy and Environment* (Paulson Institute), January 2015, 10, 19–20.

†PM2.5 is made up of metal, organic chemical, acid, soil or dust, and allergen particulates measuring 2.5 micrometers or smaller in diameter. Excessive exposure to PM2.5 aggravates existing heart and lung disease and is linked to higher incidences of heart attacks, asthma attacks, and bronchitis. U.S. Environmental Protection Agency, *Basic Information*. www3.epa.gov/pm/designations/basicinfo.htm.

Figure 9: Hourly PM2.5 Data Finds Improvement in Beijing's Air Pollution Levels, January–August 2013–2015



Note: The data are hourly and cover January 1–August 31 of each year. The classification of these data is based on the U.S. Environmental Protection Agency's *Guideline for Reporting of Daily Air Quality-Air Quality Index*.

Source: U.S. Department of State, U.S. Embassy in Beijing, *Historical Data*.

Tianjin Chemical Explosion

In August 2015, massive chemical explosions in Tianjin killed more than 100 people, injured nearly 700 people, and destroyed more than 17,000 homes.²³³ Excessive levels of cyanide—up to 277 times normal levels, according to the Tianjin Environment Protection Bureau—have contaminated the area and placed the city's groundwater and the Bohai Sea at risk.²³⁴ Already, reports of thousands of dead fish washing up on shore near the blast site have heightened public concern.²³⁵ The volume and types of chemicals released and the scale of the damage represent both a major manmade industrial and environmental disaster and a significant test for the Xi Administration's handling of political malfeasance and public outcry.

Investigations by the Chinese government into the explosion have unveiled that the company responsible, Rui Hai International Logistics, leveraged its political connections to improperly obtain licenses and skirt existing safety regulations.²³⁶ Zhang Ming, a political scientist at Renmin University, said, "It was a man-made disaster that could have been prevented, and it has exposed a range of systemic problems, from the lack of regulation for handling hazardous chemicals to the collusion of business and corrupt officials."²³⁷ The Supreme People's Procuratorate is investigating ten officials and port executives for their involvement and dereliction of duty.²³⁸

Tianjin Chemical Explosion—*Continued*

This explosion is an example of the depth of corruption and pervasive safety violations that remain in China today.²³⁹ Each year more than 68,000 people die in industrial accidents, according to official statistics.²⁴⁰ Inspections conducted at 124 sites that handle toxic chemicals in Beijing shortly after the explosion found 70 percent contained “hazards,” highlighting the depth and pervasiveness of safety violations.²⁴¹

Given strong public outcry and the seriousness of environmental degradation, demand for environmental technologies is likely to grow, creating a potential new market for U.S. environmental services companies. From 2004 to 2014, sectors related to energy efficiency, emissions reduction and monitoring, and environmental remediation experienced 20 percent annual growth, and the Chinese government’s recent efforts and increases in spending will only accelerate this growth.²⁴² A 2015 Goldman Sachs report forecasts enormous opportunities for domestic and foreign firms in soil remediation, solid and hazardous waste management, wastewater treatment, clean energy, and pollution monitoring equipment.²⁴³ For example, the report predicts China’s spending on soil remediation will reach \$109.6 billion (RMB 685 billion) from 2016 to 2020 (a 585 percent increase over current levels) and wastewater treatment will total \$304 billion (RMB 1.9 trillion) over the next five years, creating significant new market opportunities.²⁴⁴ These investments could also benefit the United States, where pollutants from China are eroding emissions reductions on the West Coast.²⁴⁵

Implications for the United States

China’s status as the world’s most populous nation, second-largest economy, top trading nation, and largest manufacturer means its economic reform agenda, even if partially implemented, will redefine the global competitive landscape. China’s focus on services and technology may create one of the world’s largest consumer markets, which could generate enormous benefits for the United States. If high market access barriers to U.S. investors and preferential government policies for domestic companies continue, they will prevent U.S. firms from competing on a level playing field. As an example, U.S. technology firms such as Google and Facebook are shut out of China’s domestic market while facing growing competition from Chinese state-supported firms such as Baidu and Renren in global markets.²⁴⁶ In addition, the government has been reluctant to relinquish control of key sectors of the economy and has rolled back reforms in politically sensitive areas, which bodes ill for the progress of the reform agenda and could prevent U.S. companies from participating.

With consumer spending expected to increase approximately \$10.9 trillion in the next decade, China’s service sector could create up to \$6 trillion of new market opportunities for U.S. firms, according to one estimate.²⁴⁷ Service sectors such as film, express delivery, environmental technologies, and IT are experiencing double-

digit growth in China.²⁴⁸ China is already the world's largest express delivery market in terms of workload and the largest e-commerce market* with over 600 million users; it is also the world's second-largest market for film.²⁴⁹ Access to China's market could benefit the U.S. service sector—which in 2014 comprised 80 percent of the U.S. economy, employed 80 percent of the U.S. workforce, and accounted for 30 percent of U.S. exports.²⁵⁰ Dr. Roach argued in his testimony before the Commission that China's service sector is a huge opportunity for the United States, “provided we can bargain effectively for market access.”²⁵¹ In spite of limited market access in many industries, U.S. service exports to China have grown in the last five years from \$17.1 billion in 2009 to \$42.5 billion in 2014.²⁵² In the first half of 2015, U.S. service exports to China grew 9.4 percent over the same period last year to reach \$22.3 billion.²⁵³

But strict market entry criteria, opaque regulations, China-specific technical standards, and state-set pricing are increasing costs for U.S. companies to compete in the Chinese market. The Office of the U.S. Trade Representative identified market access challenges for U.S. banking, film, express delivery, and several other service sectors.²⁵⁴ U.S. financial firms continue to face quotas, approvals, and ceilings that restrain their growth in China's capital markets. As a result, foreign firms accounted for less than 2 percent of China's nearly \$6 trillion (RMB 36.8 trillion) debt market in April 2015, and less than 5 percent of China's \$8.2 trillion stock market as of August 2015.²⁵⁵ U.S. multinationals FedEx Corporation and United Parcel Service (UPS) lost access to China's express package delivery market in 2009 following a revision to China's Postal Law, and did not regain it until August 2014.† Furthermore, U.S. IT and communications firms encounter onerous cyber regulations and standards as well as extensive censorship of Internet content and social media that limit U.S. digital service exports (see Chapter 1, Section 4, “Commercial Cyber Espionage and Barriers to Digital Trade in China,” for analysis of China's barriers to digital trade). Such restrictions cap U.S. export growth, to the detriment of U.S. businesses and workers.

The U.S. government has challenged China's market restrictions at the WTO with mixed success. For example, in June 2015—after a favorable 2012 WTO ruling—foreign payment processors such as Visa and MasterCard earned the right to compete against China's state-owned Union Pay. This ruling promised to open a market that last year reached \$6.8 trillion (RMB 42 trillion) in retail sales.²⁵⁶ However, after implementing changes to comply with the WTO ruling, the PBOC instituted a China-specific technical standard different from the international payments standard, forcing MasterCard and Visa to redesign their credit cards, and yet again delaying their entry into the market.²⁵⁷ In July 2015, the U.S. government again raised the issue to the WTO Dispute Settlement Body.²⁵⁸

* For more information on China's e-commerce industry, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, July 7, 2015, 5–10.

† For more information on China's express delivery services sector, see U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, September 4, 2014, 8–10.

The Chinese government is leveraging market access to force U.S. businesses to transfer technology and know-how to Chinese competitors in order to replace foreign businesses with domestic firms.²⁵⁹ In its 2014 Report to Congress, the Office of the U.S. Trade Representative reported “longstanding concerns” about China’s technology transfer policies that have been largely “unaddressed.”²⁶⁰ For example, in September 2014, the CBRC issued requirements for foreign IT and communication firms to turn over proprietary software codes and encryption keys for market access.²⁶¹ In April 2015, the CBRC temporarily suspended the rules, but as James Zimmerman, chairman of the American Chamber of Commerce in China, cautioned, “These [rules] were suspended but that doesn’t mean it’s over yet.”²⁶² Four months later, the CBRC revived these regulations, highlighting the continued pressure China is placing on U.S. firms.²⁶³

Subsidies and other forms of government support create unfair competitive advantages for Chinese firms at the expense of their foreign competitors. Under the 12th FYP, extensive subsidies for solar and wind manufacturers enabled Chinese firms to dump their products in the global market. In response, U.S. competitors petitioned the U.S. Department of Commerce to impose tariffs beginning in 2012, and even higher tariffs in 2015.²⁶⁴ State-supported national champions, such as Huawei and China Railway Construction Company, have also benefited from preferential loans to successfully dislodge established industry leaders and take over the global market.²⁶⁵

Proposed reforms to SOEs incorporate market drivers while reaffirming CCP control. The recent SOE consolidations attempt to build national brands to compete with established international competitors.²⁶⁶ For example, the recent merger between China Huafu Trade and Development Group and China National Cereals, Oils and Foodstuffs seeks to challenge established U.S. multinationals Archer Daniels Midland, Bunge Limited, and Cargill.²⁶⁷ The proposed merger of China’s oil SOEs would create the Chinese equivalent of U.S. multinational ExxonMobil in terms of size; similarly, the proposed deal between the Aluminum Corporation of China and China Power Investment Corporation would make it the world’s largest aluminum producer by capacity.²⁶⁸ In addition to strengthening the state’s control, these mergers by themselves do not solve the existing overcapacity and inefficiency issues. Excess production has artificially lowered global prices below production costs and severely limited profitability in many key U.S. industries.²⁶⁹ Alcoa, the largest U.S. aluminum producer, expects China will add more than 80 percent of new global capacity in 2015, in spite of falling global prices.²⁷⁰ China’s strong support for its steel industry is contributing to layoffs, factory closures, and financial losses in the U.S. steel industry.²⁷¹ In response, the U.S. Department of Commerce’s International Trade Commission has pursued several antidumping investigations against China.²⁷²

Finally, the recently announced Made in China 2025 and Internet Plus initiatives target sectors in which the United States currently enjoys technological advantages, such as e-commerce and biotechnology. Both plans reinforce preferential support for domestic firms, effectively shutting U.S. firms out of the market. While

Chinese social media firms Baidu, RenRen, and Weibo enjoy unfettered access to the world's largest Internet market, U.S. firms such as Google, Facebook, and Twitter remain blocked. Boosted by strong government support, Chinese firms will seek to challenge U.S. firms in industries such as biotechnology, clean energy, e-commerce, railway, and robotics, both in China and abroad.

Conclusions

- President Xi Jinping and Premier Li Keqiang announced an ambitious reform agenda at the Third Plenary Session of the Chinese Communist Party's (CCP) 18th Central Committee (the Third Plenum) in November 2013 to transition China's economy toward consumption-led growth and allow the market to play a "decisive role." However, these reforms still reserve a dominant role for the Chinese government in the economy. As the economy slows and markets have shown volatility, the Chinese government is once again stalling or rolling back reforms while resuscitating old levers of economic growth—fixed asset investments and export-led growth—in order to boost economic growth and maintain employment.
- The Chinese government is calling for greater CCP leadership within state-owned enterprises, while simultaneously subjecting them to market forces such as competition, mixed ownership, and consolidation. These policies merely reinforce state-owned enterprises' special status and do little to level the playing field for private sector and foreign competitors.
- China's efforts to upgrade its industries and enhance innovation are largely state driven and target sectors in which the United States currently enjoys technological advantage. Recent policies clearly favor domestic Chinese firms, placing pressures on U.S. firms to transfer technology and shift production to China, to the detriment of U.S. businesses and workers.
- China's growing level of consumption, increasing rate of urbanization, opening of the service sector, and massive spending on the environment and clean technology are creating one of the world's largest markets. However, strict market entry criteria, opaque regulations, China-specific technical standards, state-set pricing, and preferential support for domestic firms are increasing the costs to compete in this market.
- While fiscal reforms have made progress in providing new sources of local government revenue such as bonds and new forms of taxes, the Chinese government abandoned its attempt to rein in local government debt after sluggish first and second quarter data in 2015. Instead, the Chinese government restarted local government lending and required financial institutions to continue supporting insolvent infrastructure projects. Central intervention to prop up the debt-for-bonds swap for local governments ensured the costs of local governments' borrowing were negligible.
- China's financial sector reforms have made the most headway with progress in the liberalization of interest rates, opening of

the banking sector, and loosening of capital controls. However, Chinese policymakers are uncomfortable with the market volatility these reforms create. This year, the Chinese government reaffirmed its role in managing capital accounts and reasserted state control over the stock market after it faced volatility beginning in June 2015.

- Public alarm over environmental degradation within China continues to rise. Robust public spending has contributed to enormous demand for technologies focused on energy efficiency, emissions reduction and monitoring, and environmental remediation, creating potential opportunities for U.S. environmental technology firms. China's environmental reforms could also benefit the U.S. environment through reduced emissions and pollution.
- China has achieved its enormous economic growth through investment and export-led policies that now must be coupled with greater domestic consumption to ensure a more balanced economy. CCP leaders could persevere in structural reforms, which—assuming the short-term dislocation is not too destabilizing—could confirm China as one of the world's great markets. If, however, the CCP draws back from such reforms as it has in the past, there is a possibility China could enter a period of low or stagnant growth, which affects its potential as a market and a producer. In either case, economic pressure on CCP leaders could lead to greater discrimination against foreign firms and investors or an enhancement of other practices, like technology theft, which will make China less attractive as a market for investment.

ENDNOTES FOR SECTION 3

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SECTION 4: COMMERCIAL CYBER ESPIONAGE AND BARRIERS TO DIGITAL TRADE IN CHINA

Introduction

China causes increasing harm to the U.S. economy and security through two deliberate policies targeting the United States: coordinated, government-backed theft of information from a variety of U.S.-based commercial enterprises and widespread restrictions on content, standards, and commercial opportunities for U.S. businesses. This section examines how hackers working for the Chinese government—or with the government’s support and encouragement—have infiltrated the computer networks of U.S. agencies, contractors, and companies, and stolen their trade secrets, including patented material, manufacturing processes, and other proprietary information. The Chinese government has provided that purloined information to Chinese companies, including state-owned enterprises (SOEs).

The Chinese government also imposes heavy-handed censorship on Internet content and social media, which has driven from the Chinese market those U.S. companies unwilling to follow the authoritarian dictates of the government.* The Chinese government has also begun to censor material originating outside its borders by directing distributed denial of service (DDoS) attacks against U.S.-based information providers. In addition, Beijing has implemented discriminatory regulations and standards in China to limit the commercial opportunities for U.S. companies seeking to conduct legitimate business there.

The United States is ill prepared to defend itself from cyber espionage when its adversary is determined, centrally coordinated, and technically sophisticated, as is the Chinese Communist Party (CCP) and government. The design of the Internet—developed in the United States to facilitate open communication between academia and government, and eventually expanded to include commercial opportunities—leaves it particularly vulnerable to spies and thieves. As the largest and most web-dependent economy in the world, the United States is also the largest target for cyber espionage of commercial intellectual property (IP). “Well-resourced, advanced cyber threats that use sophisticated tactics, techniques and procedures are able to bypass [U.S.] conventional security deployments almost at-will,” according to Jen Weedon, manager of threat intelligence at FireEye, Inc., a cybersecurity firm. “American

* The France-based watchdog group Reporters Without Borders ranked China 175 out of 180 countries in its 2014 worldwide *Index of Press Freedom*. Among the U.S.-based companies excluded or heavily censored by China are Google, Facebook, Twitter, and Instagram. For more on Chinese censorship, see Beina Xu, “Media Censorship in China,” *Council on Foreign Relations*, April 7, 2015.

companies are being forced to fight a battle against adversaries possessing nation-state capabilities, which is not a fair fight.”¹

These activities by China’s government were the subject of the Commission’s June 15 *Hearing on Commercial Cyber Espionage and Barriers to Digital Trade in China*, held shortly after the Office of Personnel Management (OPM) revealed that its computer network experienced an intrusion apparently originating in China. This network breach resulted in the theft of personal information on more than 22 million federal employees, retirees, contractors, applicants for government jobs, and their contacts and families.* Some of the stolen files included SF–86 application forms, which contain detailed personal information of federal workers and contractors applying for security clearances.²

Cyber Espionage for Commercial and Strategic Advantage ***The Cost and Extent of Chinese Cyber Espionage***

The incidence of sophisticated cyber intrusions into U.S. government and private computer networks—particularly those involving “zero-day attacks”† and the exfiltration of large amounts of commercial data and personally identifiable information‡—is on the increase. Cyber espionage for the purpose of commercial gains “presents one of the most significant economic and national security challenges facing the United States,” according to Paul Tiao, a former Federal Bureau of Investigation (FBI) official who now is an attorney in private practice at Hunton & Williams in Washington, DC, and who testified before the Commission.³ The economic cost of cyber crime and espionage is estimated at \$375 billion to \$575 billion annually worldwide, or between 15 percent and 20 percent of the value created by the Internet, according to a 2014 study by Intel Corporation’s McAfee cybersecurity branch and the Center for Strategic and International Studies.⁴ The study estimates that cyber attacks against targets in the United States could result in a permanent reduction of as many as 200,000 U.S. jobs due to lost business income and expenses to repair the damage. The cost of defending against such attacks is also increasing. The global market for cybersecurity products and services is estimated to be \$77 billion in 2015—about the size of all the Federal Government’s public information technology (IT) spending budget—with spending growing twice as fast as general spending on IT.⁵

The cost of individual cyber intrusions, which includes detection, repair, and remediation, has also been on the rise. A 2014 survey

* For more information on China’s cyber espionage and related activities, see U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, and *2013 Annual Report to Congress*, November 2013.

† Zero-day attacks employ hacking techniques and malware tailored to a specific target rather than generic products available online, which can be detected through the use of commercially available cybersecurity software.

‡ Personally identifiable information can include name, Social Security number, passport number, driver’s license number, taxpayer identification number, financial account or credit card number, banking information, address, date of birth, place of birth, religion, race, weight, activities, employment and medical information, education, fingerprints, retinal scan, voice signature, facial geometry, photographic image, and travel records. Erika McCallister, Tim Grance, and Karen Scarfone, *Guide to Protecting the Confidentiality of Personally Identifiable Information: Recommendations of the National Institute of Standards and Technology* (Special Publication 800–122), National Institute of Standards and Technology, U.S. Department of Commerce, April 2010.

of 59 large U.S. companies by the Ponemon Institute and Hewlett-Packard found the average annual cost of responding to commercial cyber attacks was \$12.7 million, up 96 percent from the previous five years.⁶ During this period, the number of attacks against the 59 firms was up 176 percent, with an average of 138 successful attacks each week. The average time taken to detect an attack was 170 days, with an average of 45 days spent resolving the damage. The costs included detection, data recovery, loss of information, and business disruption.⁷

The cost of a network breach can impact a company in a variety of ways, according to Mr. Tiao. They include:

- Loss of IP to a potential competitor that may be able to use it to develop and sell a competing product or to reduce research and development costs;
- Reduced incentives for technological innovation by targeted companies;
- Loss of confidential business-sensitive information that may, for example, be used by a company to underbid the victim for a lucrative contract or to undermine the victim's strategy in business negotiations;
- Opportunity costs in the form of service and employment disruptions, lost sales and revenues, and reduced trust and use of online commercial activities;
- Costs of securing networks, cyber insurance, and recovery from cyber attacks;
- Legal fees associated with breach-related litigation and government enforcement actions; and
- Reduced stock prices and reputational harm suffered by victim companies.⁸

Even companies that have not been victimized have substantial costs to subtract from their bottom lines, according to Mr. Tiao:

Prior to an incident taking place, large companies devote extensive financial, staff, and consultant resources to keeping information security policies up to date, implementing technical network security programs, developing and exercising breach response plans, participating in public-private and private-private cybersecurity information sharing arrangements, negotiating the information security terms of third-party vendor agreements, ensuring that those vendors maintain adequate information security, and purchasing cyber security insurance, and training employees.⁹

Since at least 2009, China has directed “the single largest, most intensive foreign intelligence gathering effort since the Cold War,” according to cybersecurity firm Medius Research.¹⁰ The increased success rate for intrusions against U.S. companies is often attributed to the presence of government-run or government-sponsored

teams of hackers—with China the primary culprit. The U.S. government is equating the struggle in cyberspace to a war directed against the U.S. economy, U.S. aerospace and weapons contractors, and the energy grid, among other public targets. Former Director of National Intelligence Mike McConnell warned in 2015 that “the United States is fighting a cyber war and we are losing.”¹¹ At the Commission’s June 15 hearing, witness Dennis F. Poindexter, a 30-year veteran of the U.S. Intelligence Community, noted that if, during the Cold War, “we had done nuclear deterrence the way we do cyber deterrence [against China], we’d all be speaking Russian now.”¹²

Concern over the cyber theft of personally identifiable information and trade secrets has grown as massive intrusions into U.S. corporate and government computer networks have come to light. By most authoritative accounts, the largest benefactor of that transfer is China, whose government has adopted a strategy of exfiltrating large amounts of data from U.S. networks and sharing that information with Chinese competitors. “Out of the dozens of advanced cyber threat groups that we track, by far the most prevalent and focused are those that are engaging in commercial cyber espionage,” testified Ms. Weedon during the Commission’s June 15 hearing. According to Ms. Weedon, Chinese government hacker groups “continue to engage in widespread commercial data theft at staggering rates.”¹³

In 2012, then director of the National Security Agency (NSA) General Keith Alexander said in a speech to a Colorado audience that cyber espionage represented “the biggest transfer of wealth in history.”¹⁴ In testimony before the Senate Armed Services Committee, Director of National Intelligence General James R. Clapper warned in February that, “[c]yber threats to U.S. national and economic security are increasing in frequency, scale, sophistication and severity of impact; [and] the ranges of cyber threat actors, methods of attack, targeted systems and victims are also expanding.”¹⁵ On April 1, 2015, President Barack Obama noted that “the increasing prevalence and severity of malicious cyber-enabled activities constitute an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States.”¹⁶ The President followed with a “declaration of a national emergency to deal with this threat.”¹⁷

Mr. Poindexter describes the U.S. relationship with China as an escalating, multifaceted economic and “information war”:

*The Chinese use their intelligence services and military to collect information from the competition and feed that back into their companies. From a policy view, they steal information as a part of their national strategy to win an economic war. Their military owns some companies and what they don’t own, the Central Committee controls. They win bids; they control their own commodity prices; they harass the competition as they did with Walmart and Rio Tinto. They steal intellectual property, which they then use to compete with the companies they steal it from. They leverage their surplus for political benefit and manipulate their currency valuation.*¹⁸

Not all China-based groups are the same, though, as Ms. Weedon noted:

They have different government sponsors, different targets, and varying degrees of state sponsorship or support. Some threat actors and groups that we track appear to be contractors. Certain individuals may moonlight on the side and operate for financial gain. In spite of these differences, though, the vast majority of China-based APT [Advanced Persistent Threat] groups that we track are engaged in massive theft of IP from global corporations, particularly those involved in what the Chinese government views as areas of strategic importance.¹⁹*

Ms. Weedon told the Commission that China’s strategic emerging industries—high-tech sectors singled out by the Chinese government for development and special support in the 12th Five-Year Plan—act as “an almost to-do list” for China-based hackers.²⁰ During its work on behalf of Western and Japanese clients, FireEye identified 22 “separate groups of actors stealing information” from the strategic emerging industries. Table 1 correlates the strategic emerging industries with the number of known China-based hacking groups engaging in cyber theft of information in that industry, based on figures compiled by FireEye. (This list likely understates the extent of Chinese cyber spying on behalf of strategic emerging industries in China.)

Table 1: China’s Strategic Emerging Industries

Strategic Emerging Industry	Number of China-Based APT Groups Targeting This Strategic Emerging Industry
Clean Energy Technology	3
Next-Generation IT	19
Biotechnology	6
High-End Equipment Manufacturing	22
Alternative Energy	7
New Materials	12
New Energy Vehicles	6

Source: U.S.-China Economic and Security Review Commission, *Hearing on Commercial Cyber Espionage and Barriers to Digital Trade in China*, testimony of Jen Weedon, June 15, 2015.

Other sectors targeted for infiltration by the Chinese government include electronics, telecommunications, robotics, data services, pharmaceuticals, mobile phone services, satellite communications and imagery, and business application software.²¹

*APT stands for Advanced Persistent Threat, a designation that indicates the hackers are using sophisticated techniques over a long period to extract large amounts of information. Mandiant, “APT1: Exposing One of China’s Cyber Espionage Units,” February 2013.

The U.S. government has recognized and documented the threat posed by cyber espionage and has singled out China as the cause. A 2009 study for the Commission by Northrup Grumman warned that Chinese hacking of U.S. networks “now comprises the single greatest threat to U.S. technology and has the potential to erode the United States’ long-term position as a world leader in [science and technology], innovation, and competitiveness.”²² A 2011 report from the Office of the National Counterintelligence Executive acknowledged that “Chinese actors are the world’s most active and persistent perpetrators of economic espionage.”²³ FBI Director James B. Comey said that Chinese hackers are “at the top of the list” of international cyber spies: “They are extremely aggressive and widespread in their efforts to break into American systems to steal information that would benefit their industry. There are two kinds of big companies in the United States; there are those who’ve been hacked by the Chinese and those who don’t know they’ve been hacked by the Chinese.”²⁴

Attributing Cyber Attacks to China

China routinely denies any official involvement in cyber espionage against U.S. government or U.S. corporate networks. Chinese authorities maintain that such accusations are “baseless,” and “irresponsible, and unscientific,” and choose instead to accuse the United States itself of cyber espionage.²⁵ China’s official news agency, Xinhua, said that “while [the United States] has rarely made [a] direct response to widespread concerns over appalling revelations of its cyber spying programs, some of its people, out of ulterior motives, habitually scapegoat and demonize China, repeatedly leveling groundless allegations and accusations against China.”²⁶

Attributing individual computer network intrusions can require intensive forensic investigation and is not always conclusive. Cyber attacks can be routed through servers in multiple countries in an attempt to disguise their origin. “Cyber operations are extra-territorial,” said Mr. Poindexter, “You can conduct operations from Russia that go through China and attack the United States. You can do the reverse. . . . Anybody can attack from anywhere because of virtualization of our computer systems.”²⁷ And there is no international convention or agreement on what constitutes attribution.²⁸ Consequently, says one expert, “many states currently prefer to respond to such attacks using only passive computer security measures, at least until there is more information available about the origin and the intent of the attack.”²⁹

Nevertheless, according to Mr. Tiao, the U.S. government and private cybersecurity companies “are so much further along in our ability to establish attribution and to identify individuals and entities that are responsible for this sort of hacking activity than we were five years ago or four years ago.”³⁰ Attribution can be accomplished when forensics experts find patterns in “tools, tactics and procedures” and link “intrusion sets” to hacker groups and even to individuals.³¹

U.S. companies that specialize in investigating cyber attacks and espionage trace many intrusions back to servers and hackers in China. In 2013, U.S. Internet security firm Mandiant said its hun-

dreds of investigations showed that groups hacking into U.S. newspapers, government agencies, and companies “are based primarily in China and the Chinese government is aware of them.”³²

The U.S. government and cyber counterintelligence firms have grown more comfortable revealing their attribution methodology. For example, when the *New York Times* hired Mandiant to determine who hacked into its newsroom computer system to steal such sensitive data as the identities of reporters’ confidential sources, the firm released a detailed report along with the methodology it used to trace the network intrusion back to the Chinese government.³³ In February 2013, Mandiant released a report tracing a major set of intrusions to a particular Chinese military intelligence unit housed in a 12-story building in Shanghai. Mandiant also published details of more than 3,000 domain names, Internet protocol addresses, encryption certificates, and malware programs of one digital spy network run by the People’s Liberation Army (PLA), “Unit 61398,” which Mandiant named “APT1.” The unit “has systematically stolen hundreds of terabytes of data from at least 141 companies spanning 20 major industries,” the Mandiant report said.³⁴ According to the firm, “Once APT1 has established access, they periodically revisit the victim’s network over several months or years and steal broad categories of IP, including technology blueprints, proprietary manufacturing processes, test results, business plans, pricing documents, partnership agreements, and emails and contact lists from victim organizers’ leadership.”³⁵

Recent Cyber Intrusions Originating in China

The improved ability of the U.S. government and cybersecurity firms to attribute cyber attacks paints a damning picture of China as an active perpetrator of cyber espionage. Table 2 summarizes select recent attacks.

Table 2: Recent Examples of Cyber Intrusions Originating in China

Recent Cyber Intrusions from China	Date Identified	Target	Source of Attack
PLA Espionage	May 2014	Six U.S. entities involved in nuclear power, metals, and solar power.	Five PLA officers indicted in May 2014
USPS Espionage	November 2014	Personal data of 800,000 employees of the U.S. Postal Service, including Social Security numbers and addresses.	China
Anthem Hack	February 2015	Social Security numbers and health information of 80 million Anthem users.	“Deep Panda” (according to CrowdStrike’s analysis)
The Great Cannon Attack	April 2015	Chinese cyber weapon executed DDoS attacks against U.S. websites GitHub and GreatFire.	Chinese government (according to University of Toronto’s Citizen Lab)

**Table 2: Recent Examples of Cyber Intrusions Originating in China—
Continued**

Recent Cyber Intrusions from China	Date Identified	Target	Source of Attack
Mysterious Eagle Attack	April 2015	Journalists, dissidents, economic data, and military organizations that have a relation to China.	Chinese government (according to FireEye report)
OPM Hack	April 2015	Millions of sensitive and classified documents, as well as personally identifiable information of more than 22 million Americans.	China is officially the “leading suspect”
Engineering Universities Hacks	May 2015	Penn State University’s engineering school, along with the school’s 500 research partners. Other U.S. engineering schools hacked include Johns Hopkins University, Carnegie Mellon University, the University of California-Berkeley, and the Massachusetts Institute of Technology.	Chinese hackers (according to FireEye’s analysis)
United Airlines Hack	July 2015	Personal and flight information of United Airlines passengers.	Same group as the OPM hack

Source: News reports and official U.S. documents; compiled by Commission staff.

PLA Hackers

A federal grand jury in May 2014 indicted five Chinese PLA officers for hacking and economic espionage directed at six U.S. entities involved in nuclear power, metals, and solar power.³⁶ According to the indictments, the five PLA officers belong to Unit 61398, the same network identified by Mandiant in 2013.³⁷ The May 2014 indictment was unusual for several reasons: it was a rare indictment brought under the economic espionage statute of a foreign state actor; it specifically identified individuals who are government employees, including their names, office addresses, and even their photographs and nicknames; and it identified the victims and described the attackers’ methodologies. All five Chinese PLA officers are charged with 31 counts of computer fraud, identify theft, computer hacking, and trade secret theft. The espionage charge carries a penalty of up to 15 years in prison. The victims include Westinghouse Electric Company, U.S. subsidiaries of SolarWorld, United States Steel Corp., Allegheny Technologies, Inc., Alcoa, Inc., and the United Steelworkers Union.

At the time of the hack, Westinghouse was negotiating terms for construction of a nuclear power plant with a Chinese SOE. Allegheny was in a joint venture with a Chinese SOE while pursuing a trade complaint against the company, and Alcoa was also in a partnership with an SOE. The *Financial Times* reported in October 2015 that according to U.S. authorities three large Chinese SOEs—steelmaker Baosteel, aluminum manufacturer Chinalco, and SNPTC, a nuclear power company—gained an advantage over their U.S. competitors as a result of the PLA’s cyber espionage.³⁸

The U.S. Department of Justice promised more attempts at prosecutions and noted that, “state actors engaged in cyber espionage for economic advantage are not immune from the law just because they hack under the shadow of their country’s flag.”³⁹ The indictments will have a limited effect on the accused since China likely will not extradite the five for a trial in the United States.* However, by releasing details of the alleged crimes involving Chinese government employees, the Administration sought to highlight the role of the Chinese government in a practice that Beijing has repeatedly refused to acknowledge. In retaliation for the indictment, the Chinese government suspended bilateral talks with the United States on cyber spying. The diplomatic loss to the United States was minimal since the Chinese negotiators were unlikely to make concessions on a practice they insisted did not exist.

Chinese Hackers Breach U.S. Postal Service Network

Chinese government hackers are suspected of an intrusion into the U.S. Postal Service’s (USPS) personnel database.⁴⁰ The breach was detected in September 2014. The loss included the names, Social Security numbers, addresses, dates of birth, dates of employment, emergency contacts, and other information of all 800,000 of the Postal Services’ employees, from letter carriers to the postmaster general. Data on customers who contacted the Postal Service Customer Care Service by phone or e-mail were also obtained by the hackers. Randy Miskanic, the head of the USPS digital security testified before a House committee that the hack was “very sophisticated.”⁴¹ The revelation coincided with the visit of President Obama to Beijing for talks with CCP General Secretary and President Xi Jinping, which included a discussion about China’s cyber spying. At the time, former NSA general counsel Steward A. Baker noted that while most countries are cautious about getting caught cyber spying, “It’s only the Chinese that think there are no consequences to getting caught.”⁴² The hack is being investigated by the FBI, but no details have been released and no charges have been filed.

The Great Cannon

A months-long attack in early 2015 against two U.S.-based websites, GreatFire.org and GitHub †—which provide methods to allow Chinese citizens to circumvent government-imposed, network-level censorship—was attributed in May to the Chinese government by the University of Toronto’s Citizen Lab.⁴³ Nicknamed “the Great Cannon,” the Chinese cyber weapon provides the government the

*The *Washington Post*, quoting unnamed Administration officials, reported on October 9 that the Chinese government had “quietly arrested a handful of hackers at the urging of the U.S. government—an unprecedented step to defuse tensions with Washington at a time when the Obama Administration has threatened economic sanctions.” Those arrested were not named nor were their particular offenses revealed. According to the *Washington Post*, the action was taken by Chinese authorities in advance of President Xi’s visit to Washington in response to an Administration list of hackers “identified by U.S. officials as having stolen commercial secrets from U.S. firms to be sold or passed along to Chinese state-owned companies.” Ellen Nakashima and Adam Goldman, “In a First, Chinese Hackers are Arrested at the Behest of the U.S. Government,” *Washington Post*, October 9, 2015.

†GitHub is a U.S. website for developers that hosts content forbidden in China and GreatFire.org, is an organization that monitors Internet censorship in China.

means to harness Internet traffic and redirect it to flood websites it considers dangerous, even those overseas. If the attack is successful, the offending websites are overloaded and cease functioning due to the DDoS attack. Before fielding the Great Cannon, the Chinese government simply attempted to filter out content from foreign and domestic media, or tried to block the websites entirely. That technique did not always work, particularly if Chinese citizens were using a virtual private network to access forbidden websites. Instead of blocking traffic entering China, the Great Cannon can be used to sabotage a website hosting material forbidden by Chinese censors, or to “aggressively go after sites outside China’s borders deemed objectionable by Beijing.”⁴⁴ The new Chinese cyber weapon was used to seize foreign web traffic headed to China’s most popular search engine, Baidu, and redirect it to flood GitHub and GreatFire.org.⁴⁵

Mysterious Eagle Preys on U.S. Businesses for a Decade

In mid-April 2015, the U.S. computer security firm FireEye identified a hacking group apparently backed by the Chinese government that has been stealing information for a decade about “journalists, dissidents, and political developments in relation to China, targeting government and military organizations and targeting economic sectors of interest to China’s economy.”⁴⁶ The group has been using malware that has been able to cross the “air gap”^{*} and infect standalone computer networks not connected to the Internet. The malware’s name, translated from Chinese, is “Mysterious Eagle.”⁴⁷ FireEye called this hacker group “APT30,” one of 20 such groups probably controlled by the Chinese government. “Such a sustained, planned development effort coupled with the group’s regional targets and mission, leads us to believe that this activity is state sponsored, most likely by the Chinese government,” the FireEye report said. APT30 also targeted at least 15 companies in communications, news media, technology, finance, and aviation.⁴⁸ The Chinese hackers gained access to these companies through spear phishing attacks: e-mails that appear legitimate from senders known to the recipient, but which contain malware inserted by the hackers. In the Mysterious Eagle case, network administrators were tricked into downloading malware on their home computers; when the network administrators transferred data from their home computers via thumb drives to the company network, they inadvertently introduced the malware from their home machines to the network.⁴⁹

OPM Hack Affects More Than 22 Million Americans

On April 4, OPM revealed the first details of what turned out to be one of the largest data breaches of any U.S. network—an attack in which hackers gained access to the personally identifiable information of more than 22 million people, as well as millions of sensitive and classified documents.⁵⁰ Though the U.S. government has

^{*}Air gap refers to a computer network with no connection to the Internet through which a hacker might gain access. In some cases, access to the air-gapped network is gained through the use of thumb drives to infect a network through USB ports that may transfer the virus from an infected thumb drive to an air gapped computer.

not officially attributed the attack to China, it is the “leading suspect,” according to national intelligence director Clapper, who characterized the intrusions of the OPM computer network as government-to-government espionage.⁵¹ Given the scope and difficulty of detecting the intrusion, said the former general, “you have to kind of salute the Chinese for what they did.”⁵² Hackers will continue to try to steal information from the government and from U.S. companies “until such time as we can create both the substance and the psychology of deterrence,” he warned. Meanwhile, Director General Clapper said, because of an unresolved internal debate within the Administration on whether to retaliate, Washington must focus “a lot more attention to defense.”⁵³ In addition, he continued, “That’s frankly been a struggle for us, because of unintended consequences and other related policy issues.”

The information taken from the OPM computer network included lengthy forms, dating back to 2000, completed by federal employees and contractors as part of the process to obtain and maintain security clearances. The records include such personal identifiers as fingerprints, Social Security numbers, birthdates, and financial records, as well as such sensitive information as admissions of past drug abuse, arrests, and mental health treatment, foreign travel, interviews of colleagues and neighbors, and reports by security clearance investigators, and the names of relatives and foreign contacts for millions of current and former federal employees. “The impact on national security is staggering,” said Dmitri Alperovitch, founder of CrowdStrike Inc., a cybersecurity company in Arlington, Virginia.⁵⁴ Said FBI Director Comey: “It is a very big deal from a national security perspective and from a counterintelligence perspective. . . . It’s a treasure trove of information about everybody who has worked for, tried to work for, or works for the United States government.”⁵⁵ Among the “treasures” are 5.6 million fingerprints that could be used to identify undercover government agents or to fashion duplicates to biometric data to obtain access to classified areas.*⁵⁶

According to the *New York Times*, the inspector general at OPM had warned in November 2014 that computer security at the agency was inadequate: OPM had not inventoried the computer servers and devices with access to its networks, did not require anyone gaining access to information from the outside to use the kind of basic authentication techniques most Americans use for online banking, and did not regularly scan for vulnerabilities in the system.⁵⁷ The inspector general found that 11 of the 47 computer systems that were supposed to be certified as safe for use were not “operating with a valid authorization.”⁵⁸ Although OPM claims to have employed the most up-to-date intrusion detection software programs, including the Einstein 3 system and the Continuous Diagnostics and Mitigation program, those systems apparently failed. Even more important, none of OPM’s data were encrypted, and the malware detection system did not detect the intrusions for four months.⁵⁹

*The *Washington Post* reported that unnamed officials told the newspaper that the CIA “pulled a number of officers from the U.S. Embassy in Beijing as a precautionary measure in the wake” of the OPM breach. Ellen Nakashima and Adam Goldman, “CIA Pulled Officers from Beijing after Breach of Federal Personnel Records,” *Washington Post*, September 29, 2015.

Under current law, the Federal Information Security Modernization Act of 2014, federal agencies are responsible for their own security. No agency officially responsible for national cybersecurity, such as the Department of Homeland Security, is actually responsible for enforcing any standards on any other Federal Government agency.⁶⁰ Thus, no one is responsible for enforcing standards across the Federal Government.

Despite the numerous press accounts quoting named and unnamed Administration officials blaming China for the intrusion, including Director of National Intelligence Clapper and former NSA and Central Intelligence Agency Director Michael Hayden, the Administration has not officially attributed the action to China.*

Chinese Hackers Breach Major Engineering Universities

Hackers apparently based in China gained access to and stole information from Penn State University's engineering school for more than two years, the school disclosed on May 16 after a report by federal and private investigators.⁶¹ The data breach included information about the school's 500 research partners, including government agencies, companies, and other schools. Penn State specializes in aerospace engineering, and has a significant research partnership with the U.S. Department of Defense.⁶² The California-based network security company FireEye said forensic analysis showed that Chinese hackers were among at least one of two separate groups that stole data from the college, based on an examination of the malware and other tools used to breach the network. Other U.S. engineering schools targeted by Chinese hackers are Johns Hopkins University, Carnegie Mellon University, the University of California-Berkeley, and the Massachusetts Institute of Technology.⁶³

Chinese Hackers Breach United Airlines and Anthem for Customer Data

The group responsible for the OPM intrusion also exfiltrated data on passengers flying on United Airlines aircraft and on enrollees in California's largest health care insurer, Anthem Blue Cross Blue Shield, according to numerous news reports.⁶⁴ United, the world's second-largest airline, is often used by U.S. government employees, who are required to fly on U.S. carriers whenever possible. In the hack, United likely lost records that contained the names of passengers, their flights, destinations, passport numbers, and expiration dates, dates of birth, frequent flyer numbers, and home addresses. The data can be cross-referenced with other data taken from OPM to track the movement of federal workers, including those in the 17 different intelligence agencies whose workers are also required to fly on U.S.-flagged carriers. The Anthem breach exposed Social Security numbers and sensitive details about the health of 80 million customers, marking the attack as one of the biggest thefts of medical-related customer data in U.S. history.⁶⁵

*Director Hayden said the OPM data was "a legitimate foreign intelligence target" and that "this is not shame on China; this is shame on us for not protecting that kind of information. . . . This is a tremendously big deal. And my deepest emotion is embarrassment." *Wall Street Journal*, "Michael Hayden Says U.S. Is Easy Prey for Hackers," June 21, 2015.

Cybersecurity firm CrowdStrike has attributed the Anthem breach to a Chinese hacker group nicknamed “Deep Panda,” and has been following the group’s efforts, including a data theft from RSA, another cybersecurity firm.⁶⁶

Remedies and Retaliation for Cyber Attacks from China

Executive Order to Impose Sanctions

On April 1, 2015, President Obama issued an executive order following the attacks on the U.S. affiliate of Sony, Inc. by North Korea, China’s ally. The President declared a national emergency due to the “increasing prevalence and severity of malicious cyber-enabled activities” from abroad, constituting “an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States.”⁶⁷ Under the order, a wide variety of cyber activities could result in sanctions, including “malicious cyber-enabled activity” that leads to theft of or harm to

*critical infrastructure, misappropriating funds or economic resources, trade secrets, personal identifiers or financial information for commercial or competitive advantage or private financial gain; knowingly receiving or using trade secrets that were stolen by cyber enabled means for commercial or competitive advantage or private financial gain; disrupting the availability of computer or network of computers (for example through a DDoS attack) and attempting, assisting, or providing a material support for any of the above activities.*⁶⁸

The President’s executive order also followed Congress’ inaction on an Administration-supported bill to establish standards for privately owned critical infrastructure, such as telecommunications, electricity, and financial services. Following objections from the business community that even voluntary standards might become mandatory, the bill was defeated. A 2013 executive order establishing the Cybersecurity Framework to encourage adoption of cybersecurity standards is entirely voluntary.⁶⁹ Legislation on threat data sharing is pending in Congress.

Following revelations of the breach on the OPM computer network in mid-April, the Administration did not announce any sanctions under the April 1 executive order. The wording of the executive order appears to support the argument that it covers commercial cyber espionage. The order specifies that it is intended to punish those responsible or “complicit” in “malicious cyber-enabled activities that are reasonably likely to result in, or have materially contributed to, a significant threat to the national security, foreign policy, economic health or financial stability of the United States.”⁷⁰ It also lists the theft of “personal identifiers” as being among the “malicious cyber-enabled activities” covered by the executive order. The standard of evidence for naming any malefactor is low—“a reasonable basis to believe or a reasonable cause to believe.” Taken together, this wording appears to include the theft of personal identifiers in the OPM hack as a “malicious cyber-enabled activity” covered by the executive order.⁷¹

The White House refrained from interpreting whether the executive order would cover commercial espionage but left little doubt

that sanctions were being considered. Deputy National Security Adviser Ben Rhodes told reporters September 22 in advance of President Xi's visit to Washington that, "While our preference is resolving this through dialogue, we're not averse to punitive measures, including sanctions, if we feel like there are actors in China and entities that are engaged in activities that are sanctionable."⁷² President Obama, in a speech to the Business Roundtable before President Xi's visit noted, "We are preparing a number of measures that will indicate to the Chinese that this is not just a matter of us being mildly upset, but is something that will put significant strains on the bilateral relationship if not resolved, and that we are prepared to [take] some countervailing actions in order to get their attention."⁷³

One hurdle to explicitly blaming China, however, may be the reluctance of the Administration to detail the sources and methods used to identify the Chinese government as the originator or the sponsor of the hack. In a briefing describing the circumstances for invoking the sanctions under the executive order, White House Cyber Coordinator Michael Daniel noted that "we will consider whether we have the evidence in a form that we are willing to disclose publicly."⁷⁴

Weighing Defensive and Offensive Countermeasures

As the evidence has increased that nation states are involved in cyber attacks and espionage, the principal response has remained defensive: principally shoring up systems to detect network intrusions and malware. A more offensive strategy has slowly evolved, however, even as its details remain largely classified. The U.S. Department of Defense in 2011 published a doctrine equating the most damaging cyber attacks—those directed against public infrastructure—with an act of war, and theoretically allowing equivalent retaliation.⁷⁵ "When warranted, we will respond to hostile attacks in cyberspace as we would to any other threat to our country," the Pentagon said in the report to Congress. "We reserve the right to use all necessary means—diplomatic, informational, military, and economic—to defend our nation, our allies, our partners and our interests." In 2012, then Defense Secretary Leon Panetta made the doctrine more explicit, noting that a cyber attack on the United States resulting in large-scale property destruction and loss of life—a "cyber Pearl Harbor"—could be considered an act of war and could justify proportionate cyber retaliation.⁷⁶ Defense Secretary Ashton Carter updated the strategy in 2015 "to fit the age of probe, thievery, and assault over computer networks."⁷⁷ At the core of the strategy is a hierarchy of cyber attacks: Fending off routine commercial attacks remains the responsibility of targeted companies. The Department of Homeland Security is responsible for detecting more complex attacks and helping the private sector defend against them. The most damaging attacks would be handled by the military's Cyber Command, which is based at the NSA headquarters in Maryland. "As a matter of principle, the United States will seek to exhaust all network defense and law enforcement options to mitigate any potential cyber risk to the U.S. homeland or U.S. interests before conducting a cyberspace operation," the strategy says.⁷⁸

At a speech at Stanford University unveiling the new doctrine, Secretary Carter defined a major cyber attack as “something that threatens significant loss of life, destruction of property, or lasting economic damage.”⁷⁹ The new doctrine also lays out the case for the threat of cyber retaliation to deter attacks, much as the threat of nuclear deterrence kept the missiles from flying during the Cold War:

*Deterrence is partially a function of perception. It works by convincing a potential adversary that it will suffer unacceptable costs if it conducts an attack on the United States, and by decreasing the likelihood that a potential adversary's attack will succeed. The United States must be able to declare or display effective response capabilities to deter an adversary from initiating an attack; develop effective defensive capabilities to deny a potential attack from succeeding; and strengthen the overall resilience of U.S. systems to withstand a potential attack if it penetrates the United States' defenses.*⁸⁰

But as Secretary Carter acknowledged, such a policy is easier to declare than to implement. The overall head of NSA's Cyber Command, Admiral Michael S. Rogers, has often noted that the price of conducting cyber attacks is still far too low for many countries to resist computer network attacks.⁸¹ Secretary Carter and NSA Director Rogers have said that the United States should develop a plan to signal hackers about the consequences of their actions.⁸²

One recent proposal from the Council for Foreign Relations criticizes the Administration for tolerating “incessant cyber-attacks by China on the U.S. government, critical infrastructure, and businesses.”⁸³ The paper says that “virtually nothing has been done to stop this cyber assault,” and that U.S. “passivity” must end, “especially since there is no way to reach a verifiable cyber-security agreement with China.”⁸⁴ The authors believe current U.S. strategy to confront Chinese government commercial espionage lacks the following: (1) the imposition of costs on China that are in excess of the benefits it receives from its violations in cyberspace; (2) increased U.S. offensive cyber capabilities to dissuade China's leaders from using cyber attacks against the United States and its partners in the region; (3) continued improvement in U.S. cyber defenses, including a law regulating information sharing between intelligence agencies and the corporate world; and (4) legislation, such as the Cyber Information Security Protection Act, allowing businesses to rapidly share intelligence on cyber threats with each other and the government without fear of lawsuits.⁸⁵

In its June hearing, the Commission considered testimony on the idea of government-directed offensive operations against other nation states as a form of retaliation and deterrence. The Commission also considered the possibility of U.S. corporations mounting retaliatory cyber strikes against Chinese companies or seeking damages against companies that either mounted attacks or benefited from information stolen by government or private hackers.

Given that the Internet is a relatively new phenomenon and that war is rooted in ancient history, it is not surprising that internationally recognized laws of war embodied in the Geneva Conven-

tions and elsewhere have not kept up.⁸⁶ The authors of an authoritative law review article note that

*the law of war provides a useful legal framework for only the very small slice of cyber attacks that amount to an armed attack or that take place in the context of an ongoing armed conflict. . . . Other existing legal frameworks—both domestic and international—offer equally fragmentary assistance in addressing cyber attacks through law. Examining existing law leads to a clear conclusion: A new, comprehensive legal framework is needed to address cyber attacks. That framework includes a more robust system of domestic enforcement but a truly effective solution to this global challenge will require global cooperation.*⁸⁷

Mr. Poindexter cautioned that a counterattack could escalate beyond the theft of data to “real destructive mechanisms.”⁸⁸ Mr. Tiao warned that the many U.S. economic ties with China would make cyber retaliation difficult: “In order to take action against a nation state like China where we have a complex economic and security relationship, it’s a little more complicated than taking sort of a quick strike action against, say, the North Koreans with which we don’t have a similarly complicated relationship.”⁸⁹ Mr. Tiao, however, suggested an indictment of individual hackers could form the legal basis for a trade retaliation case or economic sanctions. And, the creation of a Foreign Intelligence Cyber Court could also provide the legal basis for further action. However, noted Mr. Tiao, U.S. companies cannot retaliate or “hack back” without violating current U.S. law* prohibiting computer hacking.

When the Commission on the Theft of American Intellectual Property (IP Commission) examined the issue in 2013, it noted that current U.S. law does not permit corporations that have been hacked to use an active defense. An “active network defense . . . allows companies not only to stabilize a situation but to take further steps, including actively retrieving stolen information, altering it within the intruder’s networks, or even destroying the information within an unauthorized network [and] . . . photographing the hacker using his own system’s camera, implanting malware in the hacker’s network, or even physically disabling or destroying the hacker’s own computer or network.”⁹⁰ Among the reasons the IP Commission cited for not allowing an active defense are the potential for collateral damage to the Internet and the possibility of doing damage to an innocent third party. The IP Commission recommended further study of the issue while acknowledging that “entirely defensive measures are likely to continue to become increasingly expensive and decreasingly effective, while being unlikely to change the cost benefit calculus of hackers away from attacking corporate networks.”⁹¹

Asked at the June Commission hearing to comment on one suggestion that U.S. intelligence agencies could aid U.S.-based companies whose IP or competitive bids had been stolen by a Chinese company, Mr. Poindexter responded: “We have a lot of restrictions on what the Intelligence Community is allowed to supply a busi-

* 18 U.S.C. § 1030 criminal law, “Fraud and Related Activity in Connection with Computers.”

ness, and the Intelligence Community doesn't want to supply that because they know what the problems are going to be. . . . Who do you support? Do you support BAE, a big British company? They are in the United States. They get hacked. What do we do then? Do we do the same kind of work?"

Mr. Tiao suggested that a Section 337 trade act case identifying the stolen IP might be easier to pursue in court rather than an ordinary tort case that would require proof of monetary damages from the theft of IP—far beyond what a U.S. cyber intelligence agency might be able to provide.* Doing so, however, would likely require a publicly traded U.S. company to file an 8-K report with the U.S. Securities and Exchange Commission (SEC). (The report's purpose would be to notify shareholders of a situation that could have a "material" effect on the earnings of a company and, therefore, its share price.) The SEC has not issued guidance specifically on what circumstances would trigger the disclosure requirement in the case of theft of IP through a computer network intrusion. U.S. companies have strongly opposed any requirement that they disclose to the public or to the SEC the intrusions on their computer network.⁹² According to the Office of the National Counterintelligence Executive, "no legal requirement to report a loss of sensitive information or a remote computer intrusion exists, and announcing a security breach of this kind could tarnish a company's reputation and endanger its relationships with investors, bankers, suppliers, customers, and other stakeholders."⁹³

In the absence of criminal prosecution, U.S. companies may be able to pursue a civil action against a hacker for the theft of IP. In the case of a cyber attack or intrusion from abroad, the civil case might require evidence obtained by a U.S. intelligence agency in order to be successful.† While that has not become commonplace, Mr. Tiao noted that since a 2013 executive order,‡ U.S. intelligence agencies made it "a major priority for the government to push information that the intelligence community was collecting and the law enforcement agencies were collecting in a timely fashion out to companies that had been identified as victims."⁹⁴

Recent Attempts to Negotiate a Solution to Chinese Cyber Espionage

The visit of President Xi to the United States in late September provided an opportunity to raise directly Washington's objections to Chinese commercial cyber espionage, intrusions into U.S. government computer networks, and the imposition of regulations and standards in China meant to disadvantage foreign-based providers

*Section 337 of the Tariff Act of 1930, 19 U.S.C. §1337, allows the seizure by customs authorities of imports that contain stolen IP.

† One possible remedy is Section 337 of the Tariff Act of 1930, 19 U.S.C. §1337, which allows the seizure by customs authorities of imports that contain stolen IP.

‡ Executive Office of the President, Executive Order 13636, "Improving Critical Infrastructure Cybersecurity," February 12, 2013. The National Institute for Standards and Technology was ordered to work with the private sector to develop guidelines on information sharing, privacy, and the adoption of cybersecurity practices. Similar legislation was considered by Congress but did not pass, due in part to opposition from the business community based on fears that voluntary guidelines would eventually become mandatory. The National Institute for Standards and Technology subsequently released a framework agreement in February 2014. The program remains entirely voluntary. Congress is considering new legislation, the Cybersecurity Information Sharing Act, which has been endorsed by the U.S. Chamber of Commerce.

of Internet services. The actual negotiations preceded the official state visit.

The Administration revealed in early September that it had conducted a series of talks in Washington with a Chinese delegation headed by Meng Jianzhu, secretary of the CCP's Central Political and Legal Affairs Commission. He met with a number of high-ranking officials, including National Security Adviser Susan Rice, FBI Director James Comey, Department of Homeland Security Secretary Jeh Johnson, and Secretary of State John Kerry.⁹⁵ Mr. Meng said that China "resolutely opposes cyber attacks and cyber espionage" and promised that "whoever carries out cyber attacks and cyber espionage in China violates the national law and will be held accountable by law."⁹⁶

President Xi began his trip to the United States with a stop in Seattle, where he met with executives of some of the top U.S. technology companies, such as Microsoft—the host of the event—Apple, IBM, Facebook, Google, and Cisco Systems. President Xi repeated stock denials that the Chinese government conducts or sponsors or tolerates commercial cyber espionage or attacks on U.S. government agencies. "Both commercial cyber theft and hacking against government networks are crimes that must be punished in accordance with the law or relevant international treaties," President Xi told the conference group.⁹⁷ "The Chinese government will not in whatever form engage in commercial theft," he added.⁹⁸ After Presidents Xi and Obama met in Washington, DC, the White House distributed a fact sheet stating that the two leaders had agreed 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."⁹⁹ The two leaders also agreed to establish a "high-level joint dialogue mechanism on fighting cybercrime and related issues" that will meet twice a year. A previous dialogue at a lower level was suspended by the Chinese government to protest the indictment in May 2014 of five PLA officers for cyber espionage.

The form of the announcement—a fact sheet released solely by the White House—along with the lack of any signed document and a lack of precision on the meaning of "cyber theft," "cyber attack," "cyber espionage," "economic espionage," "economic cyber spying," and "cyber-enabled theft of intellectual property," led some to question the level of commitment by both sides.¹⁰⁰ As President Obama said at the joint press conference September 25: "What I've said to President Xi and what I say to the American people is the question now is, are words followed by actions? And we will be watching carefully to make an assessment as to whether progress has been made in this area."¹⁰¹ The White House fact sheet explained, in part:

Further, both sides agree to cooperate, in a manner consistent with their respective national laws and relevant international obligations, with requests to investigate cybercrimes, collect electronic evidence, and mitigate malicious cyber activity emanating from their territory. Both sides also agree to provide updates on the status and results of those investigation to the other side, as appropriate.

*The United States and China agree 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.*¹⁰²

This agreement appears to create a much narrower definition of cyber misbehavior than is encompassed by President Obama's April 1 executive order. That executive order appears to cover the theft of personally identifiable information, such as the Office of Personnel Management theft of the personal details of 22.1 million federal employees, applicants, and contractors.

Regulatory Barriers to Digital Trade in China, and Costs to U.S. Firms

Censorship

China's authoritarian government maintains tight control over the flow of information across and within its borders with a system termed the "Great Firewall."¹⁰³ As part of this effort to control dissent by restricting speech, news, and social media, the Chinese government has implemented a policy of replacing foreign IT and Internet providers with Chinese companies. This not only affects human rights in China and skews the thinking of Chinese citizens about the United States and their own country, it also has a profound impact on a large segment of the U.S. economy. At the Commission's June hearing, Mr. Poindexter said that China's government is "not content to manage only their own content; they want to manage ours. . . . China controls the distribution of ideas, modifies them to suit its own needs, removes them, or allows access to them and monitors who has them."¹⁰⁴

The U.S. economy has much at stake. The United States has the most advanced IT and software industry in the world and accounts for 55 percent of global expenditures on research and development, according to a study by the U.S. Department of Commerce.¹⁰⁵ U.S. firms in digitally intensive industries sold \$935.2 billion in products and services online in 2012 (latest data available), including \$222.9 billion in exports—about a quarter of the total sales, according to a 2014 study by the U.S. International Trade Commission.¹⁰⁶ That makes the IT and software sector one of the most export-dependent industries in the United States. The U.S. International Trade Commission estimates removing existing foreign barriers to U.S. digital trade would increase the U.S. real gross domestic product (GDP) by an estimated \$16.7 billion to \$41.4 billion.¹⁰⁷ Since China is the second largest trading partner of the United States, and its other major trading partners—Canada, Japan, and Europe—do not discriminate against U.S. digital products, China's adverse policies are the single-largest drag on U.S. exports of digital services.

The Chinese government heavily regulates, monitors, and controls online content, and requires all market participants in China to comply with vague guidelines and regulations through self-censorship. In cases where foreign sites and services have refused to comply with China's censorship policies, Chinese authorities have

blocked online access to them. Examples include the *New York Times*, Bloomberg News, the *Guardian*, Facebook, Picasa, Twitter, Tumblr, Google, Foursquare, Hulu, YouTube, Flickr, Dropbox, and LinkedIn.¹⁰⁸ China's censors can block any search result; in the past, sensitive subjects (including Tibet, Tiananmen Square, the names of dissidents, and the wealth of the families of China's top leaders) and coverage of news events (such as the capsized ferry boat in the Yangtze River near Shanghai and the slow government response to the 2008 Sichuan earthquake) have been or remain blocked. Three organizations that monitor freedom of expression—the Open Network Initiative, Freedom House, and Reporters Without Borders—found China to be a “pervasive” censor.¹⁰⁹

The Great Firewall directly limits the participation of U.S. information and communication technology (ICT) companies in China's market in a variety of ways:

- Censoring the information available on foreign-based websites or requiring Internet-based companies to self-censor to access the market;
- Using the Great Firewall to slow down or degrade or redirect some foreign web-based services rather than block them outright;
- Blocking access to key words and web page advertising domains;
- Requiring Internet search engines to remove results; and
- Issuing technology mandates that hobble user privacy and security.¹¹⁰

In his testimony at the Commission's June hearing, Matthew Schruers, vice president for law and policy at the Computer and Communications Industry Association, noted that orders by Chinese authorities to filter and block information online are “unpublished and unappealable through state control or influence over the communications infrastructure.”¹¹¹ Mr. Schruers continued, “Some have explained the elaborate Chinese censorship system as being geared towards maximizing the economic benefits of the Internet while maintaining strict social control; whatever the domestic aim of these mechanisms may be, they function, intentionally or not, as unlawful barriers to international trade.”¹¹²

Some cases of discrimination against U.S. firms have been more blatant. Chinese authorities have redirected traffic sent to U.S.-based search engines to Baidu—the China-based competitor to Google, Yahoo, and Microsoft search engines—presumably, in part, because Baidu does not respond to searches for banned terms such as Tiananmen Square massacre, Tibet, Nobel Peace Prize winner Liu Xiaobo, or the artist Ai Weiwei.¹¹³ Stepped-up censorship efforts in recent months include a crackdown on virtual private networks, which are often used by companies and individuals to access secure data and blocked websites. More than 80 percent of U.S. companies surveyed by the American Chamber of Commerce in China in 2015 reported being limited by the censorship of Internet

content and websites when conducting business.* Other reported censorship methods include blocking sites by Internet protocol addresses, and blocking and filtering uniform research locators (URLs) and search engine results.

These nontariff market barriers may violate China's World Trade Organization (WTO) commitments to treat foreign and domestic businesses equally. While the WTO has not been asked to rule on the issue, one theory holds that China in particular could be vulnerable to such a charge, based on its relatively sophisticated censorship capabilities. Although countries might successfully claim to impose censorship on moral or religious grounds, "there is a good chance that a panel might rule that permanent blocks [by China] on search engines, photo-sharing applications, and other services are inconsistent with the GATS [General Agreement on Trade in Services] † provisions, even given morals and security exceptions; less resourceful countries, without means of filtering more selectively, and with a censorship based on moral and religious grounds, might be able to defend such bans in the WTO."¹¹⁴ GATS also stipulates that a system of judicial or administrative review be available to WTO members—a process that is not available in China.¹¹⁵ By contrast, Chinese Internet firms enjoy a fast-growing and walled-off market on the Mainland while they have unrestricted market access to the United States, including the ability to access U.S. capital markets to fund expansion at home and abroad.¹¹⁶ To date, the United States has not brought any WTO cases against China on its nontariff barriers against foreign information and communication technology companies.

Regulations and Standards as a Barrier to Trade

The Chinese government is in the process of passing and implementing comprehensive new laws and regulations that affect the use of information and software technology and the Internet and have the potential to limit or exclude U.S. technology companies from key tech-intensive sectors of the Chinese market. Existing regulations combined with new and stricter proposals would impose localization requirements, market access limits, data privacy and protection requirements, IP rights infringement, and uncertain legal liability rules. Among the digitally intensive industries affected are: newspapers, periodicals, books, directories and mailing lists, motion pictures, sound recordings, video and music production and distribution, broadcasting, news syndicates, banking and insurance, credit card transactions, online retail trade, and wholesale trade in business-to-business transactions.¹¹⁷ As part of the effort, the Chinese government asked U.S. technology companies over the summer to sign a pledge that they would, among other commitments, store Chinese user data within the country and provide the government access to its networks and, according to some interpretations, encryption keys and source code.¹¹⁸

According to testimony from Samm Sacks, a technology analyst at the Eurasia Group in Washington, U.S. technology companies

* The figure in 2013 was 55 percent. American Chamber of Commerce in China, "China Business Climate Survey Report," May 2015, 30.

† GATS is an international trade agreement within the WTO.

may be required by China's central government to "undergo invasive audits, turn over source code, and provide encryption keys for surveillance."¹¹⁹ The key legislation and policy directives that have been proposed or are under consideration include:

- A purge of foreign firms from government-sanctioned procurement lists;
- Restrictions on foreign equipment in the banking sector requiring suppliers to meet "secure and controllable" standards;
- A draft counterterrorism law compelling telecom and Internet companies to provide encryption keys to enable government surveillance on stored data on local Chinese servers;
- A new national security law that will expand Beijing's regulatory powers under a broad and far-reaching definition of national security and calls for sovereignty in cyberspace;
- Creation of a cyberspace review body to evaluate security for all Internet and IT products;
- A new cybersecurity law or framework; and
- A 13th Five-Year Plan for software and "big data" focused on boosting data security for SOEs, financial institutions, and government agencies.¹²⁰

National Security Law

The central government's Standing Committee approved a new National Security Law on July 1 that expands the nation's authoritative rule over a far greater list of "core interests," including control over the press, social media, and the entire Internet in China, which must be made "secure and controllable."¹²¹ Zheng Shuna, a National People's Congress official, explained at the unveiling of the new National Security Law in Beijing that "Internet space within the territories of the People's Republic of China is subject to the country's sovereignty."¹²² He added that "the country must defend its sovereignty, security, and development interests. It must also maintain political and social stability. . . . Any government will stand firm and will not leave any room for disputes, compromises, and interference when it comes to protecting core interests. China is no exception."¹²³ (For more information, see Chapter 1, Section 2, "Foreign Investment Climate in China.")

Cybersecurity Law

A week after the new national security law received approval, China's central government proposed a cybersecurity law that would likely put the Cyberspace Administration of China and the Ministry of Industry and Information Technology in charge of "comprehensively planning and coordinating network security efforts and related supervision and management efforts."¹²⁴ The law is intended to "ensure network security, to preserve cyberspace sovereignty, national security and societal public interest, to protect the lawful rights and interests of citizens, legal persons and other organizations, and to promote the healthy development of economic and social information," according to the draft.¹²⁵ Among the 67 ar-

ticles in the draft are several declaring that network providers are responsible for the material on their websites, which must not contain “state secrets”—a term with a constantly shifting meaning that can include information the government has already made public. Network providers must also ensure that those using their service are identifiable to the government. “Critical information infrastructure operators” are required to exclusively store data on servers within China.¹²⁶ Foreign companies seeking to obtain Internet service provider licenses in China must partner with a domestic company that holds a license.¹²⁷

Foreign Investment Control

China’s insistence on applying the principle of sovereignty to the Internet, which respects no borders, “suggests that the Chinese government is pursuing a policy strategy that could eventually over the long term lead to fragmentation of the U.S.-led global Internet,” Ms. Sacks told the Commission.¹²⁸ The concept also is likely to provide the legal basis for an expanded protocol for national security reviews of inbound foreign investment, which is also in the draft of a new foreign investment law. The policy, warned Ms. Sacks, could justify restricting inbound foreign investment on the basis of “strategic, economic, social, ideological, and technical readings of national security.”¹²⁹ (For more information, see Chapter 1, Section 2, “Foreign Investment Climate in China.”)

Banking Regulations

The China Banking Regulatory Commission also decreed last September that financial institutions in China must increasingly use “secure and controllable” ICT products and services in order to “meet banking information security requirements.”¹³⁰ The goal, according to the China Banking Regulatory Commission, is for 75 percent of ICT products in Chinese banking institutions to be considered “secure and controllable” by 2019. Less than 15 percent of banks operating in China meet the criteria.¹³¹ The new rules accompany China’s efforts to reduce its reliance on U.S. technology, a plan that “picked up steam after former U.S. National Security Agency contractor Edward Snowden alleged in 2013 that the U.S. government used some of the country’s technology firms to spy on foreign governments,” according to some news accounts.¹³²

While “secure and controllable” is not defined in the national security, cybersecurity, or banking laws, business groups have interpreted it as an excuse to favor Chinese software, hardware, and services over foreign competing products.¹³³ A January 28 letter signed by 18 U.S. business groups addressed to the CCP Central Leading Group for Cyberspace Affairs warned that under the banking regulation, ICT products and services would be required to “undergo intrusive security testing, contain indigenous Chinese intellectual property (IP), implement local encryption algorithms, comply with country-specific (Chinese) security standards, disclose source code and other sensitive and proprietary information to the Chinese government, and engineer their products so as to restrict the flow of cross-border data.”¹³⁴ In the letter, the U.S. business groups suggested these policies would effectively exclude sales of

U.S. hardware, software, and services to Chinese banks, and would violate China's WTO commitments to refrain from technical barriers to trade and to not discriminate against imports.¹³⁵ In addition, disclosing source code could provide government hackers access to private computer networks.

Subsequent letters signed by U.S. ICT business associations and Republican House leaders urged the Chinese leadership to postpone implementation pending further dialogue. In response to unnamed "financial institutions and related parties," the China Banking Regulator Commission instructed Chinese banks on April 13 to temporarily "suspend implementation" of the rules, which are expected to be revised and reissued after integrating suggestions from relevant domestic parties.¹³⁶ However, Ms. Sacks told the Commission at its June hearing that the banking law "remains in play" and is unlikely to be altered in any substantial way.¹³⁷ Indeed, in August, the China Banking Regulatory Commission summoned to a meeting several Western technology companies, including IBM, Microsoft, and Cisco Systems Inc., and told them the banking regulations were being revived, jeopardizing hundreds of millions of dollars in revenue for foreign tech companies selling a wide range of products from servers to cloud computing software.¹³⁸ In addition to revelations of NSA cyberspying, Chinese officials cited as justification for the impending restrictions on foreign technology the opposition in Congress to purchases by U.S. telecommunications companies of equipment manufactured by the Chinese IT companies Huawei and ZTE.¹³⁹

Counterterrorism Law

China's draft counterterrorism law presents another obstacle for foreign ICT firms. Expected to go into effect in the coming months, the law would require ICT firms to submit encryption keys to the Chinese government and to install security back doors to allow access to government officials. The initial draft of the law requires companies to keep servers and user data within China (localization), provide communications records to law enforcement authorities, and censor terrorism-related Internet content.¹⁴⁰

According to President Obama, the counterterrorism provisions "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. . . . [T]hey are going to have to change [the ICT policy] if they are to do business with the United States."¹⁴¹

In response to this criticism, National People's Congress spokeswoman Fu Ying said the ICT proposals in China's draft counterterrorism law were "in accordance with the principles of China's administrative law as well as international common practices, and won't affect Internet firms' reasonable interests."¹⁴² She pointed to Edward Snowden's allegations that operatives of the NSA and its British equivalent, the Government Communications Headquarters, hacked into the internal computer network of the Dutch multinational firm Gemalto, the largest manufacturer of subscriber identity module (SIM) cards in the world, stealing encryption keys that can be used to monitor mobile communications.¹⁴³

Less obvious but of equal importance to the new regulations is the reorganization of China's Internet regulatory authority, Ms. Sacks told the Commission at the June hearing. President Xi Jinping has assumed the top post at the Central Leading Small Group for Network Security and Informationization. The agency was created in February 2014 to consolidate the leadership's role, which had been fragmented. Of the 22 members of the group, according to Ms. Sacks, half hold the most senior rank among Party, military, and government officials. In the top-down Chinese government where the Party occupies the pinnacle, this agency is expected to be the last word on policy and implementation.¹⁴⁴

Import Substitution Policies

To boost its homegrown technology sector and address its cybersecurity concerns, China is shifting from foreign to domestic technology suppliers in sensitive segments of the economy by 2020, including banking, military, SOEs, and key government agencies.¹⁴⁵ House Republican leaders say that if these new ICT policies are fully implemented, they will “negatively impact other sectors, such as banking, manufacturing, and health care, and harm the U.S. economy and jobs due to falling sales, outright theft of business secrets, and companies simply leaving the market.”¹⁴⁶

The Chinese government has started to implement these policies. The number of foreign technology brands on China's list of ICT products approved for government purchase fell by one-third, while more than half of foreign suppliers of security-related products were dropped from the approval list.¹⁴⁷ For example, the number of government-approved products made by U.S. network equipment maker Cisco Systems Inc. fell from 60 in 2012 to zero in 2014.¹⁴⁸ In some cases, U.S. companies that lose business operating licenses or government procurement approval will be forced to partner with a Chinese firm to preserve at least some business for their Chinese affiliate company.

Internet Plus

Ms. Sacks also noted two related policies implemented by President Xi—the Made in China 2025 initiative and the Internet Plus plan—as the main channels to promote local high-value-added technology sectors as the economy slows.¹⁴⁹ (See Chapter 1, Section 3, “China's State-Led Market Reform and Competitiveness Agenda,” for discussion of the Made in China 2025 plan.) The Internet Plus plan seeks to capitalize on China's huge online consumer market by building up the country's domestic mobile Internet, cloud computing, big data, and the “Internet of Things,”* and to create global competitors by assisting domestic firms' expansion abroad.¹⁵⁰ China's Internet Network Information Center reported there were 649 million Internet users and 557 million mobile device users in China as of December 2014, far outstripping the second-largest Internet user country, the United States.¹⁵¹ McKinsey & Company, a global management and consulting firm, estimated

*The Internet of Things is the interconnectivity between physical objects such as a smartphone or electronic appliance via the Internet that allows these objects to share data. For more information, see Harald Bauer, Mark Patel, and Jan Veira, “The Internet of Things: Sizing Up the Opportunity,” *McKinsey & Company*, December 2014.

that starting in 2013, e-commerce would contribute up to 22 percent of China's productivity growth by 2025 and fuel between 7 and 22 percent of the total GDP through 2025.¹⁵² Furthermore, McKinsey estimated e-commerce could create 46 million new jobs between 2013 and 2025.¹⁵³

U.S. technology firms seeking to enter the fast-growing Chinese market face increasing costs of doing business due to censorship-related restrictions, onerous regulations, and preferential support for domestic firms.¹⁵⁴ Because Google, Facebook, Twitter, and YouTube remain blocked in China due to their refusal to censor content, domestic copycats such as Baidu, RenRen, Weibo, and Youku have filled the gap.¹⁵⁵ (See Chapter 1, Section 2, "Foreign Investment Climate in China," for further discussion of China's investment climate for foreign firms.)

Implications for the United States

China's increasing use of cyber espionage directed against commercial targets in the United States and abroad has already cost U.S. companies tens of billions of dollars in lost sales and the expenses of repairing and remediating the damage. The largest and most sophisticated cyber attacks have been traced to government-sponsored or government-run teams of hackers in China. In many cases, the trade secrets and confidential information about bidding and business strategy have been turned over to Chinese government-owned competitors. This has led to the creation of global competitors to U.S. companies and industries, where none would otherwise exist. Some of those IP thefts have done harm to the national security and the economy of the United States, particularly because they have targeted large U.S. defense contractors such as Northrup Grumman and Lockheed Martin.

The United States has relied on a passive defense, and the U.S. government has failed to create an overall strategy to counter the increasingly sophisticated cyber attacks on some of our most valuable technology companies. Legislation to encourage U.S. companies to share information about cyber intrusions among each other and to voluntarily report theft of their information to the government has not been enacted into law. U.S. law has not kept up with the challenges posed by cyber attacks from government-sponsored hackers, nor does international law adequately address the issue. Although some policy discussions on offensive operations to counter cyber attacks have taken place, nothing has been decided. As a result of this inertia, the United States remains unable to thwart state-sponsored or state-supported cyber attacks.

The United States has the most advanced and globally integrated digital economy in the world.¹⁵⁶ Exports from its digitally intensive industries make up nearly a quarter of total industry sales.¹⁵⁷ Of the world's 35 digital "category kings," the United States claims half, including such names as Google, Facebook, Twitter, LinkedIn, YouTube, and Instagram. There are currently 83 U.S. based, venture-backed companies founded since 2000 that have reached a \$1 billion valuation.¹⁵⁸ But that success is jeopardized by a concerted Chinese government effort to wall off the fastest-growing market in the world for digital commerce.

China is employing a combination of censorship, regulations, and support for homegrown companies over international competitors. Longstanding censorship has already forced major U.S. companies to limit their business dealings in China or to exit the country. Meanwhile, the Chinese government has been removing foreign software and hardware companies from its official procurement lists in an effort to shift buying to domestic information and communications technology companies. The result will be the continuing loss of market access for U.S. firms, declining revenue, and a reduction in jobs in the United States.

Conclusions

- China's government conducts and sponsors a massive cyber espionage operation aimed at stealing personally identifiable information and trade secrets from U.S. corporations and the U.S. government. Some of the stolen information is provided to Chinese state-owned businesses that compete with U.S. firms in China and abroad. Other recipients of U.S. trade secrets include sectors of the Chinese economy that the central government designated as Strategic Emerging Industries, which China intends to nurture into global competitors.
- The cost to the U.S. economy and to U.S. companies of government-sponsored cyber theft has been on the rise as network intrusions have become more sophisticated and harder to detect. The financial damage results from the loss of trade secrets such as copyrights and patents, manufacturing processes, foregone royalties, the costs of cyber defense, the loss of business and jobs, and the expense of remediating and repairing the damage to computer networks.
- U.S. cybersecurity companies and the Federal Government have become more adept at attributing computer network attacks to specific countries and to groups of hackers within those countries. Their willingness to release details on the culprits has also increased. U.S. companies have also become more willing to reveal details of the attacks on their computer networks.
- The U.S. reaction to the increasing number and sophistication of foreign cyber espionage and malicious network attacks has been mostly defensive. U.S. law does not allow retaliatory cyber attacks by private citizens and corporations, nor does it appear to allow counterintrusions (or "hack backs") for the purpose of recovering, erasing, or altering stolen data in offending computer networks. International law has not kept up with developments in cyber warfare, and no international consensus exists on how to attribute or appropriately respond to cyber attacks. However, a policy discussion on the issue of offensive and retaliatory cyber operations has begun.
- The Chinese government appears to believe that it has more to gain than to lose from its cyber espionage and attack campaign. So far, it has acquired valuable technology, trade secrets, and intelligence. The costs imposed have been minimal compared to the perceived benefit. The campaign is likely to continue and may well escalate as the Chinese Communist Party leadership con-

tinues to seek further advantage while testing the limits of any deterrent response.

- The Chinese government maintains strict censorship controls over the flow of information across and within its borders, and holds Internet providers, websites, search engines, and online news media responsible for censoring their content on the basis of vague guidelines and arbitrary rulings. The Chinese government's obsession with limiting citizen access to information harms U.S. companies attempting to compete in China. Some U.S. companies have faced retaliation, including the filtering or outright blocking of their websites, and all foreign companies risk loss of business licenses for violating the Chinese government's unpredictable sensitivities.
- The Chinese government is in the process of passing comprehensive new laws and regulations on cybersecurity that would affect trade in digital goods and services in a wide range of industries, including the news media, banking, credit card transactions, online retail trade, entertainment media, and telecommunications. Some of the new rules would have the effect of excluding U.S. companies from participating in the world's fastest-growing digital market by requiring, for example, that servers containing information about Chinese citizens and companies be located exclusively in China, and that companies doing business in China provide encryption keys to allow government entry into their databases.

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RECOMMENDATIONS

Foreign Investment Climate in China

The Commission recommends:

- Congress assess the ability of, and if necessary amend, existing U.S. trade laws to address China's industrial policies, abusive legal or administrative processes, and discriminatory treatment of foreign investors, and to determine the consistency of these practices with China's World Trade Organization commitments.
- Congress consider legislation requiring the President to submit a request to Congress for approval before any change occurs, either for the country as a whole or for individual sectors or entities, in China's status as a non-market economy. Under such legislation, any change to China's designation could not proceed without the consent of both Houses of Congress.
- Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.
- Congress direct U.S. antitrust enforcement agencies to conduct an analysis and legal assessment of alleged anticompetitive behavior by Chinese antitrust enforcers, and report in full on enforcement activities.
- Congress expand the guidelines for consultation and transparency relating to trade negotiations covered by Trade Promotion Authority to include negotiations on a Bilateral Investment Treaty between the United States and China.
- Congress require the Administration to provide a comprehensive, publicly-available assessment of Chinese foreign direct investments in the United States prior to completion of negotiations on a Bilateral Investment Treaty. This assessment shall include an identification of the nature of investments, whether investments received support, of any kind, from the Chinese government and at which level (national, provincial, or municipal), and the sector in which the investment was made.
- Congress urge the U.S. Trade Representative to initiate consultations with China's Ministry of Commerce to identify the extent to which China's policy regarding subsidies and other incentives for purchases of domestically-produced new energy vehicles may violate its World Trade Organization commitments and what steps should be taken to address any inconsistencies with those commitments.

China's State-led Market Reform and Competitiveness Agenda

The Commission recommends:

- Congress direct the U.S. Government Accountability Office to prepare a report that analyzes U.S. exposure to China's financial sector, the progress of China's financial sector reforms, and the effect of China's financial sector reforms on the U.S. and global financial systems, and identifies the policies the U.S. government is adopting to protect U.S. interests in light of this changing environment.
- Congress urge the U.S. Department of Commerce to undertake a comprehensive review and prepare a report on China's Made in China 2025 and Internet Plus initiatives, including their forced localization of manufacturing and research and development requirements, to determine their potential impact on domestic U.S. production and market access for U.S. firms.
- Congress direct the U.S. Environmental Protection Agency, U.S. Department of Energy, and U.S. Department of Commerce to jointly prepare a report that outlines China's stated targets to address pollution and climate change, and evaluates whether the Chinese government has allocated sufficient resources (including expenditures) to meet those commitments.

Commercial Cyber Espionage and Barriers to Digital Trade in China

The Commission recommends:

- Congress assess the coverage of U.S. law to determine whether U.S.-based companies that have been hacked should be allowed to engage in counterintrusions for the purpose of recovering, erasing, or altering stolen data in offending computer networks. In addition, Congress should study the feasibility of a foreign intelligence cyber court to hear evidence from U.S. victims of cyber attacks and decide whether the U.S. government might undertake counterintrusions on a victim's behalf.
- Congress require the Administration prepare an annual classified report on foreign government-sponsored cyber attacks against all Federal Government agencies, including but not limited to an assessment of the damage and the affected agencies' plans to secure their networks against further attacks.
- Congress consider legislation amending the Federal Information Security Modernization Act of 2014 to require an annual review by the U.S. Department of Homeland Security of the steps taken by all federal agencies to ensure that adequate systems are in place to protect cyber assets.
- Congress pass legislation to require the Securities and Exchange Commission (SEC) to make clear to publicly traded companies and their investors the circumstances under which the theft of intellectual property through a computer network intrusion may be a material fact that might affect a company's revenues and should therefore be required to be disclosed to the SEC.

- Congress evaluate existing consumer right-to-know laws to determine whether a cloud-based computing company has an affirmative duty to identify the physical location of its cloud-based assets.

CHAPTER 2

SECURITY AND FOREIGN POLICY ISSUES INVOLVING CHINA

SECTION 1: YEAR IN REVIEW: SECURITY AND FOREIGN AFFAIRS

Introduction

The Commission's previous annual reports to Congress documented that Chinese national security and foreign policy have become more centralized and focused under President and Chinese Communist Party (CCP) General Secretary Xi Jinping, who took power in 2012.¹ This trend continued in 2015, as the Xi Administration took further steps to articulate and pursue China's priorities and objectives in both the security and foreign policy realms. President Xi continues to position himself at the apex of the security and foreign policy decision-making apparatus in Beijing, and appears to be successfully advancing a foreign policy and security agenda that reinforces CCP rule and seeks to enable China to achieve great power status.²

Meanwhile, China's military modernization continues apace, with impressive new systems and capabilities coming online that augment China's ability to defend its stated interests and field a globally active, world-class military. In some cases, China is deploying the People's Liberation Army (PLA) in ways that contribute to regional peace and security, such as antipiracy operations in the Gulf of Aden, noncombatant evacuation operations, and humanitarian assistance and disaster relief operations. At the same time, however, the PLA is deploying weapons and honing capabilities that will allow it to hold at risk U.S. and allied forces in the Western Pacific. Also of concern are China's aggressive actions in the South and East China seas and its relentless use of cyber espionage to seek economic and military advantage over the United States.

This section—based on Commission hearings, discussions with outside experts and U.S. government officials, and open source research and analysis—reflects on these trends and examines major developments in China's national security and foreign policy, military modernization, global security activities, and U.S.-China security relations, since the publication of the Commission's 2014 Annual Report.

Major Developments in China's National Security and Foreign Policy in 2015

“One Belt, One Road” and the Continued Emphasis on Peripheral Diplomacy

Collectively referred to as the “One Belt, One Road” initiative, the “Silk Road Economic Belt” and “21st Century Maritime Silk Road” have become key components of the Xi Administration’s foreign policy agenda.³ Focused respectively on Eurasia and maritime Asia, the Silk Road Economic Belt and 21st Century Maritime Silk Road encompass approximately 60 countries and seek to enhance regional connectivity and economic, cultural, and diplomatic exchange. The initiatives, for which Beijing has already promised enormous political and financial resources, are designed to advance China’s objectives to facilitate trade and boost exports, provide opportunities for Chinese companies, facilitate access to natural resources, and relieve overcapacity in China’s construction-oriented sectors. They also appear designed to enhance China’s influence among its neighbors and project an image of China as a powerful and responsible regional, even global, power.⁴

The One Belt, One Road initiative is emblematic of the Xi Administration’s focus on “peripheral diplomacy,” which was highlighted at two major CCP meetings on foreign affairs held in 2013 and 2014.⁵ According to Michael D. Swaine, senior associate at the Carnegie Endowment for International Peace’s Asia Program,

*[Peripheral diplomacy initiatives] imply a higher level of Chinese pro-activism in foreign and defense policy and a broader definition of [China’s] national interests toward its periphery than has characterized Beijing’s approach during most of the reform era. In particular, they suggest at the very least a decreased emphasis on Deng Xiaoping’s long-standing exhortation for China to remain modest and maintain a low profile in its external relations. They also raise many questions and potential problems for China’s external relations going forward. This includes, most importantly, how Beijing will reconcile the potentially contradictory policy imperatives of deepening positive relations with neighboring countries while more resolutely advancing or protecting China’s territorial and resource interests and claims.*⁶

(For a detailed discussion of how the One Belt, One Road initiative and China’s renewed focus on peripheral diplomacy inform China’s relations with its neighbors, see Chapter 3, Section 1, “China and Central Asia,” and Chapter 3, Section 2, “China and Southeast Asia.”)

New and Proposed Laws on National Security

China under the Xi Administration is advancing legal infrastructure to more tightly control its national security policies and processes. This includes a National Security Law (enacted in July 2015) that broadly expands the CCP’s control over “security” in a wide range of fields including culture, education, cyberspace, and international seabeds;⁷ a draft cybersecurity law (introduced in July

2015) that provides the Chinese government broad powers to control and restrict online information and activity;⁸ and a draft counterterrorism law (introduced in November 2014 and again in February 2015) that provides the state sweeping authority to investigate, deter, and punish terrorists.⁹ All three laws contain provisions that would broaden and deepen the authority and power of the government, expand the reach of China's security state, and further limit the freedom of citizens already living under political repression. Moreover, due to provisions in each law to control the flow of information on the Internet, they could have negative implications for U.S. and other foreign information and communications technology companies operating in China.¹⁰ (See Chapter 1, Section 4, "Commercial Cyber Espionage and Barriers to Digital Trade in China," for more details on how these laws can impact U.S. companies.)

These developments are just the latest in a series of steps President Xi has taken to streamline and centralize China's security policymaking apparatus, and to solidify his personal role at the helm of that apparatus. According to Cheng Li, director of the John L. Thornton China Center at the Brookings Institution and prominent scholar of elite Chinese politics, "The continuing consolidation of power has been the most noticeable trend under the leadership of Xi Jinping" since 2012.¹¹ For example, in late 2013, China established the Central National Security Commission, led by President Xi, "to perfect national security systems and strategies in order to ensure national security."¹² Though little is known about the workings of the Central National Security Commission, it appears to have a broad mandate encompassing both domestic and foreign national security matters as well as issues such as "economic security," "ecological security," and "societal security," among others.¹³

White Paper on "China's Military Strategy"

In May 2015, China published the latest iteration of its biennial defense white paper.*¹⁴ The new defense white paper tracks closely with the previous defense white paper, released in 2013, and contains no major revelations about China's military strategy or modernization; however, it does provide insight into Chinese leaders' perceptions of the country's evolving security and defense priorities by including some new guidance and emphasizing or clarifying certain aspects of existing strategy.¹⁵ Highlights of the 2015 defense white paper include the following:

- The new defense white paper decisively elevates the maritime domain in China's strategic thinking as China assesses that its most likely conflict scenarios will be at sea, asserting that "the traditional mentality that land outweighs sea must be abandoned."¹⁶ The defense white paper emphasizes that the PLA Navy needs to transition from a primarily coastal force to one capable of global operations.

* Defense white papers—China's most authoritative statements on national security—are published by the State Council Information Office and approved by the Central Military Commission, Ministry of National Defense, and State Council. Beijing primarily uses these documents as a public relations tool to help ease deepening international concern over China's military modernization and to answer calls for greater transparency.

- In contrast to past defense white papers, which have emphasized offshore defense as the primary focus of the PLA Navy, the new defense white paper notes “the PLA Navy will gradually shift its focus from ‘offshore waters defense’ to the combination of ‘offshore waters defense’ with ‘open seas protection.’”¹⁷ The PLA Navy’s recent acquisitions, training, and operations—including longer-endurance patrols by PLA Navy surface ships and submarines—reflect this priority shift. (For more information on China’s overseas military activities, see “China’s Global Security Activities in 2015,” later in this section.)
- With respect to maritime territorial disputes, the defense white paper says China will “strike a balance between rights protection and stability maintenance” and strive to “prevent crises.”¹⁸ This suggests Beijing will continue to employ an incremental approach designed to enable China to successfully realize its territorial ambitions while avoiding conflict and limiting forceful reactions from the other claimants or the United States. (See Chapter 3, Section 2, “China and Southeast Asia,” for an examination of recent developments in the South China Sea dispute.)
- The defense white paper asserts that “space and cyberspace have become the new commanding heights in strategic competition,”* and that China will seek to achieve sufficient defense capabilities in both realms to protect its economic and strategic interests. The paper refers to China as a purely defensive actor in both realms. China’s reliance on space and cyberspace will continue to grow as the PLA’s most sophisticated long-range weapons—which will require unimpeded access to these domains for C4ISR† and targeting—come online.¹⁹
- The defense white paper emphasizes the need for a more unified, coordinated, and streamlined mechanism for defense policymaking by China’s civilian and military leadership through “in depth development of civil-military integration,” and announces the PLA will “set up a system and a working mechanism for overall and coordinated programming and planning.”²⁰ This is consistent with other steps taken by the Xi Administration to centralize and tightly control national security decision making in China.²¹

China’s Maritime Disputes in the South China Sea

China is aggressively advancing its territorial claims in the South China Sea by using land reclamation and construction on land features to vastly expand its civilian and military presence in contested waters. For a discussion of developments in China’s South China Sea maritime disputes in 2015, see Chapter 3, Section

*This in part echoes a 2009 interview with then PLA Air Force commander General Xu Qiliang, in which he said that “the domain of space and air have become the new commanding height for international strategic competition.” Kevin Pollpeter, “The PLAAF and the Integration of Air and Space Power,” in Richard P. Hallion et al., eds., *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, National Defense University Press, 2012, 165.

†C4ISR stands for command, control, communications, computers, intelligence, surveillance, and reconnaissance.

2, “China and Southeast Asia.” See also, “U.S.-China Tensions in the South China Sea,” later in this section.

China’s Maritime Dispute in the East China Sea

Although the South China Sea dominated headlines in 2015, China also sought to strengthen its position vis-à-vis Japan in its maritime dispute over the Senkaku Islands (called the Diaoyu Islands in Chinese) in the East China Sea.* Tensions in the East China Sea had reached a high point in November 2013 when China established an Air Defense Identification Zone (ADIZ)† over contested waters to “[protect] state sovereignty and territorial and airspace security.”‡²² Since then, bilateral ties have improved somewhat, and no single event has ratcheted up tensions.²³ Nevertheless, China continues to quietly build up its military and civilian presence in the East China Sea.

- In July 2015, the Japanese government reported that “China has accelerated its development activities of natural resources in the East China Sea,” identifying 16 freestanding structures China had erected “on the Chinese side of the geographical equidistance line between Japan and China” to facilitate the development of subsea natural gas resources (see Figure 1).§ According to Japanese officials, 7 of the 16 structures had begun drilling activities by September.²⁴ Although the structures are on the Chinese side of the “equidistance line,” the Japanese government has asked China to stop construction of the platforms, noting “it is extremely regrettable that China is advancing unilateral development.”²⁵ Japanese Minister of Defense Gen Nakatani suggested China “could install a radar system on the platform, or use it as an operating base for helicopters or drones conducting air patrols.”²⁶
- Satellite imagery analysis conducted by *IHS Jane’s* in January 2015 suggests China is upgrading existing military infrastructure on Nanji Island, part of an island chain off the coast of Zhejiang Province about 160 nautical miles (nm) from the Senkaku Islands. The island now appears to host a heliport with ten landing pads and wind turbines, in addition to previously built radar and communications infrastructure.²⁷ According to Li Jie, a senior researcher from the PLA-affiliated Chinese Naval Research Institute, the island is “a strategically important location because [of its] proximity to the Diaoyu Islands, [because] it can provide support to the East China Sea

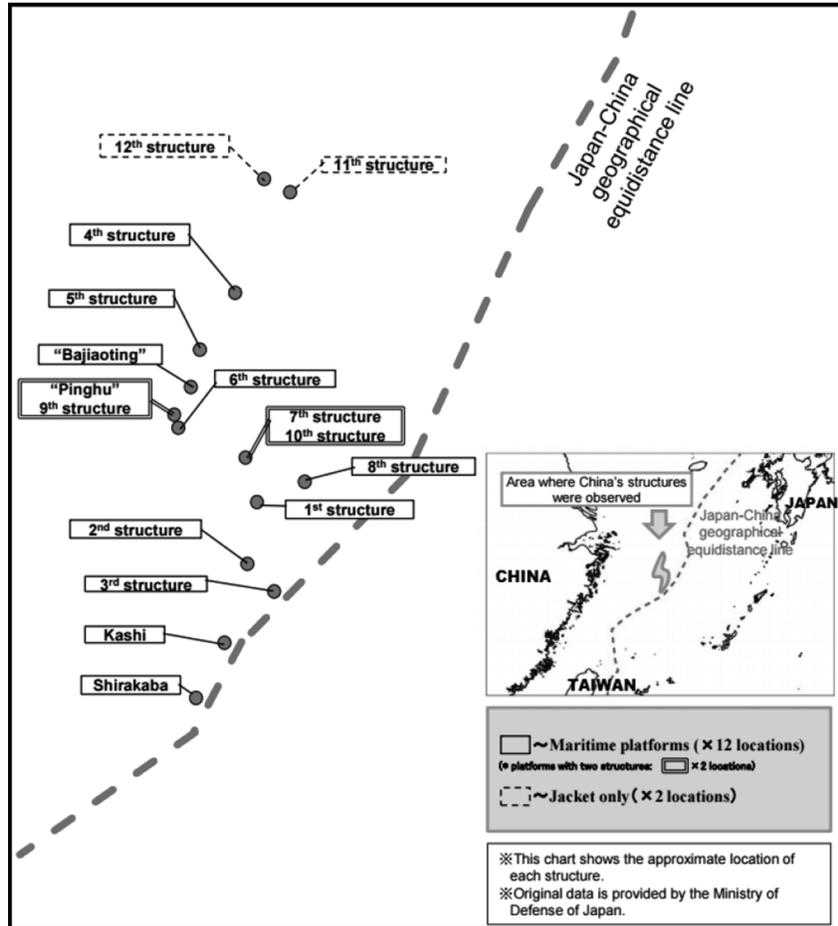
* Taiwan is a claimant in the East China Sea dispute as well.

† An ADIZ is a publicly declared area established in international airspace adjacent to a state’s national airspace in which civil aircraft must be prepared to submit to local air traffic control and provide aircraft identifiers and location.

‡ China does not appear to have used its East China Sea ADIZ as a tool of aggression against Japan since it was established in 2013. Interestingly, the only publicly reported incident of China requiring a civilian aircraft to leave the ADIZ was in July 2015, when a Lao Airlines plane en route from South Korea to Laos was denied permission to enter Chinese airspace over the East China Sea and was forced to return to South Korea. Jeremy Torr, “China Turns Back Lao Airlines Flight for Failing to Comply with ADIZ Rules,” *Air Transport World*, July 27, 2015.

§ In the absence of delimited maritime territory in the East China Sea, Japan takes the position that “maritime delimitation should be conducted based on the geographical equidistance line between Japan and China.” Japan Ministry of Foreign Affairs, *The Current Status of China’s Unilateral Development of Natural Resources in the East China Sea*, July 22, 2015.

Figure 1: China's Natural Gas Infrastructure in the East China Sea



Note: A jacket is a support structure for a drilling platform.

Source: Japan Ministry of Foreign Affairs, *The Current Status of China's Unilateral Development of Natural Resources in the East China Sea*, July 22, 2015.

[ADIZ], and [because] it's a major naval point on the Chinese coastal defense lines. ... It's unarguable that China would like to enhance the existing military presence there."²⁸

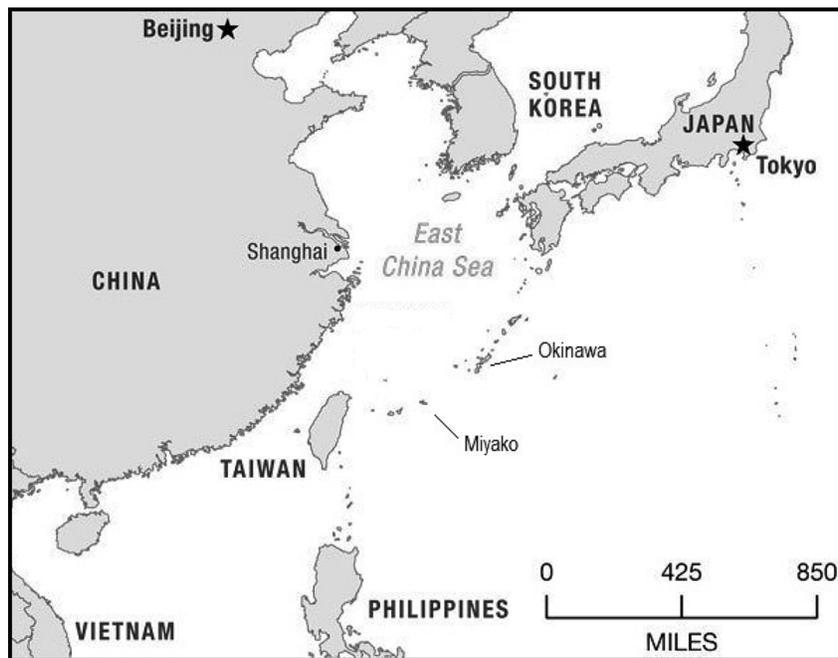
- Chinese aircraft and China Coast Guard ships continue to patrol contested waters. The Japanese Ministry of Defense reported 706 scrambles* against Chinese aircraft flying near the Senkaku Islands between January 2014 and June 2015 (latest data available).²⁹ A commanding officer from a Japanese Self-Defense Force squadron based at Naha, the closest Japanese base to the Senkakus, told reporters, "It's practically every day. ... It's absolutely extraordinary to ask one squadron to

* In military aviation, scrambling refers to directing the immediate takeoff of aircraft from a ground alert condition of readiness to react to a potential air threat.

deal with more than 400 scrambles a year. It's an extremely heavy burden."³⁰ Japan's Ministry of Defense also reported that China Coast Guard ships entered the territorial sea* of the Senkaku Islands between seven and nine times per month during the same timeframe.³¹

- In May 2015, a PLA Air Force squadron, which included at least one bomber, transited from the East China Sea to the Western Pacific through Japan's Miyako Strait† for the first time (see Figure 2).³² This is one of several indicators that the PLA Air Force is enhancing its capabilities to conduct over water operations far from China's coast, including in the East China Sea (see "PLA Training and Exercises," later in this section).

Figure 2: Map of Miyako Strait



Source: NPR, "The Role for the US in the East China Sea Dispute," January 30, 2013.

Corruption in the PLA

As part of President Xi's ongoing nationwide anticorruption campaign, China is conducting a campaign against corruption in the PLA. This campaign is widely understood to be aimed at mitigating growing public disillusionment with politics and governance in China, as well as ending practices such as graft and paying for promotion, which could reduce the quality of officers, perpetuate oppo-

*The UN Convention on the Law of the Sea defines "territorial sea" as a 12-nautical-mile zone extending from a country's coastline or island shore over which that country enjoys full sovereignty. UN Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone."

†The Miyako Strait runs between the Japanese islands of Miyako and Okinawa.

sition to reforms, and threaten PLA modernization and readiness.³³ Aside from these objectives, the anticorruption campaign also appears to be a useful political tool for President Xi to marginalize his political opponents and consolidate power.³⁴

The scale of PLA corruption has potentially serious implications for U.S. security interests. According to a RAND Corporation report sponsored by the Commission, “China’s Incomplete Military Transformation: Assessing the Weaknesses of the People’s Liberation Army”:

If the assessment that the PLA is highly corrupt is accurate and if the PLA’s corruption seriously limits its warfighting capabilities, it may mean that the United States might be inclined to assume China has more sway in international affairs than its actual combat power merits. On the other hand, if the PLA is a highly capable fighting force despite its problems with corruption, the United States might risk overestimating the hollowness of the Chinese armed forces and be insufficiently cautious of confrontation with a PLA that is actually more capable than stories about widespread corruption in the ranks might suggest.³⁵

Measuring the scale and location of corruption in the PLA and evaluating the progress of China’s anticorruption campaign is a difficult task.³⁶ Statements by current and retired PLA officials, Chinese state media, and some foreign analysts frame corruption as a serious threat to PLA combat readiness.³⁷ A *PLA Daily* editorial in April 2015 emphasized China faced “national humiliation” on the battlefield if it did not address PLA corruption.³⁸ However, some analysts, such as former U.S. Army attaché in Beijing Dennis Blasko, suggest the effect of institutional PLA corruption on China’s combat readiness is relatively small. Mr. Blasko writes, “To date, very few (if any) operational combat unit (i.e., divisions, brigades, regiments, etc.) commanders and staff officers are known to have been caught in the corruption dragnet.”³⁹ Moreover, he notes:

From the evidence available, the vast majority of corruption in the PLA is found within the political officer system (mostly involving promotions and assignments), the logistics and armaments systems (among those who handle official funds and property and are involved in the procurement of supplies and equipment), and potentially in low-level local headquarters responsible for conscription/recruitment (but likely involving relatively small sums of money). There is little indication that the PLA’s frontline operational leaders, those in command of the units tasked to do the fighting, have been smitten by the scourge of corruption to the degree that some rear area personnel have been.⁴⁰

Major developments in the PLA anticorruption campaign from late 2014 to 2015 include:

- In November 2014, the Central Military Commission, China’s highest military decision-making body, made the auditing office of the PLA directly responsible only to the Central Military Commission. The auditing office had been subordinate to the

PLA General Logistics Department, which analysts and media reports suggest is a hotbed of corruption.*⁴¹ By taking direct oversight of the PLA auditors, the Central Military Commission likely intends to reduce institutional obstacles to its reforms and increase its control over PLA discipline.⁴²

- Former Central Military Commission vice chairman Xu Caihou, one of the highest-ranking PLA officials to fall in the anticorruption campaign, died of cancer in March 2015 before he could be brought to trial on corruption charges.⁴³
- In March 2015, Chinese state media announced 14 PLA generals, including Guo Zhenggang, the son of former Central Military Commission vice chairman Guo Boxiong, had been arrested for corruption.⁴⁴
- In July 2015, Guo Boxiong himself was expelled from the CCP and placed under investigation for graft. General Guo was the highest-ranking PLA official to fall in the anticorruption campaign.⁴⁵
- According to a January 2015 report from state-run *China Daily*, China's anticorruption campaign has led to the arrests of more than 4,000 officers with the rank of lieutenant colonel and above, including about 100 generals, since January 2013.⁴⁶

China's Military Parade

In September 2015, China held its largest-ever military parade to commemorate the 70th anniversary of the end of World War II, which China refers to as the Chinese People's Resistance against Japanese Aggression and World Antifascist War. The parade featured 12,000 Chinese troops (as well as military units from 17 other countries),[†] 500 pieces of military equipment, and close to 200 aircraft.⁴⁷ Among these were many of China's most advanced weapons, some of which had not previously been publicly revealed.⁴⁸ Although Chinese officials insist the parade was not aimed at any particular country or countries,⁴⁹ it signaled clearly how China could employ its military might against potential adversaries. For example, among the nine classes of ballistic and cruise missiles on display—all of which were prominently labeled—were missiles that pose obvious threats to U.S. forces in the Pacific: the DF-21D “carrier killer” antiship ballistic missile, capable of targeting U.S. ships at sea, and the DF-26 ballistic missile, capable of targeting Guam (thus its nickname, the “Guam killer”).[‡]

In a pre-parade speech commemorating end of the war, President Xi announced the PLA would reduce the number of its troops by

*Some of the most powerful PLA officers to fall in the anticorruption campaign include Gu Junshan, former deputy director of the General Logistics Department (charged with corruption in March 2014) and Liu Zheng, also former deputy director of the General Logistics Department (expelled from the CCP in January 2015). Reuters, “China Military Official Booted from Parliament in Anti-Graft Drive,” February 28, 2015; BBC, “China Ex-General Gu Junshan Charged with Corruption,” April 1, 2014.

[†]The following countries sent military units to China's parade: Afghanistan, Belarus, Cambodia, Cuba, Egypt, Fiji, Kazakhstan, Kyrgyzstan, Laos, Mexico, Mongolia, Pakistan, Russia, Serbia, Tajikistan, Vanuatu, and Venezuela. Andrew S. Erickson, “China Military Parade—3 September 2015—Your Complete Hardware and Logistics Guide (Updated Version),” *Andrew S. Erickson Blog*, September 2, 2015.

[‡]Other missiles on display at the parade were the DF-10, DF-15B, DF-16, DF-5B, DF-31A, YJ-12, and YJ-83. Andrew Erickson, “Missile March: China Parade Projects Patriotism at Home, Aims for Awe Abroad,” *China Real Time Report* (Wall Street Journal blog), September 3, 2015.

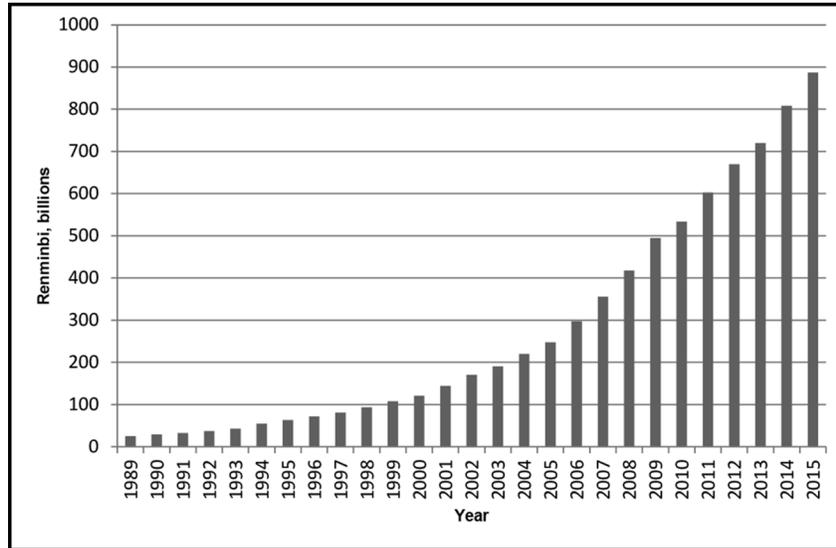
300,000,⁵⁰ which would bring the number of China's total troops down to approximately two million, according to state-run news service Xinhua.⁵¹ The announcement, couched in language about China's commitment to "carry out the noble missions of upholding world peace,"⁵² seemed intended to reassure global audiences that China's rise will continue to be peaceful. According to Dean Cheng, research fellow on Chinese political and security affairs at the Heritage Foundation, the troop reduction "is consistent with the longer-term effort by the PLA to both pare down its size and shift from a military focused on quantity to one more focused on quality" and "will presumably free up resources that can be reallocated to better pay, better quality of life, additional training, and/or equipment acquisition."⁵³

Major Developments in China's Military Modernization in 2015

Since the publication of the Commission's 2014 Annual Report, China's national security and foreign policy apparatus has made new military budget announcements, developed and acquired new military platforms and weapons, engaged in large-scale training and exercises, and conducted significant overseas military operations. Many of these developments are detailed below. (For an in-depth examination of China's space and offensive missile forces modernization programs, which are not covered here, see Chapter 2, Section 2, "China's Space and Counterspace Programs" and Chapter 2, Section 3, "China's Offensive Missile Forces.")

China's 2015 Defense and Security Budget

China's announced annual defense budget rose 10.1 percent to \$141.9 billion (RMB 886.9 billion) in 2015.⁵⁴ Although the 2015 spending increase is down from a 12.2 percent increase in 2014, in real terms it is roughly consistent with defense spending increases in recent years because China's inflation rate is near a five-year low.⁵⁵

Figure 3: China's Announced Defense Spending, 1989–2015

Source: This figure reflects Commission judgments based on several sources, each of which provides data for part of the period 1989–2014. The most recent source is used when these sources disagree. For 1989–1993, David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects*, University of California Press, 2002, 189; for 1994–2001, Dennis J. Blasko et al., “Defense-Related Spending in China: A Preliminary Analysis and Comparison with American Equivalents,” *United States-China Policy Foundation*, 2007, 19; for 2002–2012, Andrew Erickson and Adam Liff, “Demystifying China’s Defense Spending: Less Mysterious in the Aggregate,” *China Quarterly*, December 2013, 805–830; for 2013, Jeremy Page, “China Raises Defense Spending 12.2% for 2014,” *Wall Street Journal*, March 5, 2014; for 2014, Andrew Erickson and Adam Liff, “The Budget This Time: Taking the Measure of China’s Defense Spending,” *Asan Forum*, March–April 2014; and for 2015, Andrew Erickson and Adam Liff, “China’s Military Spending Swells Again despite Domestic Headwinds,” *Wall Street Journal*, March 5, 2015.

China’s actual aggregate defense spending is higher than the official budget because Beijing omits from its official figures some major defense-related expenditures, such as research and development programs, purchases of advanced weapons, and local government support to the PLA. The U.S. Department of Defense (DOD) estimates China’s actual defense spending in 2014 exceeded \$165 billion, approximately 25 percent higher than China’s announced defense budget of \$131.6 billion;⁵⁶ the Stockholm International Peace Research Institute estimates China’s actual defense spending in 2014 was \$216 billion, approximately 64 percent higher than China’s announced defense budget.*

*There is no consensus on which items should be included in a country’s “official” defense budget. Every major power—including the United States and major allies—spends money on defense not captured in its official defense budget. When evaluating China’s actual defense spending, some observers, such as the Stockholm International Peace Research Institute, include China’s spending on the People’s Armed Police in their calculations, which can increase budget estimates by as much as one-fifth of the official figure. DOD does not disclose its methodology for calculating actual Chinese defense spending. Sam Perlo-Freeman et al., “Trends in World Military Expenditure, 2014,” *Stockholm International Peace Research Institute*, April 2015, 2; Sam Perlo-Freeman, “Deciphering China’s Latest Defense Budget Figures,” *Stockholm International Peace Research Institute*, March 2014; U.S.-China Economic and Security Review Commission, *Hearing on China’s Military Modernization and its Implications for the United States*, written testimony of Andrew Erickson, January 30, 2014; Andrew Erickson and Adam Liff,

Continued

China's defense spending increases appear sustainable in the short term. Although China's official nominal defense spending has grown by double digits almost every year since 1989, the rapid growth of China's economy has kept defense spending at a relatively low percentage of China's gross domestic product (GDP): official defense spending in 2015 will account for only 1.34 percent of China's GDP, and even high-end foreign estimates put Beijing's actual aggregate defense spending at a moderate 2–3 percent of China's GDP.⁵⁷ Furthermore, increases to overall state expenditures have outpaced increases to official defense spending in recent years,⁵⁸ which has probably insulated Chinese leaders from potential criticism that they are spending too much on the military. Because China's economic growth has slowed, further double-digit increases to military spending will continue to generate opportunity costs as government spending strains to meet other national priorities.⁵⁹ However, there is no indication China's government is slowing the growth rate of military spending in response to growing opportunity costs.

PLA Navy

In 2015, the PLA Navy's acquisitions continued to reflect China's efforts to transform it from a coastal force into a technologically advanced navy capable of projecting power throughout the Asia Pacific and beyond.* Significant developments in China's naval forces from late 2014 to 2015 include the following:

- China launched its fifth Type 815 DONGDIAO-class intelligence-gathering ship in January. China's continued production of DONGDIAOs suggests it will increase intelligence activities in what China considers its near and far seas† and conduct more frequent ISR‡ missions farther from the Chinese mainland in coming years.⁶⁰ China sent a Type 815 DONGDIAO to spy on the 2014 Rim of the Pacific exercises off Hawaii, even as China was participating in the exercises for the first time.⁶¹
- In February, China introduced into service its first advanced antisubmarine warfare aircraft, an indigenously built Y-9.⁶² Although China is expanding the PLA Navy's antisubmarine warfare capability, Stratfor, a security-focused consulting firm, asserts China is likely at least ten years from deploying enough antisubmarine warfare aircraft to challenge U.S. submarines in the Western Pacific.⁶³ The Y-9 has antisubmarine warfare technology roughly comparable to the U.S. P-3C Orion.⁶⁴

*Demystifying China's Defense Spending: Less Mysterious in the Aggregate." *China Quarterly*, December 2013; and Dennis J. Blasko et al., "Defense-Related Spending in China: A Preliminary Analysis and Comparison with American Equivalents," *United States-China Policy Foundation*, 2007.

† For a comprehensive discussion of trends in PLA Navy modernization, including order of battle and acquisition information, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 299–308.

‡ China typically defines its "near seas" as waters within the Yellow Sea, East China Sea, and South China Sea. China typically describes its "far seas" as waters outside of its near seas.

§ ISR refers to intelligence, surveillance, and reconnaissance.

- In January, China commissioned two Type 054A JIANGKAI II-class missile frigates.⁶⁵ China has now commissioned 18 of its planned 22 JIANGKAI IIs.⁶⁶ The JIANGKAI IIs each likely carry 32 HHQ-16 surface-to-air missiles and 8 YJ-82 antiship cruise missiles, and have served a variety of missions, including antipiracy missions in the Gulf of Aden and patrols in China's near seas.⁶⁷
- China launched its 27th Type 056 JIANGDAO-class corvette in early May.⁶⁸ China's JIANGDAOs most likely will be used primarily for near-seas surface patrols because their armaments are not sufficient for deep-water combat operations.⁶⁹ China expects to field an additional 5 to 15 ships.⁷⁰
- In July, China commissioned its second Type 052D LUYANG III-class destroyer.⁷¹ According to the U.S. Office of Naval Intelligence report, *The PLA Navy: New Capabilities and Missions for the 21st Century*, the LUYANG III's advanced air defense radar "allows the PLA [Navy] surface force to operate with increased confidence outside of shore-based air defense systems, as one or two ships are equipped to provide air defense for the entire task group."⁷² The LUYANG III carries a variant of the advanced, long-range YJ-18 antiship cruise missile. The YJ-18's supersonic speed and assessed maximum range of 290 nautical miles will improve the antiaccess/area denial* capabilities of the PLA Navy.⁷³ In the next five years, China expects to deploy ten LUYANG IIIs in total.⁷⁴
- In late 2014, China for the first time landed several production-line J-15 fighters on its Soviet-built KUZNETSOV-class aircraft carrier, the *Liaoning*.⁷⁵ As China's naval aviators and the *Liaoning*'s crew gain experience operating aircraft from the *Liaoning*, China will make progress toward developing a potent expeditionary aircraft carrier force. Among other things, a fully operational *Liaoning* could contribute significantly to the PLA's combat capabilities in the South China Sea, where the short range of China's fighter fleet limits its power projection capabilities.⁷⁶
- In July, Chinese state media published an internal document of the China Shipbuilding Industry Corporation that confirmed China's first indigenous aircraft carrier is under construction.⁷⁷ If construction began in 2013, as U.S. analysts widely reported, it could reach initial operational capability † by 2020.‡⁷⁸ China

* According to DOD, "antiaccess" actions are intended to slow deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

† According to DOD, a system achieves initial operational capability when some units in the force structure scheduled to receive a system have received it and have the ability to employ and maintain it. Defense Acquisition University, *Glossary: Defense Acquisition Acronyms and Terms*, December 2012, B-107.

‡ One unattributed Chinese source suggests the carrier could be launched as early as December 2015. David Tweed, "China Aircraft Carrier Launch by End-2015 Plausible, Experts Say,"

appears to be building a second indigenous carrier,* and probably intends to build an additional one or two indigenous carriers.⁷⁹ Boasting a more sizable hull, which will likely allow it to accommodate a larger air wing than the *Liaoning*, China's new carrier will also feature engine and launch system improvements.

- China launched three new Type 093 SHANG-class nuclear attack submarines in May, according to Chinese media reports.⁸⁰ The new submarines are reportedly the first SHANGs to carry a vertical missile launch system capable of firing the long-range YJ-18 antiship cruise missile.†⁸¹ The increasing number of Chinese submarines and the growing range of Chinese submarine-launched munitions will greatly complicate the threat environment for U.S. ships operating near China.
- *Popular Science* reported in May that the PLA Navy has built a simulator to begin training the crew of its Type 095 guided-missile, nuclear-powered submarine, which is still under development.⁸² Jesse L. Karotkin, senior China analyst at the U.S. Office of Naval Intelligence, testified to the Commission that the Type 095 may “provide a generational improvement in many areas such as quieting and weapon capacity” and carry the PLA Navy's first submarine-launched land-attack cruise missile.⁸³
- In May, a report from Chinese state-run *People's Daily* claimed China has developed a highly efficient air-independent propulsion (AIP) system for diesel-electric submarines. Because AIP-equipped diesel-electric submarines need to surface to recharge their batteries less frequently, this will allow China's AIP-equipped submarines to operate for longer periods while limiting their chance of detection.⁸⁴
- Media reports suggest China launched its fifth Type 903 FUCHI-class auxiliary replenishment oiler in June.⁸⁵ China now fields nine auxiliary replenishment oilers, and its growing fleet better equips the PLA Navy's surface fleet, including future aircraft carrier task groups and expeditionary forces, to sustain high-tempo operations at longer ranges.⁸⁶ The demands of the PLA Navy's expanding missions in far seas have placed its auxiliary replenishment oiler fleet on near-constant deployment status.⁸⁷
- In July 2015, China commissioned the *Donghaidao*, the PLA Navy's first semisubmersible mobile landing platform.⁸⁸ The *Donghaidao* is a logistics ship capable of transporting troops, cargo, and some naval craft in the relatively shallow waters

Bloomberg, September 30, 2015; Open Source Center, “PRC Internet: China's First Indigenously Built Aircraft Carrier to Float out in December 2015,” September 24, 2015. ID: CHR2015092459609733.

*A Taiwan Ministry of Defense report on the PLA reportedly notes China's second indigenous carrier is currently under construction in Shanghai. Reuters, “China Building Two Aircraft Carriers: Taiwan Defense Ministry Report,” September 3, 2015.

†The YJ-18 has a much longer range than the YJ-82, which was previously China's only indigenous submarine-launched antiship cruise missile. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, May 2015, 10; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015, 16.

near contested land features in the South China Sea. It is capable of embarking China's POMORNIK hovercraft, which will significantly extend the range of the hovercraft and increase their usefulness in contingencies in the East and South China seas and those involving islands held by Taiwan.⁸⁹

China's Amphibious Forces

The PLA's continued investment in amphibious forces reflects China's perception of a rising need to meet security challenges in its maritime domain. Although amphibious forces, including amphibious lift, amphibious infantry, and auxiliary transport vehicles, would be crucial in an invasion of Taiwan, China does not appear to be building the amphibious lift capability necessary to conduct such a large campaign.⁹⁰ China would more likely use its amphibious forces in contingencies in the East and South China seas and those involving islands held by Taiwan. Significant developments in China's amphibious forces from late 2014 to 2015 include the following:

- With the conversion of two mechanized infantry divisions into amphibious mechanized infantry divisions from 2007 to 2012, China doubled its total amphibious mechanized infantry division personnel from about 30,000 soldiers to 52,000–60,000 soldiers and reorganized its amphibious mechanized infantry forces from two to four divisions.⁹¹ The primary role of China's amphibious mechanized infantry divisions is to supplement the PLA Marine Corps as China's main infantry force in amphibious invasions.
- China launched its fourth Type 071 YUZHAO-class landing platform dock in January 2015.⁹² China will eventually field six Type 071s, each of which can carry up to 60 armored vehicles and 800 troops, and up to four helicopters.⁹³ The expanding landing platform dock fleet will improve China's ability to move troops and equipment in South and East China sea missions.⁹⁴
- By early 2015, China had acquired two Ukrainian-built and one indigenously built POMORNIK hovercraft, the largest military hovercraft in the world.⁹⁵ China would deploy its hovercraft on amphibious lift ships to provide quick transport of infantry, tanks, and heavy equipment to shore during amphibious invasions. China plans to have a total of four POMORNIKS in service by the end of 2015.⁹⁶

China's Amphibious Forces—Continued

- Images of a model of a landing helicopter dock appeared on Chinese military web pages in April.⁹⁷ Although the model is not necessarily authoritative, it fits the description of a landing helicopter dock rumored since 2013 to be under construction.⁹⁸ A landing helicopter dock based on the model would be significantly larger than China's current landing platform docks, and as a mobile platform would increase China's ability to launch helicopters and move troops and equipment in East and South China seas contingencies.⁹⁹
- In March, China announced the completion of the front fuselage assembly for the prototype of its AG600 seaplane. The AG600 will be China's largest seaplane, and with a range of 2,970 nm it could improve China's troop transport and patrol capabilities throughout the South China Sea.¹⁰⁰ In addition to civilian uses, China will likely use the AG600 to carry supplies by air to South China Sea islands without an airstrip, and could use the AG600 to transport up to 50 troops at a time.¹⁰¹ Some analysts believe the AG600 could also conduct intelligence missions.¹⁰²

PLA Air Force

China's PLA Air Force modernization in 2015 included the development of cutting-edge force projection equipment and additions and upgrades to forthcoming and deployed weapon systems.* Significant developments in PLA Air Force modernization from late 2014 to 2015 include the following:

- In February 2015, documents emerged detailing the characteristics and flight test records of China's Divine Eagle unmanned aerial vehicle. These documents suggest the Divine Eagle is equipped with seven radars, including five active electronically scanned array radars, which could allow it to monitor stealth aircraft, such as the United States' B-2 bomber and F-35 fighter.¹⁰³ The Divine Eagle is well equipped to track incoming aircraft, ships, and cruise missiles and help coordinate interceptors from the Chinese mainland during a contingency. The vehicle's array of stealth features and 25-kilometer flight ceiling could degrade the ability of U.S. forces to detect and engage it.¹⁰⁴
- China introduced its first KJ-500 airborne early warning and control aircraft into service in early 2015, according to media reports.¹⁰⁵ China is expanding its fleet of approximately 13 airborne early warning and control aircraft to improve high-fidelity and time-sensitive tracking for China's air and maritime forces.¹⁰⁶ The KJ-500 will reportedly carry radar comparable to China's KJ-2000 airborne early warning and control plane,

*For a discussion of long-term trends in PLA Air Force modernization, including order of battle and acquisition information, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 308–314.

which “employs radar technology two generations ahead of that used by the U.S. Air Force’s E-3C [airborne early warning and control aircraft],” according to Carlo Kopp, an Australia-based military analyst and editor of *Air Power Australia*.¹⁰⁷ The KJ-500 uses the indigenous Y-8 airframe.

- Satellite imagery from October 2014 confirms China has received one of three ordered Ilyushin IL-78 MIDAS air refueling tankers from Ukraine.* The plane is the first modern addition to China’s small and outdated fleet of air refueling aircraft, which previously consisted of about 20 modified H-6 bombers operated by the PLA Air Force and the PLA Naval Air Force.¹⁰⁸ In addition to the two IL-78 tankers still due from Ukraine, China purchased up to 8 IL-78 tankers from Russia in the mid-2000s, but production issues have prevented Russia from delivering any planes to date.¹⁰⁹ Moreover, China may build new tankers based on the airframe of the indigenous Y-20 transport aircraft, which is still in development.¹¹⁰ Over the next decade, these air refueling tanker acquisitions could significantly extend the combat reach of some of China’s attack aircraft. However, the PLA will need to modernize its fleet of attack aircraft—most of which cannot refuel in the air—to take advantage of its expanding air refueling fleet.¹¹¹
- Media reports suggest China has built two new fifth-generation J-20 fighters, bringing its J-20 fleet to six aircraft. The two aircraft reportedly conducted their first flights in late 2014.¹¹² The J-20 could reach initial operational capability in 2017–2018, and China reportedly hopes to build 24 J-20s by 2020.¹¹³ The PLA Air Force views the J-20 as key to improving China’s ability to conduct offensive operations to deny an enemy’s chance to mobilize defensive forces.¹¹⁴ The J-20’s stealth features and electronic warfare capabilities would degrade the ability of U.S. forces within the first island chain to detect and engage it.†
- China’s prototype J-11D fighter had its first flight in April 2015. The J-11D has better radar and stealth features than previous fighters in the J-11 line, and almost certainly is capable of carrying China’s most advanced air-to-air and antiship missiles.¹¹⁵ The J-11D reportedly will feature a turbofan engine with improved thrust and reliability.¹¹⁶ The J-11 is a modern fighter comparable in performance to fourth-generation U.S. jets.¹¹⁷

*For more information on China’s expanding air refueling fleet, see Michael Pilger, “First Modern Tanker Observed at Chinese Airbase,” *U.S.-China Economic and Security Review Commission*, November 18, 2014.

†The first island chain refers to a line of islands running through the Kurile Islands, Japan and the Ryukyu Islands, Taiwan, the Philippines, Borneo, and Natuna Besar. The second island chain is farther east, running through the Kurile Islands, Japan, the Bonin Islands, the Mariana Islands, and the Caroline Islands. PLA strategists and academics have long asserted the United States relies primarily on the first island chain and the second island chain to strategically “encircle” or “contain” China and prevent the PLA Navy from operating freely in the Western Pacific. Open Source Center, “PRC Article Surveys China’s Naval Rivals, Challenges,” January 6, 2012. ID: CPP20120109671003; Bernard D. Cole, *The Great Wall at Sea* (Second Edition), Naval Institute Press, 2010, 174–176.

- The Aviation Industry Corporation of China may be developing a high-altitude hypersonic unmanned aerial vehicle for regional strategic reconnaissance operations. Taiwan press reporting suggests that the drone would be launched from H-6 bombers, capable of achieving speeds up to Mach 3 to 3.5; operating at a range of 5,500 kilometers (km) (3,417 miles (mi)) and a height of 95,140 feet (18 mi); and returning to an airbase.¹¹⁸

PLA Training and Exercises

The PLA conducts exercises and training to enhance warfighting competencies, integrate new weapon systems and tactics, develop and refine integrated joint operations command structures and concepts, evaluate crew and platform proficiencies, and demonstrate China's ability to project power in Asia and beyond, among other objectives.

Implementing President Xi's emphasis on real-combat military training was a top priority for all large-scale PLA military exercises in 2015.¹¹⁹ The Xi Administration frequently emphasizes the importance of military training under realistic combat conditions. The 2015 defense white paper states the PLA will begin to "intensify training" in complex scenarios and establish a "training supervision and inspection system, so as to incorporate real-combat requirements into training."¹²⁰ The PLA's military training appears to be growing more complex as it increasingly emphasizes joint exercises between diverse combat arms types. According to Xinhua, the PLA planned to conduct more than 100 joint exercises involving more than 50 corps in 2015.¹²¹

Major military exercises from late 2014 to 2015 included the following:

- From August to October, all four PLA services participated in the Joint Action 2015 exercises, a series of live-fire drills reportedly involving more than 140,000 troops.¹²² Joint Action is designed to integrate all Chinese armed forces to operate together across the spectrum of war. The exercises took place in several simultaneous or overlapping phases in different regions of the country, and emphasized testing troops' "joint operations using digitized commands and information."¹²³
- From July to September 2015, the PLA conducted the Firepower 2015 exercises, a series of cross-region base training exercises for artillery and air defense brigades.¹²⁴ The Firepower exercises are designed to link sensors to strike systems for joint target engagement. Firepower 2015 subjected participating brigades to "red versus blue" combat simulations.* One

*"Red versus blue" exercises in the U.S. military pit a "red" force that simulates a potential foe's capabilities against a "blue" force that simulates the capabilities of friendly forces. Chinese media reports suggest that in Chinese red versus blue exercises, the red force represents friendly forces and the blue force represents an enemy force. Open Source Center, "CCTV-7: Jinan Air Defense Unit Holds Ground-Air Confrontations in 'Firepower-2015 Shandan D' Drill," August 9, 2015. ID: CHO2015081029855809; Open Source Center, "CCTV-Xinwen: Lanzhou MR Units Hold Confrontations in 'Firepower-2015 Qingtongxia C' Exercise," August 4, 2015. ID: CHO2015080513756969; and Open Source Center, "People's Liberation Army Daily: PRC Air Force's First Blue Team Makes Debut in Firepower-2015-Shandan A Exercise," July 6, 2015. ID: CHR2015070623165581; Open Source Center, "JFJB Photo: 'Stride 2015-Zhurihe Military Drill Kicks Off,'" June 2, 2015. ID: CHN2015060221884644.

feature of these exercises has been the use of opposing force electromagnetic warfare* operations by blue forces to train PLA units to operate under conditions that simulate U.S. tactics.¹²⁵ This raft of brigade-level exercises likely will increase the ability of commanders at the brigade level and lower to innovate and take the initiative in combat, and reduce the tendency among front-line PLA commanders to push decisions up the chain of command.¹²⁶ The PLA will use Firepower 2015 to evaluate and rank all units to ensure the highest-performing PLA units will be deployed at the front lines of future conflicts.¹²⁷

- China held the Stride 2015 military exercises from June to September. Stride 2015 subjected 29 brigades to red versus blue simulated combat drills at six training sites across China, with most of the drills occurring in the Inner Mongolia Autonomous Region. According to a *China Military Online* report, Stride 2015 emphasized “the commanders’ planning for combat operations, command [and] control training, . . . ground-air coordination training, harmonious training between ‘new type’ forces [such as special operations forces] and traditional forces and the transformation and application of new combat methods and results.”¹²⁸ As the PLA develops its command and control and joint operations capabilities in simulated combat, it will become increasingly capable of integrating its evolving military forces to conduct large-scale military operations involving diverse combat arms types.
- In March, Chinese long-range bombers traversed the Bashi Channel between Taiwan and the Philippines to conduct the first known PLA Air Force drill in the Western Pacific.¹²⁹ The planes involved were reportedly H-6K bombers, which can carry long-range land attack cruise missiles capable of reaching Guam.¹³⁰ The PLA Air Force conducted another drill through the Bashi Channel in August, with “multiple types of aircraft . . . reaching 1,000 kilometers [540 nm] beyond the First Island Chain,” according to Chinese state-run media outlet Xinhua.¹³¹ These drills provided pilots with maritime flight experience and reflect the PLA Air Force’s growing role in support of the PLA’s strike missions into the second island chain.¹³² China most likely intended these drills to develop its far-seas power projection capabilities, and to demonstrate its ability and intention to exert influence farther from the Chinese mainland.
- In May 2015, the PLA Air Force for the first time successfully airdropped heavy artillery into “enemy” rear areas during a drill.¹³³ According to Chinese media, the artillery airdrop “indicates a major leap forward for [the PLA’s] airborne operation capability.”¹³⁴ This capability could have applications in a Taiwan conflict scenario.

* Electromagnetic warfare involves the use of focused energy, usually radio waves or laser light, to confuse or disable an enemy’s electronics and protect the electronics of friendly forces. Raytheon, “Electronic Warfare”; Lockheed Martin, “Electronic Warfare.”

PLA Navy Sails through U.S. Arctic Waters

On September 2, five PLA Navy ships sailed through Alaska's Aleutian Island chain. This marked the first time the PLA operated in the Bering Sea, and the first time it operated in the United States' territorial sea (i.e., within 12 nm of U.S. territory) during a far sea deployment without a U.S. port call. According to U.S. defense officials, the PLA Navy flotilla (which included three combat ships, a supply ship, and an amphibious ship) operated in accordance with international law as articulated in the UN Convention on the Law of the Sea (UNCLOS), which allows for "innocent passage" within the territorial sea, as well as "transit passage" through straits.¹³⁵ The PLA Navy ships sailed through the area following a military exercise with Russia in the Sea of Japan.¹³⁶

The PLA Navy's transit was significant in part because, while it was consistent with international law, it contravened China's unconventional policy on foreign militaries' operations in its own exclusive economic zone and territorial sea.¹³⁷ China asserts that it has the right to require foreign ships to obtain permission or provide notification before conducting innocent passage, although UNCLOS does not include such a provision.¹³⁸ It is unclear whether the PLA Navy's transit through U.S. territory reflects a shift in China's long-standing policy.

The unprecedented transit came as China has indicated a growing interest in the Arctic, particularly in opportunities for new shipping routes and natural resource exploitation.¹³⁹ U.S. Pacific Command Commander Admiral Harry Harris testified to Congress that he believed the PLA Navy passed through the Aleutian Islands in part to "demonstrate their capability to operate that far north."¹⁴⁰ The timing of the transit coincided with President Obama's visit to Alaska, which included, among other events, a U.S.-led conference of global leaders (including from China) and stakeholders in Arctic issues.¹⁴¹ When asked whether the PLA transit was timed to coincide with President Obama's visit, Adm. Harris replied, "I think it was coincidental, but I don't know that for a fact."¹⁴²

China's Global Security Activities in 2015

China's global security engagement continued to expand in 2015, reflecting China's maturing international security interests and the PLA's improving capacity to operate in unfamiliar environments far from China's shores.

China Seeks Arrangements for Overseas Military Facility

In its 2015 defense white paper, China said its "growing strategic interests" would require an expansion of overseas military engage-

ment to safeguard its overseas interests.*¹⁴³ It is widely understood that China will use the PLA to protect these overseas interests, which include growing overseas expatriate populations and commercial interests.¹⁴⁴ The PLA Navy already operates routine patrols of busy shipping lanes vulnerable to piracy in the Gulf of Aden † and has been involved in Chinese noncombatant evacuation operations overseas. Moreover, China appears to be working to establish military facilities in strategically important parts of the world, especially in the greater Indian Ocean region. These facilities would support logistical requirements and greatly assist the PLA Navy in increasing its global presence.¹⁴⁵

According to statements by Djibouti President Ismail Omar Guelleh, the governments of China and Djibouti are in talks to establish a Chinese military facility in Djibouti.¹⁴⁶ These negotiations follow a 2014 defense cooperation agreement between Djibouti and China that allowed PLA Navy ships to dock at the Port of Djibouti and brought hundreds of millions of dollars in Chinese investment to the country.¹⁴⁷ To date, PLA Navy ships have visited the Port of Djibouti more than 50 times to resupply food, perishables, and water.¹⁴⁸ A permanent Chinese military facility could allow China to offer its ships a more comprehensive set of resupply services in Djibouti while supporting China's antipiracy operations in the Gulf of Aden. Moreover, Djibouti occupies a strategic position at the Bab-el-Mandeb—a chokepoint for sea lines of communication between the Red Sea and Indian Ocean—through which travels a large portion of hundreds of billions of dollars in trade between China and the Middle East and Europe.¹⁴⁹ A military foothold in Djibouti would boost China's power projection capabilities in an area of the world crucial to China's economic interests. The United States, France, and Japan each have a permanent military presence in Djibouti. The United States military's Camp Lemonnier in Djibouti is a hub for U.S. counterterrorism operations in Africa and the Middle East.¹⁵⁰

China may seek to establish military facilities elsewhere in the region as well. Over the last few years, China has played a large role in financing and constructing civilian port infrastructure in the Indian Ocean, including the Port of Colombo and Port of Hambantota in Sri Lanka, and Gwadar Port in Pakistan.¹⁵¹ Furthermore, PLA Navy antipiracy task groups have made port calls in at least 12 regional countries for resupply and replenishment and military-to-military engagements.¹⁵² Chinese investments in commercial ports in the Indian Ocean and Chinese naval diplomacy with countries in the region will likely improve the PLA Navy's ability to replenish using regional ports, and could lay the groundwork for future logistics hubs in the Indian Ocean.

*This reflects the PLA's New Historic Mission to protect China's expanding national interests. In December 2004, then Chinese President Hu Jintao outlined four "New Historic Missions" for the Chinese military. According to Daniel Hartnett, analyst at CNA Corporation, the missions are "to ensure military support for continued Chinese Communist Party rule in Beijing; to defend China's sovereignty, territorial integrity, and national security; to protect China's expanding national interests; and to help ensure a peaceful global environment and promote mutual development." U.S.-China Economic and Security Review Commission, *Hearing on China's Military and Security Activities Abroad*, written testimony of Daniel Hartnett, March 4, 2009.

†The Gulf of Aden is a gulf between the Horn of Africa and the south coast of the Arabian Peninsula. It is a crossroads for trade between the Indian Ocean and Mediterranean Sea.

China's Submarine Deployments

In late 2013, China began its first known submarine deployment to the Indian Ocean. Chinese officials have claimed these submarines support China's antipiracy activities in the Indian Ocean.¹⁵³ The more likely purpose of these deployments, though, is to collect intelligence on U.S., Indian, and other forces in the Indian Ocean; test and enhance the ability of China's submarine crews to operate for long durations at extended distances from the Chinese mainland; prepare for potential crises and wartime operations in the Indian Ocean; and demonstrate China's growing strategic interests in the region.¹⁵⁴ According to Adm. Harris:

*We're seeing Chinese submarine deployments extend farther and farther [from China], almost with every deployment. It has become routine for Chinese submarines to travel to the Horn of Africa region and North Arabian Sea in conjunction with their counterpiracy task force operations. We are seeing their ballistic missile submarines travel in the Pacific at [longer] ranges, and of course all of those [deployments are] of concern.*¹⁵⁵

These deployments demonstrate China's growing ability to conduct small-scale, long-distance naval operations for extended durations despite its lack of overseas military facilities. Moreover, these deployments suggest Chinese submarine commanders and crews are becoming familiar with the operating environment of the Indian and Pacific oceans. With the visit of a PLA Navy submarine to the Port of Karachi, Pakistan, in May 2015, China has now conducted at least four submarine deployments in the Indian Ocean region since December 2013.¹⁵⁶ China's submarine deployments in the Indian Ocean include the following:

- From December 2013 to February 2014, a SHANG-class nuclear attack submarine conducted China's first known submarine patrol in the Indian Ocean.*¹⁵⁷
- In September 2014, a Chinese SONG-class diesel-electric submarine † made a port call in Colombo, Sri Lanka.¹⁵⁸ Another port call to Colombo by a Chinese submarine was reported in October 2014.‡¹⁵⁹ These visits highlight what have been generally positive relations between China and Sri Lanka in recent years, including contracts for billions of dollars in Chinese investment in Sri Lanka. In February 2015, however, the

*The SHANG nuclear attack submarine carries torpedoes (range of 15 nm) and YJ-82 anti-ship cruise missiles (20 nm) and will likely be equipped with the YJ-18 antiship cruise missile (290 nm) in coming years. The SHANG is designed for antisurface warfare and intelligence, surveillance, and reconnaissance operations, and likely will escort future nuclear deterrent patrols and aircraft carrier task groups. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 301.

†The SONG's weaponry, expected missile upgrades, and role in PLA Navy operations are similar to those of the SHANG nuclear attack submarine. *IHS Jane's*, "Jane's Fighting Ships: Song Class (Type 039/039G)," February 13, 2015; U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 301.

‡Sources disagree about whether the October 2014 port call involved the same SONG-class submarine that visited Colombo in September, or a HAN-class nuclear attack submarine. Atul Aneja, "China Says its Submarine Docked in Sri Lanka 'for Replenishment,'" *Hindu*, November 28, 2014; Shihar Aneez and Ranga Sirilal, "Chinese Submarine Docks in Sri Lanka despite Indian Concerns," Reuters, November 2, 2014.

newly elected Sri Lankan government ruled out future Chinese submarine visits and stopped work on the \$1.5 billion Chinese development of the Port of Colombo pending an investigation into rumors of impropriety surrounding the contract.¹⁶⁰ Although in June Sri Lanka outlined steps for the project to resume, this development suggests the new Sri Lankan government may be taking a more skeptical view of economic and security cooperation with China than did its predecessor.¹⁶¹

- In April 2015, a Chinese submarine finished a two-month deployment to the Gulf of Aden. According to media reports, it was a HAN-class nuclear attack submarine.*¹⁶²
- In May 2015, a Chinese YUAN-class diesel-electric submarine visited the Port of Karachi, Pakistan,¹⁶³ one month after China reportedly agreed to sell eight YUANs to Pakistan.†¹⁶⁴

PLA Navy Evacuates Citizens from Yemen

From March 29 to April 6, 2015, China conducted a noncombatant evacuation operation ‡ (NEO) in war-torn Yemen, marking the first Chinese NEO conducted exclusively by the PLA.¹⁶⁵ China's Gulf of Aden antipiracy task force, consisting of two PLA Navy frigates and a replenishment ship, brought about 600 Chinese citizens and more than 200 foreign nationals across the Gulf of Aden to the port of Djibouti. The PLA Navy conducted the evacuation without encountering hostile forces. The Yemen operation was a significant symbolic milestone as China works to build its reputation as a responsible global power.¹⁶⁶ According to Deputy Chief of the PLA's General Staff Department Sun Jianguo, the Yemen NEO is an example of China's "unique role in the effort to create a peaceful, stable, prosperous neighborhood and [provide] public services to address global problems and challenges."¹⁶⁷

China has conducted more than a dozen NEOs since 2006, including NEOs in Chad, Haiti, Kyrgyzstan, Lebanon, the Solomon Islands, Thailand, Timor-Leste, Tonga, Egypt, Libya, Japan, Iraq, and Vietnam. These NEOs involved the evacuation of 59,600 Chinese nationals in total.¹⁶⁸ Generally, Chinese civilian government agencies—not the PLA—led these NEOs, usually by marshaling commercial ships and aircraft.¹⁶⁹ Significant recent Chinese non-combatant evacuation operations include the following:

- In 2011, the PLA Air Force and Navy deployed four cargo aircraft and one surface combatant, respectively, to support and protect the Ministry of Foreign Affairs-led evacuation of 35,000 Chinese nationals from Libya. This marked the first use of

*China's aging HAN nuclear attack submarines have weaponry similar to the SONG diesel-electric submarine, but because China has already begun to decommission its older HAN boats and probably will phase out this class as more modern submarines are incorporated into the fleet, the HAN nuclear attack submarine is unlikely to receive substantial armaments upgrades in the near future. *IHS Jane's*, "Jane's Fighting Ships: Han class (Type 091/091G)," February 13, 2015.

†The YUAN's weaponry, likely missile upgrades, and role in PLA Navy operations are similar to those of the SHANG nuclear attack submarine and SONG diesel-electric submarine. *IHS Jane's*, "Jane's Fighting Ships: Yuan Class (Type 041)," February 13, 2015.

‡Noncombatant evacuation operations involve the extraction of civilians from a foreign country amid a dangerous security situation.

PLA military platforms in a Chinese NEO.¹⁷⁰ China's ministries of Commerce and Public Security, the Civil Aviation Administration of China, Chinese companies operating in Libya, and Chinese shipping companies also participated in the evacuation and coordinated closely with the PLA.¹⁷¹

- In May 2014, Chinese civilian government and embassy personnel worked with the Vietnamese government to coordinate the evacuation of 3,553 Chinese nationals from Vietnam following violent anti-Chinese riots. Representatives of the state-owned Metallurgical Corporation of China—the employer of most of the evacuees and a target of the riots—also helped to coordinate the evacuation. The Chinese government used chartered planes to evacuate the roughly 100 people injured in the riots and four chartered ships to evacuate the rest.¹⁷²

The Yemen NEO furthers China's goal to develop NEO capabilities in far seas.¹⁷³ The size and projected growth of China's expatriate population and overseas economic assets motivates this mission. Chinese citizens made more than 100 million trips abroad in 2014, and will make 150 million trips abroad annually by 2020.¹⁷⁴ According to Mathieu Duchâtel, senior researcher at the Stockholm International Peace Research Institute, and Jonas Parello-Plesner, former senior policy fellow at the European Council on Foreign Relations, more than five million Chinese nationals live abroad, many working for one of the 20,000 Chinese companies operating overseas.¹⁷⁵ China assesses protecting overseas Chinese citizens and economic assets will require greater expeditionary capabilities, and the 2015 defense white paper suggests China will develop its NEO capabilities by expanding the PLA Navy's global presence and calling on the PLA, rather than civilian government organizations, to run future NEOs. Although the PLA Navy has demonstrated the ability to conduct a NEO in a permissive environment, its limited operational experience and planning capability and lack of overseas military assets and bases may hamper its ability to extend its NEO capabilities beyond the Asia Pacific and greater Indian Ocean regions and to operate in hostile environments. China will likely continue to acquire blue-water naval assets, seek new training and experience for its personnel, and cultivate port agreements in far seas to overcome some of these deficiencies.

China-Russia Security Relations in 2015

China and Russia continued to enhance cooperation in the security realm in 2015. This trend is likely to continue as Beijing and Moscow seek areas of shared interest on which to align while downplaying their growing competition in the economic and foreign policy realms.

Joint Sea 2015

In the first phase of Joint Sea 2015 military exercise, which took place from May 17 to May 21, two PLA Navy Type 054A frigates and a Type 903 auxiliary replenishment oiler met five Russian Navy ships for the first China-Russia joint exercise in the Mediterranean Sea.¹⁷⁶ The exercise featured navigation safety, underway replenishment, escort missions, and live fire training.¹⁷⁷ The Chinese ships docked in the Russian Black Sea port of Novorossiysk several days before the exercises.¹⁷⁸ China's increasing military activity in the Mediterranean Sea indicates Beijing's interest in protecting regional trade routes, maintaining its ability to conduct noncombatant evacuation operations in the region, and demonstrating the increasingly global reach of its military.¹⁷⁹

The second phase of the exercise took place in the Sea of Japan from August 20 to August 28 and was reported by Chinese and Russian press to be the largest-ever exercise between the two countries.¹⁸⁰ One Russian Navy deputy commander noted that it was "unprecedented" in scope.¹⁸¹ The weeklong exercise, which involved 7 PLA Navy surface ships, 5 PLA Air Force aircraft, and 200 Chinese marines,¹⁸² focused on "anti-sabotage, anti-submarine, anti-vessel and anti-aircraft defense"¹⁸³ and culminated in a joint amphibious landing drill,¹⁸⁴ the PLA's first ever amphibious landing in a foreign country.¹⁸⁵

China Purchases Russian S-400 Air and Missile Defense Systems

China will purchase S-400 air and missile defense systems from Russia, according to an April 2015 statement from the chief executive officer of Russian arms exporter Rosoboronexport. China signed a contract to purchase the S-400s in 2014.¹⁸⁶ Analysts say the order likely includes four to six units, at a total cost of \$3 billion.¹⁸⁷ The S-400 will extend the range of China's surface-to-air missile force from 300 kilometers (approximately 186 miles) to 400 kilometers (approximately 249 miles)—enough to cover all of Taiwan, the Senkaku Islands in the East China Sea, and parts of the South China Sea¹⁸⁸—and feature an improved ballistic missile defense capability over China's existing surface-to-air missile systems.¹⁸⁹ China also is developing its own next-generation surface-to-air missile, the HQ-19, which likely will have capabilities similar to the S-400.¹⁹⁰

China-Russia Security Relations in 2015—Continued

War Anniversary Parade in Moscow

On May 9, 102 Chinese soldiers marched in a military parade in Moscow to commemorate the anniversary of the end of World War II.¹⁹¹ President Xi also attended the event. China was one of only ten countries to send a delegation because many Western leaders boycotted the parade over Russia's actions in Ukraine.¹⁹² The participation of Chinese troops in the parade may signal China's growing, if temporary, security alignment with Russia as each country deals with strained security relations with its respective neighbors.

China's Global Arms Sales

China overtook Germany to become the third-largest arms exporter worldwide in 2015, according to a Stockholm International Peace Research Institute study.¹⁹³ Between the periods 2005–2009 and 2010–2015, China's exports of major arms rose 143 percent from \$3.1 billion to \$7.6 billion. China's arms exports increasingly include advanced weapons and platforms, such as jet fighters and missile corvettes. The surge and growing complexity in China's arms exports reflect the maturation of China's domestic defense industry after decades of significant Chinese government investment in defense research and development, as well as China's efforts to secure foreign military technology through arms transfers and espionage.¹⁹⁴ China is poised to continue growing its arms exports as it increasingly offers low-cost alternatives to advanced platforms formerly available only from the United States and Russia. Moreover, these mounting arms exports will support China's military modernization program by defraying the costs of some of the country's investments in its domestic defense industry.

In the past ten years, China has sold weapons to 48 countries, all in Asia, Africa, or Latin America.¹⁹⁵ Several countries, including Algeria, Argentina, Bangladesh, Burma (Myanmar), and Nigeria, have acquired major naval platforms from China. China also has secured deals to supply several countries, including Pakistan, Venezuela, and Bangladesh, with jet fighter aircraft, and is likely to pursue new jet fighter transfers in the near future.¹⁹⁶ Major Chinese arms export deals over the past several years have included the following:

- In March 2015, Pakistan agreed to purchase eight Chinese YUAN-class submarines in a deal reportedly worth as much as \$5 billion.¹⁹⁷ The acquisition could support Pakistan's efforts to develop a sea-based nuclear deterrent.¹⁹⁸ Pakistan's YUANs most likely would feature air-independent propulsion diesel engines, a standard feature of PLA Navy YUANs that increases stealth and endurance.
- In June 2015, the *Bangkok Post* reported China had won a bid to provide Thailand with three YUAN-class submarines at a

cost of about \$1 billion.¹⁹⁹ Thailand reportedly chose the Chinese bid over bids from Germany and South Korea. Many analysts interpreted the deal as a signal that Thailand's ruling junta seeks closer security ties with China as its partnership with the United States falters.²⁰⁰ However, in July, Thailand's military leadership apparently shelved the deal, most likely due to popular opposition to the allocation of funds to military acquisitions at the cost of social welfare and economic programs.²⁰¹

U.S.-China Security Relations in 2015

U.S.-China relations were strained in 2015, with China's continued aggressive behavior in the South China Sea and its ongoing cyber espionage against U.S. targets as the two major irritants from Washington's point of view.

U.S.-China Tensions in the South China Sea

Even as China's destabilizing actions in the South China Sea alienate U.S. allies and partners and challenge lawful air and maritime transit by the U.S. military, Beijing continues to insist that the United States should not involve itself in issues related to the South China Sea.²⁰² In 2015, China's land reclamation activity on seven land features increased tensions between Beijing and its neighbors regarding disputes over the contested Spratly Islands. (See Chapter 3, Section 2, "China and Southeast Asia," for an in-depth examination of China's land reclamation and other activities in the South China Sea.)

U.S.-China tensions in the South China Sea began to heighten considerably in May 2015. On May 12, as more details of China's land reclamation in the South China Sea came to light, the *Wall Street Journal* reported that U.S. Secretary of Defense Ashton Carter was contemplating sending U.S. Navy surveillance aircraft and ships within 12 nm of China's land reclamation projects, citing "growing momentum within the Pentagon and the White House for taking concrete steps in order to send Beijing a signal that the recent buildup in the Spratlys went too far and needed to stop."²⁰³ On October 27, after much deliberation by the Obama Administration, a U.S. Navy guided missile destroyer conducted a freedom of navigation patrol within 12 nm of Subi reef, an artificial island created by China from a low-tide elevation,* appearing to signal that the United States does not consider Subi Reef to have a territorial sea.²⁰⁴

Starting in May and continuing through the summer, the U.S. Navy more regularly publicized its air patrols near the land reclamation projects. On May 20, a CNN reporter accompanied the crew of a U.S. Navy P-8A Poseidon surveillance plane that flew from Clark Air Base in the Philippines to airspace near some of China's land reclamation projects. Over the course of the flight, the

*According to UNCLOS, low-tide elevations, which are submerged at high tide, may not generate a territorial sea unless they are located within the territorial sea of another island or mainland coastline. UN Convention on the Law of the Sea, "Part 2: Territorial Sea and Contiguous Zone." See also Gregory Poling, "Carter on the South China Sea: Committed and (Mostly) Clear," *Center for Strategic and International Studies Asia, Maritime Transparency Initiative*, June 3, 2015.

PLA Navy ordered the crew of the Poseidon to leave the airspace eight times.²⁰⁵ CNN reported the P-8 crew had been flying such missions for months and were accustomed to similar warnings, but they noted the warnings had become more frequent and aggressive as China's land reclamation projects progressed. That same month, a U.S. defense official said U.S. Navy surveillance missions near China's land reclamation projects occur on an almost-daily basis.²⁰⁶ In July, Commander of the U.S. Pacific Fleet Admiral Scott Swift told reporters he had been present on one such flight, noting that the missions were "positive and structured," and "normalized."²⁰⁷

Publicizing U.S. naval patrols and surveillance flights near China's reclaimed land features in the South China Sea appears to be part of a growing effort by the United States both to impose reputational costs on China and to reassure allies, partners, and friends in the region as China's land reclamation and construction activities continue. In his keynote speech at the 2015 Shangri-La Dialogue,* Secretary Carter asked for "a lasting halt" to land reclamation in the South China Sea and harshly criticized China's land reclamation, saying, "Turning an underwater rock into an airfield simply does not afford the rights of sovereignty or permit restrictions on international air or maritime transit."²⁰⁸ He also reaffirmed the United States' right and intention to "fly, sail, and operate wherever international law allows,"²⁰⁹ a statement President Obama repeated in a joint press conference during President Xi's first ever state visit to the United States in September.²¹⁰

At the time of the writing of this Report, U.S. pressure on China to cease further land reclamation and military facilities construction appears to have largely been ineffective. In August, China's foreign minister announced China's land reclamation "has already stopped," in an attempt to assuage concerns as consensus was building between the United States and Southeast Asian countries to call for a lasting halt to all land reclamation in the South China Sea.²¹¹ The Chinese foreign minister's assertion was false, however; although the land reclamation phase appears to be nearing completion, China continues to build, expand, and upgrade infrastructure on these reclaimed sites.²¹² During the September state visit, President Xi again sought to allay concerns, stating "China does not intend to pursue militarization"²¹³ of the artificial islands. Absent greater specificity about what constitutes "militarization," and given the existing military infrastructure on China's reclaimed features, President Xi's pledge seems similarly disingenuous.

Memoranda of Understanding on U.S.-China Maritime Encounters

After several close encounters between the U.S. and Chinese militaries in and above the South China Sea in 2013 and 2014,†

*The Shangri-La Dialogue is a high-profile meeting of regional defense leaders held annually in Singapore.

†In December 2013, a PLA Navy ship executed unsafe maneuvers 300 feet from a U.S. Navy ship in the South China Sea, nearly resulting in a collision. On four occasions between March and August 2014, PLA Air Force planes engaged in dangerous and aggressive maneuvers against U.S. Navy aircraft over international waters in the South China Sea. Josh Chin, "Chinese Intercepts of U.S. Aircraft: Rogue Pilots or Realpolitik?" *China Real Time Report* (*Wall Street Journal* blog), August 26, 2014; Tom Cohen, "'Aggressive' Chinese Fighter Jet Flies Dangerously Close to U.S. Military Plane," CNN, August 24, 2014; Scott Neuman, "Photo Released of Chinese Fighter That Buzzed U.S. Navy Plane," *National Public Radio*, August 23, 2014; and

DOD and the Chinese Ministry of Defense completed negotiations on two voluntary memoranda of understanding (MOUs) on “Rules of Safety of Air and Maritime Encounters” and “Notification of Major Military Activities” in November 2014.

The “Rules” MOU seeks to avoid miscalculations and misunderstandings in encounters between U.S. and Chinese surface ships by establishing best practices for unplanned encounters.*²¹⁴ During the September 2015 state visit, the two countries announced an air-to-air annex to the “Rules” MOU.†²¹⁵ The “Notifications” MOU aims to increase transparency between the two militaries by providing best practices for regularly sharing information about security-related policy developments in each country and by establishing a mechanism to encourage the two militaries to invite each other to observe unilateral, bilateral, and multilateral exercises.²¹⁶ At the September state visit, the two sides announced an annex providing rules for an emergency military hotline as well.²¹⁷

The extent to which the Chinese and U.S. militaries have followed the MOU guidance in their interactions is unclear. According to September 2015 testimony to Congress by Adm. Harris, U.S. Pacific Command has “seen very few dangerous activities by the Chinese” since August 2014.²¹⁸ Days later, U.S. National Security Adviser Susan Rice also asserted that “[w]e’ve seen a marked improvement in operational safety since we signed [the MOUs].”²¹⁹ One day after Ms. Rice’s statement, however, the *Wall Street Journal* reported that on September 15, 2015, two Chinese fighter jets flew within 500 feet of a U.S. Air Force reconnaissance plane approximately 80 miles from China’s coast in the Yellow Sea. U.S. defense officials referred to the intercept as “unsafe,” but were hopeful that it was an isolated incident, noting “improvements” in the behavior of PLA pilots since last year.²²⁰

Chinese Cyber Espionage Continues to Damage Relations

China’s unabated use of cyber espionage continues to erode trust between Washington and Beijing. Of particular concern to the U.S. government and business community is Chinese cyber-enabled economic espionage. Chinese economic espionage not only disadvantages the U.S. economy, but also can have an impact in the security realm when targeting defense contractors and sensitive tech-

John Harper, “Hagel Calls Chinese Actions against USS Cowpens ‘Irresponsible,’” *Stars and Stripes*, December 19, 2013.

* This MOU follows a similar nonbinding agreement signed in 2014, the “Code on Unplanned Encounters at Sea” between China, the United States, and 19 other Pacific countries. Neither of these agreements addresses China’s policy of requiring prior permission for foreign intelligence gathering and military activity in its exclusive economic zone, contrary to international law. Referring to the 2014 code, a senior PLA Navy official stated that “whether or where or when these rules apply” had not been decided. Similarly, the “Rules” MOU allows each country their own interpretation, stating “this Memorandum is made without prejudice to either side’s policy perspective on military activities in the exclusive economic zone.” Jeremy Page, “China Won’t Necessarily Observe New Conduct Code for Navies,” *Wall Street Journal*, April 23, 2014; U.S. Department of Defense and Chinese Ministry of National Defense, *Memorandum of Understanding between the United States of America Department of Defense and the People’s Republic of China’s Ministry of Defense on Notification of Major Military Activities Confidence Building Measures Mechanism*, November 4, 2014, 4; and Peter Dutton and Andrew Erickson, “When Eagle Meets Dragon: Managing Risk in Maritime East Asia,” *Real Clear Defense*, March 25, 2015.

† During the state visit, the two countries also announced they would pursue a parallel “Rules” MOU for the U.S. and Chinese coast guards. *White House Office of the Press Secretary*, “Fact Sheet: Chinese President Xi Jinping’s State Visit to the United States,” September 25, 2015.

nologies with military applications. A January 2015 internal DOD report found the U.S. defense industry to be vulnerable to cyber espionage, asserting there were “significant vulnerabilities on nearly every [DOD] acquisition program that underwent cybersecurity [operational test and evaluation] in [fiscal year] 2014.”²²¹ (For an in-depth discussion of China’s cyber-enabled economic espionage activities, see Chapter 1, Section 4, “Commercial Cyber Espionage and Barriers to Digital Trade in China.”)

Chinese cyber espionage against the United States government is also of concern. Perhaps the most notable evidence of China’s growing espionage against the U.S. government came in 2015 with the revelation that the personal information of more than 22 million Americans as well as millions of sensitive and classified documents had been exfiltrated from the U.S. Office of Personnel Management via a massive cyber espionage campaign.²²² Several observers, including the U.S. Director of National Intelligence James Clapper, have suggested the Chinese government was behind the campaign.²²³ At the time of the writing of this Report, the U.S. government had not publicly attributed the espionage campaign to China.

In addition, China is developing capabilities to conduct offensive cyber operations—which are separate from cyber espionage—against U.S. military or civilian systems.* An updated edition of one of China’s most authoritative resources on military strategy, *The Science of Military Strategy*, acknowledges for the first time the existence of offensive cyber forces within China’s military, something Beijing had previously denied.† As noted earlier, China’s 2015 defense white paper refers to the cyber realm as one of two “new commanding heights in strategic competition.”²²⁴ According to U.S. defense officials, the United States and China are negotiating an agreement that neither side will conduct offensive cyber operations against each other’s civilian critical infrastructure in peacetime.²²⁵

Select U.S.-China Security-Related Visits and Exchanges in 2015

Presidents Obama and Xi Hold a Summit: As noted earlier, President Xi Jinping made his first ever state visit to the United States in September 2015. During the visit, the two countries announced several agreements and cooperative efforts, the most prominent related to climate change and cyber-enabled economic espionage. In addition to the expanded military MOU noted previously, other security and foreign policy announcements included commitments to: advance counterterrorism cooperation (particularly on countering improvised explosive devices); expand

* For an assessment of China’s offensive cyber warfare capabilities and how they might interact with U.S. forces and systems in a conflict, see Evan Heginbotham et al., “The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power 1996–2017,” *RAND Corporation*, September 2015, 259–282.

† The updated *Science of Military Strategy* was published in Chinese in 2013, but had not been translated into English until early 2015. Shane Harris, “China Reveals Its Cyberwar Secrets,” *Daily Beast*, March 18, 2015.

Select U.S.-China Security-Related Visits and Exchanges in 2015—Continued

humanitarian assistance and disaster relief cooperation; establish an annual bilateral dialogue on nuclear security; and maintain cooperation in support of reconstruction and economic development in Afghanistan.²²⁶

U.S.-China Strategic and Economic Dialogue: At the seventh round of the Strategic and Economic Dialogue talks held in Washington on June 23–24, 2015, participants discussed over 100 issues, but accomplished little on the “Strategic Track,” likely due to impasses over the South China Sea and cybersecurity.²²⁷

Central Military Commission Vice Chairman Fan Changlong Visits the United States: General Fan spent six days in the United States in June 2015, visiting the U.S. aircraft carrier *Ronald Reagan* in San Francisco, a Boeing factory in Seattle, and the U.S. Army Base at Fort Hood before arriving in Washington, DC, for meetings with Pentagon and State Department officials.²²⁸ During his visit, the two sides established an Army-to-Army Dialogue.²²⁹ China’s land reclamation in the South China Sea was a prominent discussion topic, although it appears little progress was made to address either side’s concerns.²³⁰ General Fan invited Secretary Carter and Adm. Harry Harris to visit China before the end of the year.²³¹ General Fan visited Cuba immediately after his trip to the United States.²³²

Joint Antipiracy Exercises in the Gulf of Aden: The U.S. and Chinese navies participated in their third annual joint antipiracy exercise in the Gulf of Aden in December 2014. The two-day exercise involved a U.S. Navy guided-missile destroyer, at least two PLA Navy ships, and more than 700 personnel. The exercise included combined visit, board, search, and seizure operations (to include the landing of a PLA Navy helicopter on the U.S. ship), and communications exchanges, among other activities.²³³ Captain Doug Stuffle, commander of U.S. Navy Destroyer Squadron 1, said, “These bilateral exercises help us establish clear paths for communication; they encourage transparency of trust, help us mitigate risk, and allow us to demonstrate cooperative efforts in the international community to help us work together to deal with transnational threats. In the end, we look to create a peaceful, stable and secure maritime domain.”²³⁴ The PLA, which has been undertaking antipiracy patrols in the Gulf of Aden since December 2008, began its 21st escort task force in August 2015.²³⁵

Joint Exercise in the South China Sea: In April, the U.S. Seventh Fleet flagship *Blue Ridge* and a PLA Navy landing craft conducted joint drills in uncontested waters of the South China Sea. The first part of the exercise focused on improving communication at sea; the second part focused on search and rescue.²³⁶

Other Military Exercises: The U.S. and Chinese militaries participated in several multilateral exercises together in 2015. In January, a combined U.S., Chinese, and Thai military engineer

Select U.S.-China Security-Related Visits and Exchanges in 2015—Continued

force built a school in Thailand as part of the multilateral Cobra Gold exercise.²³⁷ In May, China and Malaysia led the fourth Association of Southeast Asian Nations Regional Forum Disaster Relief Exercise, which included the United States and 24 other participants and simulated a typhoon impacting Malaysia.²³⁸ In June, China participated for the first time in “Exercise Khaan Quest,” a 25-country peacekeeping drill led by Mongolia and the United States.²³⁹ From August to September, the United States, China, and Australia conducted their second trilateral “Kowari” exercise, during which a small number of troops from each country participated in wilderness training in a remote area near Darwin, Australia.²⁴⁰ From August to October, China, the United States, and the United Kingdom sent small numbers of troops to participate in New Zealand’s “Tropic Twilight” humanitarian drill, which involved infrastructure construction and upgrades for schools and clinics at outlying Cook Islands atolls.²⁴¹

Port Visits: The *Blue Ridge* visited Zhanjiang in April. There, the *Blue Ridge* hosted ship tours for Chinese military personnel, and its crew received reciprocal PLA Navy ship tours. Specific details of the ship visits were not publicized.²⁴² In addition, the U.S. guided missile destroyer *Stethem* visited Qingdao in July. The July port visit also involved planning for a future search and rescue exercise at sea.²⁴³

Quarterly Video Teleconferences between Naval Chiefs: Starting in April 2015, former U.S. Chief of Naval Operations Admiral Jonathan Greenert and his Chinese counterpart Admiral Wu Shengli, Commander in Chief of the PLA Navy, began conducting quarterly video teleconference calls to discuss a range of issues in the military-to-military relationship. During a July call, Adm. Wu invited then incoming (now acting) Chief of Naval Operations Admiral John Richardson to visit China.²⁴⁴

Other Exchanges: 27 military-to-military exchanges were planned for 2015, according to DOD’s annual report to Congress on China’s military for 2015.* At the time of the writing of this Report, approximately half of these exchanges appear to have occurred. In addition to the aforementioned exchanges, the following took place: U.S. Army Pacific Commander General Vincent K. Brooks visited Beijing and Haikou to meet with PLA leaders;²⁴⁵ defense officials held the annual Defense Policy Coordination Talks and Asia-Pacific Security Dialogue in Washington, DC;²⁴⁶ PLA Navy and PLA Air Force academic delegations visited the United States;²⁴⁷ a U.S. National Defense University delegation visited the Shenyang Military Area Command;²⁴⁸ and defense officials conducted the 10th U.S.-China Disaster Management Exchange, among other exchanges.²⁴⁹

*These were to include 4 high-level visits, 11 institutionalized exchanges, 5 academic exchanges, and 7 functional exchanges. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2015*, May 2015, 75.

Conclusions

- Three years after coming to power, Chinese President Xi Jinping has made significant progress consolidating control over China's national security and foreign policy apparatus. Two areas of particular focus for the Xi Administration are strengthening the state's power over national security matters (as exemplified in three new and proposed laws governing national security) and emphasizing "peripheral diplomacy" with China's neighbors (as exemplified in the One Belt, One Road initiative).
- U.S.-China security relations continued to deteriorate in 2015. China's aggressive behavior in the South China Sea and its unremitting cyber espionage against the United States were the key drivers of growing distrust. Further, the Chinese military's continued emphasis on developing antiaccess/area denial capabilities makes clear that China seeks the capability to limit the U.S. military's freedom of movement in the Western Pacific.
- China's military modernization program continues to bear fruit, particularly as new naval and air force platforms and capabilities come online. In particular, new developments in China's naval modernization increase its ability to deploy troops and equipment in contingencies in the East and South China seas and those involving islands held by Taiwan. Moreover, the continued production of surface combatants, along with advances in submarine and aircraft carrier programs, supports China's ability to project force in its near seas.
- China in 2015 continued to take steps to bolster its position in its dispute with Japan over islands and adjacent waters in the East China Sea by constructing 16 structures to facilitate natural gas exploitation near disputed waters; conducting near-daily patrols of contested waters and airspace; and enhancing the PLA Air Force's presence in the East China Sea with the establishment of regular oversea training flights far from China's coast and a first-ever transit flight through Japan's Miyako Strait.
- The rapid growth of China's arms exports during the last ten years reflects the maturation of China's domestic defense industry. In the coming years, Chinese arms, including advanced systems such as jet fighters, will increasingly compete with U.S. and Russian arms on the global market.
- China's noncombatant evacuation operations, far seas submarine deployments, and interest in establishing an overseas military facility reflect its willingness to use military resources to defend its growing overseas assets. China's global security activities likely will increase as the population of Chinese nationals overseas grows along with Chinese overseas economic activity.
- As a result of China's comprehensive and rapid military modernization, the regional balance of power between China, on the one hand, and the United States and its allies and associates on the other, continues to shift in China's direction.

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SECTION 2: CHINA'S SPACE AND COUNTERSPACE PROGRAMS

Introduction

China has become one of the top space powers in the world after decades of high prioritization and steady investment from its leaders, indigenous research and development, and a significant effort to buy or otherwise appropriate technologies from foreign sources, especially the United States. China's aspirations are driven by its assessment that space power enables the country's military modernization and would allow it to challenge U.S. information superiority during a conflict. As the Commission has documented in previous reports, China has asserted sovereignty over much of the East and South China seas, as well as Taiwan, and is engaged in a course of aggressive conduct to enforce those claims against its neighbors. Among other purposes, China's space and counterspace programs are designed to support its conduct as part of its antiaccess/area denial* strategy to prevent or impede U.S. intervention in a potential conflict. China also believes that space power drives the country's economic and technological advancement and provides the Chinese Communist Party (CCP) with significant domestic political legitimacy and international prestige. Although China's space capabilities still generally lag behind those of the United States and Russia, its space program is expanding and accelerating rapidly as many other countries' programs proceed with dwindling resources and limited goals.

China's rise as a space power has important national security implications for the United States, which relies on its own space capabilities to assess and monitor current and emerging threats to national security and project military power globally. Within this context, this section will examine China's space and counterspace programs, including key organizations involved in the programs; space power's contribution to China's national power; China's development of a robust and comprehensive array of counterspace capabilities; China's rapid space-based C4ISR† modernization; China's progress in space launch, human spaceflight, and lunar exploration; and U.S.-China space cooperation. The statements and assessments presented in this section are based on the Commission's February 2015 hearing on China's space and counterspace programs, unclassified briefings by U.S. and foreign government offi-

* According to the U.S. Department of Defense, "antiaccess" actions are intended to slow deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. U.S. Department of Defense, *Air Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

† C4ISR refers to command, control, communications, computers, intelligence, surveillance, and reconnaissance.

cials, consultations with nongovernmental experts on China and space issues, the Commission's July 2015 fact-finding trip to China, and open source research and analysis.

Key Organizations Involved in China's Space and Counter-space Programs

China's space program involves a wide network of entities spanning its political, military, defense industry, and commercial sectors. Unlike the United States, China does not have distinctly separate military and civilian space programs. CCP leaders provide policy guidance and authorize allocations of resources for the program, and various organizations within the People's Liberation Army (PLA) execute space policy and oversee the space research, development, and acquisition process. China's military also exercises control over the majority of China's space assets and space operations.

Although China conducts civilian space activities, such as scientific research and exploration, and Chinese civilian agencies provide input into space policy and space research, development, and acquisition requirements, China does not have an official civilian space program.¹ Tate Nurkin, managing director of research and thought leadership at IHS Jane's Aerospace, Defense and Security, explained to the Commission:

China's space program does not have structures in place that make meaningful divisions between military and civil programs, and those technologies acquired and systems developed for ostensibly civil purposes can be applied—and most frequently are—for military purposes. This dynamic indicates that China's space program is also a critical element in the country's ongoing military modernization program.²

Under this nebulous framework, even China's ostensibly civilian projects, such as human spaceflight, directly support the development of PLA space, counterspace, and conventional capabilities.³ Moreover, although any country's satellites are capable of contributing to its military operations, the PLA during wartime would probably take direct command over all Chinese satellites.

Central Special Committee

One important coordinating body for China's major strategic research and development (R&D) projects is the Central Special Committee, which reports to the CCP Politburo Standing Committee, Central Military Commission,* and State Council.† Established in the early 1960s and led through the decades by some of China's top political leaders,‡ the Central Special Committee brings together

* China's Central Military Commission is the country's top military decision-making body. Congressional-Executive Commission on China, *China's State Organizational Structure*.

† China's State Council, headed by Premier Li Keqiang, presides over China's ministries, commissions, and direct offices. It is responsible for executing laws, supervising the government bureaucracy, and carrying out the administrative functions of the Chinese government. Congressional-Executive Commission on China, *China's State Organizational Structure*.

‡ The Committee has been chaired by Zhou Enlai, Hua Guofeng, Deng Xiaoping, Li Peng, Zhu Rongji, and Wen Jiabao, indicating today it is likely chaired by Li Keqiang. Tai Ming Cheung, "The Special One: The Central Special Committee and the Structure, Process, and Leadership

civilian and military leaders and technical experts on an ad hoc basis to evaluate and provide recommendations on strategic dual-use high-technology programs—almost certainly including China’s space launch, human spaceflight, and lunar programs. The committee may play a role in important military science and technology projects as well. Although the Central Special Committee today is a government—rather than party—institution, and lacks the broad decision-making authority it had in the 1960s and 1970s, it still signifies China’s state-led, top-down policy approach to science and technology development and its focus on large-scale projects.⁴

Leading Small Groups

China has established several leading small groups to help forge institutional consensus regarding its space policies and to provide high-level coordination among the array of political, military, defense industry, and commercial organizations involved. China reportedly has formed leading small groups for human spaceflight, lunar exploration, Earth observation satellites, and heavy-lift launch vehicles.⁵ These groups, which are formalized fora rather than institutions, are composed of representatives from relevant organizations selected on a project-specific basis, and are led by top CCP officials.

Ministry of Science and Technology

The Ministry of Science and Technology (MOST), which is directly subordinate to the State Council, formulates and promulgates major long-term strategies for the development of science and technology. MOST’s national R&D strategy for the 2006–2020 period, the *Medium-to-Long-Term Plan for the Development of Science and Technology*, coordinates state-funded R&D efforts across government, military, and commercial spheres and places heavy emphasis on funding basic research that affects multiple fields. Concerning China’s space program, the strategy updates and accelerates the pursuit of space R&D objectives established in the *State High-Technology Development Plan of 1986* (also known as the 863 Program), which set China’s space development on its current trajectory. The strategy for 2006–2020 identifies and funds 13 unclassified technology megaprojects, including a high-definition Earth observation system and human spaceflight and lunar probes. It also reportedly identifies and funds three classified programs, which many analysts believe to be a laser project exploring inertial confinement fusion, the Beidou satellite navigation system, and a hypersonic glide vehicle program.⁶

State Administration of Science, Technology, and Industry for National Defense

The State Administration of Science, Technology, and Industry for National Defense (SASTIND), which is subordinate to the State Council’s Ministry of Industry and Information Technology, exer-

of the Chinese Defense and Strategic Dual-Use Science, Technology and Industrial Triangle” (Conference on the Structure, Process, and Leadership of the Chinese Science and Technology System, San Diego, CA, July 16–17, 2012).

cises administrative authority over China's defense industrial enterprises and serves as an intermediary among China's military, defense industry (including its space industry), government ministries, research facilities, and other stakeholders. In this capacity, SASTIND organizes and coordinates space R&D, approves space contracts, and develops standards for the space industry. SASTIND also directly manages China's lunar exploration program.⁷

China National Space Administration

The China National Space Administration (CNSA), which is subordinate to SASTIND and is led by the SASTIND director, is a small organization that is responsible for China's relations with external parties on non-commercial and non-military space-related matters. In this capacity, CNSA coordinates and executes international agreements and other aspects of China's international cooperation efforts in space.⁸ Since 2014, CNSA has engaged with the space programs of a range of countries, including Algeria, Germany, India, Italy, the Netherlands, Russia, Sudan, and Turkmenistan, as well as the European Union.⁹

Although CNSA often is incorrectly referred to as China's equivalent of the U.S. National Aeronautics and Space Administration (NASA), it does not have a direct role in overseeing China's space policy; space research, development, and acquisition process; space assets; or space operations.¹⁰

General Staff Department

The General Staff Department serves as the PLA's headquarters.* As such, it develops short- and long-term requirements for space and counterspace technologies based on guidance from the Central Military Commission and the PLA services. The General Staff Department is also the focal point for China's space warfare operations and planning. The department houses operations, intelligence, and electronic warfare elements—among other capabilities—to assist the PLA in carrying out its functions.¹¹

General Armaments Department

The General Armaments Department is responsible for supplying and maintaining the PLA's weapons systems and managing important weapons testing centers and research centers. As such, it oversees the research, development, and acquisition process for China's satellites, launch vehicles, and counterspace weapons and manages large national-level engineering projects, such as China's human spaceflight program. The General Armaments Department, through subordinate entities, is also responsible for the day-to-day operations of the majority of China's military and civilian space activities.¹² Additionally, the department is believed to advise the Central Military Commission on space and counterspace issues via its Science and Technology Committee's expert groups.¹³

*Directly subordinate to the Central Military Commission, the highest command organ in China's military, are four General Departments: the General Staff Department, the General Political Department, the General Logistics Department, and the General Armaments Department. The General Departments are responsible for executing Central Military Commission policies and conducting the day-to-day administration of China's military.

The China Satellite Launch, Tracking, and Control General (CLTC), which is subordinate to the General Armaments Department, is the entity responsible for managing China's space launches and the telemetry, tracking, and control functions for its spacecraft systems.* In this capacity, the CLTC runs a significant portion of the General Armament Department's land-based space infrastructure, including its launch centers, control centers, telemetry and tracking stations, and naval space tracking vessels. In addition, the CLTC designs and manufactures space launch and telemetry, tracking, and control equipment, constructs China's land-based space infrastructure, and handles space launch and telemetry, tracking, and control functions for foreign customers of China's space industry.¹⁴

Space Launch Centers

The CLTC has four launch centers—Jiuquan, Xichang, Taiyuan, and Wenchang—each of which launches military, civilian, and commercial spacecraft. Jiuquan Space Launch Center, which became operational in 1960, is China's oldest and largest launch facility. From Jiuquan, China launches many of its intelligence, surveillance, and reconnaissance (ISR) satellites and all spacecraft involved in its human spaceflight program.¹⁵ Xichang Launch Center is China's most active facility and the only one capable of conducting launches to geosynchronous Earth orbit.† From Xichang, China primarily launches most of the country's commercial satellites as well as government-owned communications satellites.¹⁶ Taiyuan Satellite Launch Center is China's least active launch site. From Taiyuan, China primarily launches meteorological, Earth resource, and scientific satellites. The PLA also conducts test launches of its ballistic missiles from the complex.¹⁷

In late 2014, China opened the Wenchang Satellite Launch Center on Hainan Island, the southernmost province of China. Once full operations begin, Wenchang will launch all of China's future ISR satellites and manned spacecraft. According to Kevin Pollpeter, deputy director of the Study of Innovation and Technology in China Project at the University of California Institute on Global Conflict and Cooperation, “the launch center's closer proximity to the equator than China's three other launch centers can increase launch payloads by 10–15 percent and satellite life by two to three years, a factor important for developing the country's commercial launch market. Launches will also be directed over the ocean, which will permit debris from launches to land safely out to sea.”¹⁸

*Telemetry, tracking, and control is the process of monitoring spacecraft systems, transmitting the status of those systems to the control segment on the ground, and receiving and processing instructions from the control segment.

†Geosynchronous Earth orbit can be achieved at about 22,000–23,000 miles above the Equator. The highest orbital band within geosynchronous Earth orbit in frequent use is known as “geostationary Earth orbit.” At this altitude, satellites move at the same speed as the Earth's rotation, enabling them to cover large geographic areas. Satellites in geostationary Earth orbit are used primarily for early-warning missile and nuclear test monitoring, electronic intelligence, commercial communications, and satellite television and radio.

Figure 1: China's Space Launch Centers



Source: *Economist*, "Space: Ready for Launch: China's Secretive Space Program Takes a Step into the Open," January 8, 2015.

Space Tracking and Control

Space operations require a substantial amount of support from land-based infrastructure. Most of this support is provided by two CLTC-managed control centers: (1) the Xi'an Satellite Telemetry and Control Center, China's main facility for controlling satellites and managing satellite data; and (2) the Beijing Aerospace Flight Control Center, China's main facility for controlling China's human and lunar missions.¹⁹

The Xi'an and Beijing control centers rely on a network of 10–20 telemetry and tracking stations positioned throughout China. The stations, which act as middlemen to relay information between China's spacecraft and the control centers, can only communicate with spacecraft when they are directly overhead. The centers thus are unable to maintain constant communication with spacecraft that travel beyond the area visible from China's territory. To help alleviate these coverage limits, the CLTC has built telemetry and

tracking stations in Namibia, Pakistan, and Chile, and leases access to stations in Kenya and Australia.* China is constructing a sixth overseas telemetry and tracking station in Argentina, a reported investment of over \$300 million, in exchange for providing Argentina a share of the antenna's usage time and access to imagery from its surveillance satellites.²⁰ Additionally, the CLTC operates as many as six Yuanwang naval space tracking vessels, which serve as mobile telemetry and tracking stations. The Yuanwang ships have provided critical C4ISR support to China's intercontinental ballistic missile tests and some of its human spaceflight missions.²¹

Defense Industrial Organizations

The China Aerospace Science and Technology Corporation (CASC) and China Aerospace Science and Industry Corporation (CASIC) are the primary state-owned defense industrial enterprises that support the General Armament Department in the research, development, and manufacturing of space and counterspace technologies and systems. Formed in 1999 out of a single entity, the Chinese Aerospace Corporation, these two conglomerates were established to inject competition into China's aerospace industry—a move the country's leaders hoped would spur the industry to become more efficient, more innovative, and less of a financial burden on the central and local governments.²² Since the division, CASC and CASIC have demonstrated advancements in these areas, though their progress has resulted from improvements to internal processes rather than from expanded competition, as the two conglomerates have largely focused on different product areas with little overlap.²³

China Aerospace Science and Technology Corporation

CASC plans and oversees the development, production, and testing of space launch vehicles, manned spacecraft, space stations, deep space exploration spacecraft, and ballistic missiles. It also heavily invests in satellite applications, information technology, and other industries to which space technology is applicable. CASC employed over 170,000 individuals in 2012, the latest year for which statistics are available. The corporation comprises 8 large research and production academies,† 14 specialized firms, and 12 companies publicly listed in either China or Hong Kong, and is home to 11 defense science and technology (S&T) laboratories, a national engineering laboratory, and 5 engineering research centers.²⁴ Two subordinate organizations are particularly important to China's space activities:

*China previously operated a telemetry and tracking station in Tawara Atoll, Kirabati, but closed the station in 2003 when Kirabati recognized Taiwan. Jane's Space Systems and Industry, "XSCC-Xian Satellite Control Center"; Brian Harvey, *China in Space: The Great Leap Forward*, Springer, 2013, 65.

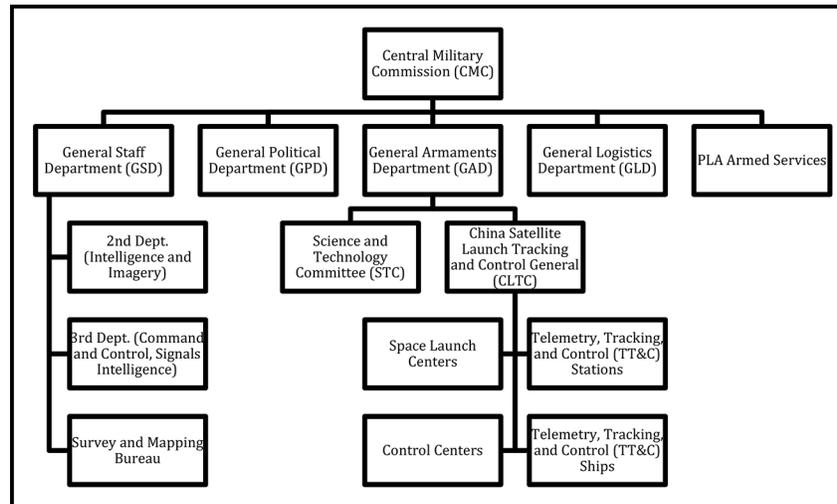
†The term "Academy" for these subordinate organizations should not be taken literally, as Gao Ruofei, Executive Vice President of the China Great Wall Industry Corporation, informed the Commission during its July 2015 trip to China. Instead, these should be characterized as "research, development, and manufacturing entities." Gao Ruofei, China Great Wall Industry Corporation, briefing to Commission, Beijing, China, July 22, 2015.

- The China Academy of Space Technology, one of CASC's eight academies,* is responsible for the development and production of satellites and spacecraft. The Academy developed many of China's high-profile space projects, including the Shenzhou series of manned spacecraft, the Chang'e lunar orbiter, and the Tiangong-1 space laboratory. It also designs many of China's C4ISR satellites and plays a role in the formation of China's national space technology development plans. The Academy employs over 10,000 people.²⁵
- The China Great Wall Industry Corporation is one of CASC's 14 specialized firms and serves as its commercial representative for launch services and satellite systems. In this capacity, the corporation is responsible for international marketing, contracting, and export management. It is China's sole commercial entity engaged in these functions. Once contracted, the corporation conducts these commercial launches in conjunction with other CASC and PLA entities. The corporation also engages in international space cooperation efforts and provides products and services for a wide range of civilian applications that nominally utilize space technology, including satellite technology, information technology products, electronic products, and real estate.²⁶ China Great Wall Industry Corporation was placed under U.S. sanctions in 1991, 1993, 2004 (twice), and 2006 for exporting missile technology to Pakistan and Iran, with the last of the sanctions lifted in 2008 following the company's establishment of an internal compliance program based on U.S. training.²⁷ In a briefing to the Commission during its trip to Beijing in July 2015, the corporation's executives emphasized the implementation of this program and the company's promise to never engage in the import and export of missiles and their associated products.²⁸

China Aerospace Science and Industry Corporation

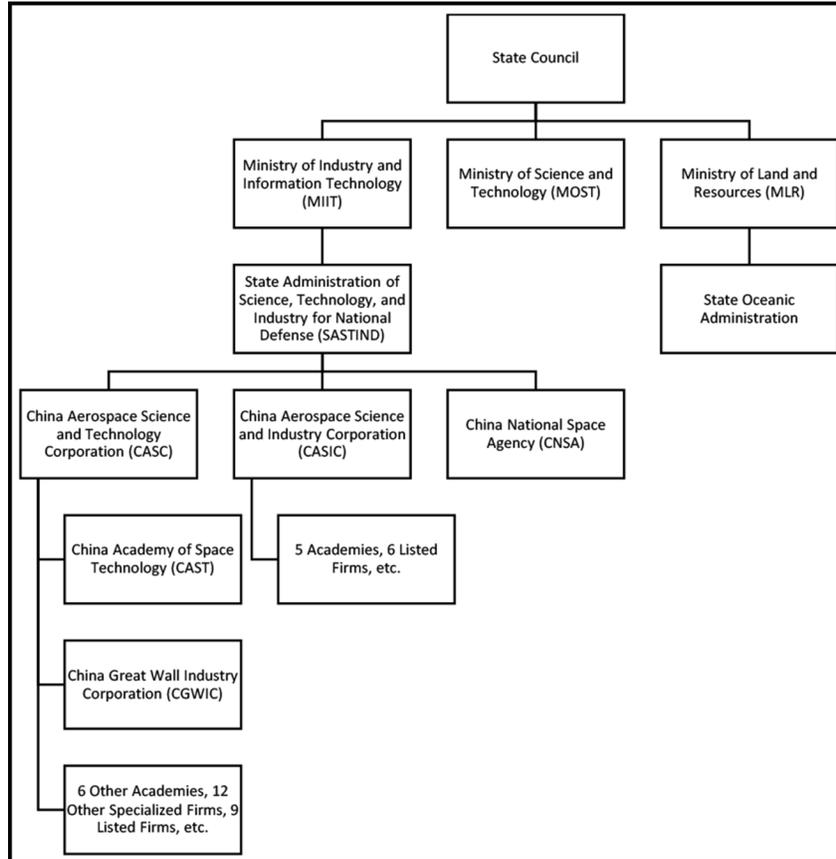
CASIC is China's largest missile designer and manufacturer. As such, the organization plans and oversees the development, production, and testing of China's direct-ascent antisatellite assets and operationally responsive launch capability, including the associated road-mobile launchers and small satellites. CASIC employed more than 135,000 workers in 2013, the latest year for which statistics are available. It comprises five academies, two scientific research and production bases, six companies publicly listed in either China or Hong Kong, and over 570 enterprises and institutes.²⁹

*The other seven academies are the Academy of Launch Vehicle Technology, the Academy of Aerospace Solid Propulsion Technology, the Academy of Aerospace Propulsion Technology, the Sichuan Academy of Aerospace Technology, the Academy of Spaceflight Technology, the Academy of Aerospace Electronics Technology, and the Academy of Aerospace Dynamics.

Figure 2: Select Military Organizations Involved in China's Space Program

Source: Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 96–106; Eric Hagt, "Integrating China's New Aerospace Power in the Maritime Realm," in Andrew S. Erickson and Lyle J. Goldstein, eds., *Chinese Aerospace Power: Evolving Maritime Roles*, Naval Institute Press, 2011, 386.

Figure 3: Select Civil and Defense Industry Organizations Involved in China's Space Program



Source: Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 96–106; Eric Hagt, “Integrating China’s New Aerospace Power in the Maritime Realm,” in Andrew S. Erickson and Lyle J. Goldstein, eds., *Chinese Aerospace Power: Evolving Maritime Roles*, Naval Institute Press, 2011, 386.

Space Power’s Contribution to China’s National Power

Military Contributions

In the early 1980s, China set out to transform its military from a large infantry-based army designed to fight protracted wars into a smaller, well-trained, and “informationized” force.* China accelerated this effort in 2004, when the PLA formally institutionalized the concept of “informationization.”³⁰ Since then, the PLA has based its “preparations for military struggle” on the strategy of “winning local wars under the conditions of informationization,” ac-

* In Chinese military doctrine, “informationization” refers to the application of advanced information technology to military operations.

ording to authoritative PLA documents.*³¹ This requires China to narrow the technology gap between the PLA and the world's most advanced militaries through a focus on information technology and on developing and procuring new, high-tech communications and data fusion systems for battle space management and for long-range, accurate weapons. At the operational level, PLA writings identify information superiority as the key factor in all antiaccess/area denial tasks, which includes the fielding of an integrated air defense and the coordination and synchronization of strikes against an adversary's forces. According to China's most recent *Science of Campaigns*, an authoritative document on PLA campaigns published by China's National Defense University, "the struggle for ... information superiority has infiltrated into each campaign phase ... and become a decisive condition for seizing the battlefield initiative."³²

PLA strategists and analysts recognize that space forces are crucial to the PLA's transformation into an informationized force as well as its ability to achieve information superiority during a conflict. According to Dean Cheng, senior research fellow for Chinese political and security affairs at the Heritage Foundation, these PLA analysts have specifically noted that "more and more essential data ... is gathered from or transmits through satellites." They assess that space systems now provide a majority of battlefield communication, battlefield surveillance and reconnaissance, weather condition assessment, and precision guidance functions, rendering "space dominance" an essential component of realizing "information dominance."³³ The PLA has accordingly developed space capabilities in pursuit of achieving these and other functions, including ISR, ballistic missile warning, space launch detection and characterization, environmental monitoring, satellite communication, and position, navigation, and timing.

- *Intelligence, Surveillance, and Reconnaissance.* Space-based systems can monitor areas of interest to help provide China's political and military leaders with information on an adversary's location, disposition, and intent; assist in tracking, targeting, and engaging an adversary's forces; and provide a means to conduct battle damage assessment. They also can provide situational awareness and warning of attack.
- *Ballistic Missile Warning.* Space-based systems, in conjunction with ground-based systems and operators, can provide China's political and military leaders with timely warning and characterization of foreign ballistic missile events and nuclear detonations to support threat/non-threat determination and follow-on decision making.
- *Space Launch Detection and Characterization.* Space-based systems, in conjunction with ground-based systems, can provide information necessary to assess both foreign and domestic space launches. Launch detection data can be used to evaluate events that could directly or indirectly threaten China's space

*China's most recent defense white paper, published in 2015, updated this term slightly to "winning informationized local wars." China Information Office of the State Council, *China's Military Strategy*, May 26, 2015, 3.

assets so the PLA can achieve timely warning and take appropriate countermeasures. This capability also can support analysis of China's domestic space launches.

- *Environmental Monitoring.* Space-based systems can provide data on meteorological, oceanographic, and space environmental factors that affect PLA operations. Additionally, space capabilities can provide data to assist the development of forecasts, alerts, and warnings regarding factors in the space environment that may negatively impact China's space assets, space operations, and their terrestrial users. Imagery capabilities can provide Chinese planners with current information on sub-surface, surface, and air conditions, allowing PLA commanders to avoid adverse environmental conditions or take advantage of other conditions to enhance operations. Such monitoring also can support intelligence preparation of the operational environment by providing PLA analysts with information necessary to assess potential adversary courses of action.
- *Satellite Communications.* Satellite communications can provide the PLA with the ability to establish or augment telecommunications in operating areas that lack suitable land infrastructure. Potential PLA applications of satellite communication technology include providing instant global connection between deployed forces and the Central Military Commission, transmitting critical intelligence between echelons of command, and tying sensors to weapons systems.
- *Positioning, Navigation, and Timing (PNT).* Space-based PNT assets can provide information PLA forces can use to more effectively plan, coordinate, and execute operations. Precise and reliable PNT information is essential to the performance of virtually every modern Chinese weapon system.³⁴ The PLA can apply precision timing to synchronize operations and conduct attacks from stand-off distances, thereby allowing Chinese forces to avoid threat areas and defend against opposing naval forces from a position as far as possible from the Chinese coast.

Analysis of authoritative Chinese documents indicates Beijing believes space superiority would be critical to almost every component of its military operations (particularly long-range precision strikes) during a potential Taiwan Strait conflict and against the United States and other potential adversaries in the region.³⁵ In 2009, then PLA Air Force Commander and current Vice Chairman of the Central Military Commission Xu Qiliang said space had become a “new commanding height for international strategic competition” and having control of air and space “means having control of the ground, oceans, and the electromagnetic space, which also means having the strategic initiative in one's hands.”³⁶ China's 2015 defense white paper* affirms the importance of space in China's strategic calculus:

* Defense white papers—China's most authoritative statements on national security—are published by the State Council's Information Office and approved by the Central Military Commission, Ministry of National Defense, and State Council. Beijing primarily uses these documents as a public relations tool to help ease deepening international concern over China's military modernization and answer calls for greater transparency.

*Outer space has become a commanding height in international strategic competition. Countries concerned are developing their space forces and instruments, and the first signs of weaponization of outer space have appeared. . . . China will keep abreast of the dynamics of outer space, deal with security threats and challenges in that domain, and secure its space assets to serve its national economic and social development, and maintain outer space security.*³⁷

The PLA also is pursuing a robust and comprehensive array of counterspace capabilities. China has not published an officially endorsed document describing its counterspace strategy and doctrine and likely is still developing its tactics, techniques, and procedures. Since the early 2000s, however, PLA doctrinal publications and military writings on space warfare* and China's demonstrated and developmental counterspace capabilities indicate China's program is primarily designed to deter U.S. strikes against China's space assets, deny space superiority to the United States, and attack U.S. satellites.³⁸ These purposes are likely driven by three security-related assessments:

- The PLA assesses that obtaining and demonstrating the ability to damage or destroy the satellites an adversary considers essential to its national security and military operations could deter that adversary from attacking China's space assets, potentially in the event of a conflict arising from China's coercive actions in its near seas. According to a PLA writing on space deterrence, "it is necessary to display one's own power to the enemy so that they perceive the deterrent force, and also to get them to realize that this force is capable of creating loss or consequences that would be difficult for them to accept."³⁹ Moreover, China's military strategists perceive counterspace capabilities to be a more credible and flexible deterrent than nuclear and conventional capabilities, as the threshold for the use of counterspace capabilities is lower because it would not involve a significant loss of life.⁴⁰
- Beijing recognizes that its satellites are vital for its commercial and civil sectors and that disruptions to these systems—even for short durations—could contribute to internal instability by harming China's economy and government operations.⁴¹
- The PLA assesses U.S. satellites are critical to the United States' ability to sustain combat operations globally. PLA analysis of U.S. military operations states that "destroying or capturing satellites and other sensors . . . will deprive an opponent of initiative on the battlefield and [make it difficult] for them to bring their precision-guided weapons into full play."⁴² In another study, the PLA estimated that the United States developed a comprehensive surveillance system comprising approximately 50 satellites as well as unmanned aerial vehicles and

*PLA doctrinal publications and military writings on space warfare include the following: the *Science of Service Strategy* (2013 and 2005 editions), the *Lecture on Space Operations* (2012), the *Science of Campaigns* (2006), and "Developing the Theory of Strategic Deterrence with Chinese Characteristics" in *China Military Science* (2004).

aircraft during its participation in the North Atlantic Treaty Organization campaign in Kosovo. The same study estimates space systems provided 70 percent of U.S. battlefield communications during the campaign, 80 percent of its battlefield surveillance and reconnaissance, and 100 percent of its meteorological data, and did so 24/7 through all weather conditions.⁴³

Economic and Commercial Contributions

Senior Chinese government and aerospace officials publicly tout the economic and commercial benefits of China's space program, highlighting four areas in particular: market creation and spin-off technologies, satellite application technologies, commercial launch services, and satellite exports.⁴⁴

Market Creation and Spin-off Technologies

Chinese analysts assess that China's space program has had a transformative impact on the country's national economy. In their view, the demand created by large, complex space projects involving numerous government and commercial entities and utilizing a wide range of technologies can spur advancement in areas such as computers, microelectronics, precision manufacturing, automatic control, new energy, and new materials. Moreover, they assess that China's space program provides demand for skilled labor and expanded science and engineering educational programs. These analysts point to the U.S. Apollo program as the best example of the transformative impact a national space program can have on a country's economy.⁴⁵

Beijing has taken a concentrated and hands-on approach to ensuring its space program realizes similar effects, and Chinese analysts point to numerous benefits it has provided. In their view, Chinese investments in space technologies have their most profound impact on high-technology development, with each dollar invested estimated to yield \$10 in gross domestic product growth. Furthermore, 80 percent of 1,000 new materials developed domestically are identified in one analysis as having resulted from research in space technology. More than 2,000 space-based technological achievements have reportedly been transferred to various sectors of China's national economy, and nearly 1,000 space industry products have been converted for civilian use. Chinese analysts highlight that China's human spaceflight program—which involves over 3,000 commercial enterprises—has been particularly important to China's technological progress in electronics, new materials, and automatic control.⁴⁶

China's efforts to introduce spin-off technologies (that is, technologies originally developed for the space industry that also can be applied to commercial and civilian applications) are led by eight industrial parks known as "aerospace bases." These bases—located in Beijing, Chengdu, Hainan, Inner Mongolia, Shanghai, Shenzhen, Tianjin, and Xi'an—are the products of partnerships between the space industry and their respective provincial governments. The bases manufacture space industry products and then attempt to leverage the industry's capabilities in space technologies to build civilian products. These civilian products involve technologies in

areas identified by the central government as strategic emerging industries, including high-end manufacturing equipment, alternative energy, new materials, alternative energy automobiles, and new-generation information technologies.⁴⁷

Satellite Application Technologies

Chinese analysts emphasize the importance of China's space program in the development of satellite application technologies—that is, supplementary products that build upon the information provided by space technologies to add value for consumers. In their view, China's space program has facilitated the development of these technologies in three primary areas. First, it has led to the development of satellite communications applications such as satellite television and telecommunication services. Second, China has launched several lines of Earth observation satellites that provide remote sensing data, which have been used for functions such as agricultural use monitoring, environmental protection, and municipal planning. Many of China's civil-government agencies are dependent on this data. Third, the program has facilitated the development of satellite navigation products such as receivers for China's Beidou constellation. The Beidou system could further stimulate innovation in mobile Internet applications for consumers and in other areas of consumer, civil, or commercial application that require PNT data. In August 2015, Alibaba, a private Chinese firm, and China North Industries Corporation, a Chinese state-owned defense conglomerate, formed a joint venture worth roughly \$310 million to “build applications and technology to support and work with the [Beidou] system.”⁴⁸

Commercial Launch Services

Commercial launches provide China's space industry with revenues, opportunities to measure the quality of its products and services against international competitors, and synergies through integration with its military space sector. Despite these ostensible benefits, China has struggled to develop its commercial space launch capabilities and realize desired growth in market share. According to Beijing, these shortfalls are the result of U.S. export controls, which since 1999 have prohibited U.S.-manufactured satellites and satellites containing U.S.-manufactured components from being launched by China as well as the purchase by China of these items.⁴⁹ These laws have progressed through several iterations, as explained in July 2014 by a firm specializing in international trade law:

Originally all satellites, whether military, commercial, or remote-sensing, were subject to controls under Cat. XV of the U.S. Munitions List in the International Traffic in Arms Regulations (ITAR). In the early 1990s most commercial satellites were moved to the Export Administration Regulations (EAR) of the Department of Commerce. Then, after some violations associated with launches in China, Congress passed legislation transferring all satellites back to ITAR. Those controls have been in place since March 15, 1999.⁵⁰

The Obama Administration changed satellite export control rules further in November 2014, moving many commercial satellite and satellite technology exports back to EAR jurisdiction, meaning they can now be approved for export or for launch on foreign rockets, unlike under the ITAR regime. Exports to China, however, along with North Korea and any state sponsor of terrorism, are still banned under EAR based on the FY13 National Defense Authorization Act, which permitted this rule change but included a specific clause to ensure controls remained in place for these countries.⁵¹ In addition to exports, China is still blocked from offering launch services for U.S.-made satellites or any satellites with U.S.-made components, as launches of satellites on foreign rockets are seen as “permanent exports.”⁵²

Despite the obstacles posed by U.S. export control regulations, China is marketing its launch services to Europe and the developing world, aiming to capture 15 percent of the global launch services market by 2015. While China achieved this objective with roughly 19 and 26 percent market share in 2011 and 2012, respectively, it only held 11 percent in 2013, the last year for which data is available.*⁵³ Executives at the China Great Wall Industry Corporation, China’s sole commercial satellite and launch services provider, stressed the continued impact of these obstacles in a briefing to the Commission during its trip to Beijing in July 2015, stating that although the company’s products and practices are “just as good” as those of U.S., European, and Russian providers, it is unable to compete in the “whole market” due to U.S. export controls.⁵⁴

China launched a Chinese-made satellite for Nigeria in 2007, the first such launch for a foreign client since 1999. In 2011, China launched a satellite for European satellite communications provider Eutelsat, its first launch of an entirely foreign-made satellite for a foreign client since 1999. Since these initial launches, China has provided launch services for Chinese-made satellites to Bolivia, Nigeria, Pakistan, and Venezuela, and has signed contracts for additional launches for Belarus, Laos, Sri Lanka, and Venezuela. For foreign-made satellites, China has provided launch services to Argentina, Ecuador, Indonesia, Luxembourg, and Turkey and signed contracts for future launch services with Algeria, Belarus, Congo, Laos, and Sri Lanka.⁵⁵

Figures on the cost of Chinese launches are scarce. According to one source, however, the costs were in one case lower than those of Arianespace, the leading European launch company.⁵⁶ A spokesperson for the China Great Wall Industry Corporation, which handles the contracting of China’s commercial launch services, predicted that going forward its launches will be offered at the same price level as those of U.S. company SpaceX, an emerging low-cost leader in the field.⁵⁷ Previously, officials from China’s space industry had stated that they could not beat SpaceX’s price.⁵⁸ China’s

*These figures include launches of Chinese government satellites and satellites owned by state-owned enterprises. If these are excluded, China’s market share is lower, but still only surpasses 15 percent in 2011 and 2012. Additionally, data sources on the commercial launch market differ slightly; this assessment uses the highest totals reported. If the lower totals are used, China’s market share still surpasses the 15 percent target in 2011 and 2012, while falling short of this number the other years. For complete market share data see: Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 21–22.

integration of its commercial and military launch infrastructures is expected to provide cost-saving effects as well, as it provides both sectors with synergies in economies of scale, “experience effects” such as increased reliability and fewer failures, and the ability to utilize modular designs.*⁵⁹

Satellite Exports

In an attempt to increase its share of the global satellite market, China has focused on exporting commercial satellites to developing countries. Beyond valuing the revenues provided by satellite exports, China views the selection by international buyers of its satellites over Western-made ones as another indicator of the overall strength of its space industry.⁶⁰ As a relatively late entrant to the commercial satellite field, China set the goal of capturing 10 percent of this market by 2015.⁶¹ Although data on all global commercial satellite sales are not available, China’s share of geosynchronous Earth orbit satellite contracts, which represent the vast majority of commercial satellites,⁶² increased from 2007 to 2013 but only achieved 10 percent in 2011 and 2012.⁶³

China also likely values commercial satellite exports because these domestic-made satellites help increase demand for Chinese launch services, as they lack U.S.-made components and are thus free of restrictions that would otherwise prevent their launch on Chinese rockets.

China has exported communication satellites to Bolivia, Nigeria, Pakistan, and Venezuela and an imagery satellite to Venezuela. Moreover, China has signed contracts to provide communications satellites to Belarus, Laos, and Sri Lanka and an additional remote sensing satellite to Venezuela. In the face of stiff competition from international satellite builders, Beijing probably relied on a combination of technology transfer and preferential financing to secure these deals.⁶⁴

Political and Diplomatic Benefits

Like other space powers, China uses its space program to enhance its international prestige and influence. Analysis of authoritative Chinese documents indicates Beijing believes successful space activities, particularly human spaceflight, provide important geo-strategic benefits, such as bolstering China’s international image, promoting a role for China on the world stage commensurate with what it sees as its growing international status, and increasing China’s ability to influence international policy generally and international space policy specifically.⁶⁵ For example, as China moves from a regional to global PNT service provider, Beijing could use the Beidou system as leverage to obtain more influence over PNT-related decisions in international and regional organizations such as the International Telecommunications Union,⁶⁶ the International Committee on Global Navigation Satellite Systems, the Asia-Pacific Economic Cooperation forum, and the International Civil Aviation Organization.

*Modular designs are constructed using an approach that divides a product into parts that can be connected or combined in different ways.

The CCP also uses China's space program to rally public support, a move indicative of the party's larger strategy to legitimize itself by convincing the Chinese people it is delivering economic growth and a better quality of life while restoring China to its "rightful" place as a world leader following the country's so-called "century of humiliation" from the mid-19th to the mid-20th centuries. Mr. Pollpeter explains:

The CCP is now communist in name only, and its continued legitimacy is predicated on delivering economic and nationalistic benefits in an informal social contract with its citizens: the CCP agrees to increase the standard of living and develop China into an internationally respected country, and the people agree not to rebel. By developing a robust space program and participating in high-profile activities such as human spaceflight and lunar exploration, the CCP can demonstrate that it is the best provider of material benefits to the Chinese people and the best organization to propel China to its rightful place in world affairs.⁶⁷

China collaborates with other countries on a range of bilateral and multilateral space activities, including satellite development, space exploration, human spaceflight, space object surveillance and identification, and space R&D.⁶⁸ Many of these engagements are designed to facilitate China's acquisition of new technologies from technologically-advanced states and to promote the export of China's space technologies to states with space programs lagging behind its own.⁶⁹ Others are intended to help China achieve a level of space situational awareness that enables the PLA's offensive and defense space missions and supports China's orbital debris detection, mitigation plans, and operations.

Asia Pacific Space Cooperation Organization (APSCO)

With its headquarters located in Beijing, APSCO is China's primary entity for multilateral cooperation on space. China led the founding of the formal, membership-only organization in 2008 as a successor to the Asia-Pacific Multilateral Cooperation in Space Technology and Applications organization.⁷⁰ Aside from China, APSCO has seven other member countries,* all of which have less advanced space programs than that of China. APSCO members hold conferences, engage in joint training efforts, and cooperate on multilateral research and development projects.†⁷¹ These efforts allow China to position itself as a purveyor of space technology and expertise to lesser-developed states; China has, for example, donated ground systems and will provide remote sensing data to other member countries.‡⁷² China's leaders also likely use Beijing's

*APSCO's member countries are China, Bangladesh, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey. Indonesia is a signatory state but not yet a full member. Asia-Pacific Space Cooperation Organization, "APSCO Member States"; APSCO, "Convention of the Asia-Pacific Space Cooperation Organization," October 28, 2005.

† Ongoing multilateral research and development projects in APSCO include a remote sensing data sharing platform, earth observation and communications satellites, a space observation network, and satellite navigation technology. APSCO, "Programs."

‡ These donations have included a data broadcasting system for China's Fengyun meteorological satellites to several member countries and a receiving station for remote sensing data to Thailand. Remote sensing data from China's Gaofen, Ziyuan, Fengyun, and Haiyang satellites

central role in APSCO to promote the export of its space technology and services in order to gain support for its space goals in the Asia Pacific region, as well as to obtain supplementary data and geographic coverage for its space situational awareness efforts.

China-Brazil Cooperation

China and Brazil have cultivated a strong cooperative relationship in space-related endeavors, particularly through joint satellite development and space launches. China and Brazil signed their first space cooperation agreement in 1984, and four years later embarked on the \$300 million China-Brazil Earth Resources Satellites project to jointly develop two advanced remote sensing satellites.⁷³ Both countries contributed technologies for the service and payload modules of these satellites. China and Brazil extended the program and launched three additional satellites between 1999 and 2014,⁷⁴ with a sixth satellite slated for launch in 2016.⁷⁵ In addition to serving China's environmental and scientific missions, the satellites likely have provided the PLA with enhanced resolution of terrestrial strategic targets.⁷⁶ The project also probably helped Beijing lay the groundwork for its most advanced Earth observation satellite, the Gaofen series, which has military applications (see "Space-based C4ISR Capabilities" later in this section for more details on this satellite series).⁷⁷

China-Russia Cooperation

Despite a break in cooperation between 1958 and 1997, China maintains a long-running comprehensive space relationship with Russia, its oldest space partner. In 1997, China and Russia established a space cooperation subcommittee within their bilateral prime ministers' dialogue, which resulted in the opening of a Chinese space program office in Russia and a corresponding Russian office in China, as well as collaboration on a range of human spaceflight and space exploration activities.⁷⁸ Future cooperative activities in space could include joint rocket engine development and a joint Russia-China space station, or Russia's participation in China's future space station, planned for completion around 2022.⁷⁹

Through its space cooperation with Russia, China is able to gain valuable knowledge from one of the world's top space powers to advance its own space technology development, particularly in the area of launch vehicles—a technology critical for China's space-based C4ISR and counterspace capabilities. China also uses its space relationship with Russia to increase the geographic reach of its satellite coverage. In 2014, China and Russia signed agreements on expanding cooperation of their respective satellite navigation systems, Beidou and the Global Navigation Satellite System (GLONASS), to include building monitoring stations in each other's countries.

will be provided to member countries. Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 24–25.

China-Ukraine Cooperation

China cooperates with Ukraine on a range of space issues. From 2001 to 2015, the two countries followed three consecutive five-year programs guiding their cooperation on large-scale space projects.⁸⁰ Under the 2006 to 2010 program, China and Ukraine collaborated on 29 long-term projects, including remote sensing satellites, space weather satellites, and space rocketry. In 2012 China and Ukraine agreed to collaborate on more than 50 additional joint projects in the areas of Earth observation and rocket and satellite technology development, including the Ionosat space system, marking a significant increase in space cooperation over previous years.* The two countries continue to discuss potential opportunities for space collaboration; future joint ventures could include engine manufacturing projects and exploratory missions to the Moon and Mars.⁸¹ In March 2015 Ukraine's ambassador to China stated his expectation that a fourth five-year program would be approved later in the year, suggesting that bilateral space cooperation has proceeded despite the ongoing conflict in Ukraine.⁸²

China likely applies technical expertise gained from Ukraine in its development of next-generation launch vehicles. Ukraine, a former Soviet republic, inherited a wealth of knowledge in ballistic missiles and launch vehicles from the Soviet Union when it dissolved in 1991.⁸³

China-Europe Cooperation

Joint space cooperation between China and Europe is thriving, particularly in the areas of space science, space exploration, and human spaceflight. As long as conditions remain ripe for collaboration, China and Europe will remain motivated to cooperate in order to advance their domestic agendas: China generally seeks access to Europe's advanced space technology to improve its own space capabilities, while Europe seeks greater cooperation primarily in order to compensate for the reduced funding of the European Space Agency and to facilitate greater economic ties between China and Europe.⁸⁴

In the mid- to late-2000s, China extracted important gains from the relationship through its early co-development work on Europe's Galileo satellite navigation network, resulting in the most divisive point in bilateral space relations to date. Europe had initially invited China to participate in the project in order to draw more funding, expand Galileo's access to the Chinese market, and distance itself from the United States for political reasons. Europe declined China's continued participation in the project, however, primarily due to concerns over the dual-use nature of satellite navigation and questions regarding China's plans for its own Beidou satellite navigation system.† The project likely provided Beijing with

* Ionosat is a type of Earth observation satellite in the Earth's ionosphere designed primarily for scientific purposes, disaster relief, and space weather monitoring. Yuzhnoye Design Office, "Ionosat."

† The European Space Agency provided the additional rationale that legal restrictions prohibited China's involvement, following Galileo's change from public-private funding to public only. Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 28–30.

essential technology and experience needed for the development of Beidou.⁸⁵ Beidou satellites even use frequencies previously allocated to Galileo, which EU and Chinese diplomats jointly negotiated for in the early 2000s.⁸⁶

China-Venezuela Cooperation

China and Venezuela have a robust space partnership. In 2005, the two countries signed a memorandum of understanding on space technology cooperation and established a special joint subcommittee on technology, industry, and space. Since then, China has built and launched two satellites for Venezuela, the Venesat-1 communications satellite in 2008 and the VRSS-1 remote sensing satellite in 2012. China also is helping Venezuela build small satellites, supplying Venezuela's space industry with Chinese technology, and training Venezuelan engineers.⁸⁷

China's Counterspace Program

China is pursuing a broad and robust array of counterspace capabilities, which includes direct-ascent antisatellite missiles, co-orbital antisatellite systems, computer network operations, ground-based satellite jammers, and directed energy weapons. China's nuclear arsenal also provides an inherent antisatellite capability.

During a conflict, China likely would employ a combination of "hard attacks," which use kinetic methods to cause permanent and irreversible destruction of a satellite or to ground support infrastructure, and "soft attacks," which use nonkinetic methods to temporarily affect the functionality of a satellite or ground systems. PLA writings suggest Beijing prefers soft attacks to hard attacks because they are less likely to escalate a conflict, are less likely to broaden a conflict to include other countries, do not create debris that could damage its own satellites, and offer Beijing plausible deniability. However, Beijing almost certainly would conduct hard attacks in response to an adversary's kinetic strikes on China's satellites or when Beijing determined a crisis had progressed to the point where destructive attacks were needed and that it could accept reciprocal retaliation from or an escalation by an adversary.⁸⁸

Direct-Ascent Antisatellite Missiles

China has tested two direct-ascent antisatellite missiles: the SC-19 and the larger DN-2. Direct-ascent antisatellite missiles are designed to disable or destroy a satellite or spacecraft using one of several possible kill mechanisms, such as a kinetic kill vehicle.* The missiles typically are launched against pre-selected targets, as they must either wait for the target satellite to pass overhead within a certain distance from the launch site, or target a stationary satellite within range of the launch site. Unlike co-orbital antisatellite systems (discussed later in this section), direct-ascent antisatellite missiles do not establish a persistent presence in space, enter into long-term orbits, or loiter to await commands to engage a target.⁸⁹

*A kinetic kill vehicle is a maneuverable platform with the ability to detect, track, and undergo guidance to a target and destroy it through the force of a direct collision.

China destroyed an aging Chinese weather satellite using its SC-19 direct-ascent antisatellite missile in January 2007 following two non-destructive tests of the missile in 2005 and 2006. The 2007 test demonstrated China's ability to strike satellites in low Earth orbit, where the majority of the United States' approximately 549 satellites reside, including about 30 military and intelligence satellites. During a discussion of the test in 2015, General John Hyten, commander of U.S. Air Force Space Command, said: "It was a significant wakeup call to our entire military ... until that singular event, I don't think the broader military realized that that is something [we will] have to worry about."⁹⁰ If China began series production of the SC-19 after the successful 2007 test, China could already have sufficient numbers of the missile to attack all U.S. military and intelligence satellites in low Earth orbit.

China conducted additional SC-19 tests in 2010, 2013, and 2014. In each test, the SC-19 intercepted a mock warhead launched by a ballistic missile rather than a satellite. The targets were not in orbit, so any debris generated by the interceptions quickly fell back to Earth.⁹¹ Although China has called these tests "land-based missile interception tests,"⁹² available evidence suggests they were indeed antisatellite tests. Regarding the most recent test in 2014, Assistant Secretary of State for Arms Control, Verification, and Compliance Frank Rose said, "Despite China's claims that this was not an [antisatellite] test; let me assure you the United States has high confidence in its assessment, that the event was indeed an [antisatellite] test."⁹³

The non-debris-generating nature of the tests suggests China may have gained a better appreciation of the diplomatic costs of debris-generating antisatellite tests as well as the long-term consequences of such tests for China's own space assets. China received worldwide criticism for creating more than 3,400 pieces of debris during its 2007 antisatellite test, and this debris continues to threaten the space systems and astronauts of all nations, including China. More than half of the debris could still be in orbit in 2027.⁹⁴ Not all experts agree, however: according to Mr. Cheng, China may have avoided debris-generating tests since 2007 for other reasons such as changes to its testing needs, and evidence linking the shift to the previous diplomatic response is lacking.⁹⁵

In May 2013, China fired its new DN-2 rocket into nearly geosynchronous Earth orbit, marking the highest known suborbital launch since the U.S. Gravity Probe A in 1976 and China's highest known suborbital launch to date. Beijing claims the launch was part of a high-altitude scientific experiment; however, available data suggests China was testing the ballistic missile component of a new high-altitude antisatellite capability. The nature of the test indicates China is developing an antisatellite capability to target satellites in medium Earth orbit, highly elliptical Earth orbit, and geosynchronous Earth orbit.⁹⁶ Although the DN-2 is technically capable of reaching U.S. Global Positioning System (GPS) satellites, it would likely be better suited for strikes on U.S. ISR satellites.*⁹⁷

*There are over 30 GPS satellites in orbit, distributed across multiple planes, and many more than the four required for a "position fix" are overhead at any given time. Numerous successful direct-ascent antisatellite missile attacks would thus be required to achieve results of military

Based on China’s research, development, and acquisition timelines for previous ballistic missile and antisatellite programs, China could operationally deploy the DN–2 in the 2020–2025 timeframe.

Table 1: Summary of Direct-Ascent Antisatellite Tests

Date	Orbital Debris	Missile	Notes
July 2005	No	SC–19	Rocket test
February 2006	No	SC–19	Failed intercept and destruction of an orbital target
January 2007	Yes	SC–19	Successful intercept and destruction of an orbital target
January 2010	No	SC–19	Successful intercept and destruction of a suborbital target
January 2013	No	SC–19	Successful intercept and destruction of a suborbital target
May 2013	No	DN–2	Rocket test
July 2014	No	SC–19	Successful intercept and destruction of a suborbital target

Sources: Commission analysis and judgments based on the following sources: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2015*, April 2015, 14; Frank Rose (Assistant Secretary of State, Bureau of Arms Control, Verification, and Compliance), “Written Remarks Delivered to the Federation of American Scientists” (Washington, DC, February 20, 2015); U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, written testimony of Richard Fisher, February 18, 2015; U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, written testimony of Kevin Pollpeter, February 18, 2015; Bill Gertz, “Stratcom: China Continuing to Weaponize Space with Latest Anti-Satellite Missile Shot,” *Washington Free Beacon*, August 13, 2014; Brian Weeden, “Through a Glass, Darkly: Chinese, American, and Russian Anti-Satellite Testing in Space,” *Secure World Foundation*, March 17, 2014; Brian Weeden, “Anti-Satellite Testing in Space—The Case of China,” *Secure World Foundation*, August 16, 2013; Craig Murray, “China Missile Launch May Have Tested Part of a New Antisatellite Capability,” *U.S.-China Economic and Security Review Commission*, May 22, 2013; Xinhua, “China Carries out Land-Based Mid-Course Missile Interception Test,” January 28, 2013; Greg Kulacki, “Is January Chinese ASAT Testing Month?” *Union of Concerned Scientists*, January 4, 2013; and Xinhua (English ed.), “China Conducts Test on Ground-Based Midcourse Missile Interception,” January 11, 2010.

Co-orbital Antisatellite Systems

Co-orbital antisatellite systems have not been a significant concern for the United States since the collapse of the Soviet Union. However, China’s recent space activities indicate that it is developing co-orbital antisatellite systems to target U.S. space assets. These systems consist of a satellite armed with a weapon such as an explosive charge, fragmentation device, kinetic energy weapon, laser, radio frequency weapon, jammer, or robotic arm. Once a co-orbital satellite is close enough to a target satellite, the co-orbital satellite can deploy its weapon to interfere with, disable, or destroy the target satellite. Co-orbital satellites also may intentionally crash into the target satellite.⁹⁸

utility. ISR satellites, by contrast, are relatively few in number and are thus somewhat more vulnerable, although the changing velocity and altitude inherent to their highly elliptical orbit would complicate targeting. Brian Weeden, “Through a Glass, Darkly: Chinese, American, and Russian Anti-Satellite Testing in Space,” *Secure World Foundation*, March 17, 2014.

Co-orbital antisatellite systems provide several advantages over current direct-ascent antisatellite missiles, including their ability to be used to target satellites in every orbital regime, generate less debris, conduct attacks without geographic limitations, and limit escalation, as many co-orbital attack options are reversible and offer plausible deniability. Additionally, co-orbital satellites would pose significant warning challenges for the U.S. Intelligence Community because they could be launched into orbit long before an attack.⁹⁹

Since 2008, China has tested increasingly complex space proximity capabilities. Although these capabilities have legitimate applications for China's manned space program, the dual-use nature of the technology and China's secrecy surrounding the tests suggest China also is using the tests to develop co-orbital counterspace technologies.

- During a manned space mission in September 2008, China's Shenzhou 7 spacecraft deployed the BX-1, a miniature imaging satellite, which then positioned itself into an orbit around the spacecraft. The activities of the BX-1 may have been designed to test a dual-use on-orbit inspection capability for future inspector satellites. In addition to aiding China with maintenance of its satellites, inspector satellites could approach U.S. satellites in orbit to collect detailed images and intelligence on them. Moreover, at one point the BX-1 passed within 45 kilometers of the International Space Station, apparently without prior notification, suggesting it may have been simulating a co-orbital antisatellite attack.¹⁰⁰
- In June 2010, China launched the SJ-12 satellite. Over the next two months, the satellite conducted a series of maneuvers and came within proximity of the SJ-6F, an older Chinese satellite that was placed into orbit in 2008. The activities of the SJ-12 may have been designed to test a co-orbital antisatellite capability, such as on-orbit jamming. Moreover, during its maneuvers, the SJ-12 apparently bumped the SJ-6F, causing it to drift slightly from its orbital regime. This activity suggests China also could have used the test to demonstrate the ability to move a target satellite out of its intended position by hitting it or attaching to it.¹⁰¹
- In July 2013, China launched a rocket carrying the CX-3, SY-7, and SJ-15 satellites, one of which was equipped with a robotic arm for grabbing or capturing items in space. Once all three were in orbit, the satellite with the robotic arm grappled one of the other satellites, which was acting as a target satellite.¹⁰² The satellite with the robotic arm then changed orbits and came within proximity of a separate satellite, the SJ-7, an older Chinese satellite that was orbited in 2005.¹⁰³ Robotic arms can be used for civilian missions such as satellite repair, space station construction, and orbital debris removal; they also can attach to a target satellite to perform various antisatellite missions.¹⁰⁴

Computer Network Operations

Chinese military doctrine and the integration of computer network operations, electronic warfare, and counterspace reflected in certain Chinese military organizations and research programs indicate the PLA during a conflict would attempt to conduct computer network attacks against U.S. satellites and the ground-based facilities that interact with U.S. satellites.¹⁰⁵ According to one Chinese author:

*A military satellite cannot connect with the Internet. Therefore, some people think “hackers” cannot attack a satellite’s command and control [system]. But in actuality, the microwave antenna of the satellite control is open, so one can intercept satellite information through technological means and seize the satellite’s command and control [system]. Using this as a springboard to invade the enemy’s independent network systems is entirely possible.*¹⁰⁶

If executed successfully, such attacks could significantly threaten U.S. information superiority, particularly if they are conducted against satellites with sensitive military and intelligence functions. For example, access to a satellite’s controls could allow an attacker to damage or destroy the satellite; deny, degrade, or manipulate its transmissions; or access its capabilities or the information, such as imagery, that can be gained through its sensors.

Chinese hackers likely have been responsible for several computer network operations against U.S. space assets, though the U.S. government has not publicly attributed any of them to China. If responsible, China likely used these intrusions to demonstrate and test its ability to conduct future computer network attacks and to perform network surveillance.

- In October 2007 and July 2008, cyber actors attacked the Landsat-7, a remote sensing satellite operated by the U.S. Geological Survey, resulting in 12 or more minutes of interference on each occasion. The attackers did not achieve the ability to command the satellite.¹⁰⁷
- In June and October 2008, cyber actors attacked the Terra Earth Observation System satellite, a remote sensing satellite operated by NASA, resulting in two or more minutes of interference on the first occasion and nine or more minutes of interference on the second occasion. In both cases, the responsible parties achieved all steps required to command the satellite but did not issue commands.¹⁰⁸
- In September 2014, cyber actors hacked into the National Oceanographic and Atmospheric Administration’s (NOAA) satellite information and weather service systems, which are used by the U.S. military and a host of U.S. government agencies. NOAA stopped the transmission of satellite images to the National Weather Service for two days while it responded to the intrusion and “sealed off data vital to disaster planning, aviation, shipping, and scores of other crucial uses,” according to a U.S. media report citing a discussion with NOAA officials.¹⁰⁹ The U.S. government has not publicly attributed the attack to any country or actors; however, then Congressman Frank Wolf stated, “NOAA told me it was a hack and it was China.”¹¹⁰

Moreover, China's large-scale, state-sponsored theft of intellectual property and proprietary information through cyber espionage has enabled future space and counterspace operations by filling knowledge gaps in China's space R&D, providing insight into U.S. space plans and capabilities, and helping to identify vulnerabilities in U.S. space systems.

In May 2015, Pennsylvania State University disclosed that two separate groups of cyber actors had been sifting through the computers of its engineering school for more than two years. The University is also home to a separate lab that specializes in aerospace issues and works primarily for the U.S. military. Although the lab's networks are reportedly separate from those of the engineering school, the length of the breach raises the possibility that the hackers may have entered the lab's networks as well, according to a source familiar with the U.S. government investigation of the intrusions, as cited in a U.S. media article. This source also alleged that China sponsored at least one of the groups, while the other is believed to be state-sponsored as well.¹¹¹

Earlier in June 2014, CrowdStrike, a private U.S. cybersecurity firm, published a report providing detailed technical information regarding the activities of a Chinese cyber threat group, which CrowdStrike refers to as "Putter Panda." According to the report, the group supports China's space surveillance mission and is subordinate to the Third Department of the PLA General Staff Department, widely believed to be China's premier organization responsible for signals intelligence collection and analysis. CrowdStrike assesses that Putter Panda since 2007 has targeted "government, defense, research, and technology sectors in the United States, with specific targeting of space, aerospace, and communications."¹¹²

Moreover, Mandiant, a U.S. cybersecurity firm, has responded to multiple incidents in which at least six distinct China-based threat actors have compromised aerospace and defense companies both in the United States and other countries. These threat groups, which Mandiant assesses most likely are associated with the Chinese government, have targeted the sector since at least 2006, and frequently steal sensitive data from their victims. Stolen files include human resources records, internal business communications, marketing and sales documents, and test results and other product information pertaining to the development and operation of missile systems and military and civilian satellite technology for both communications and location tracking.¹¹³

Ground-Based Satellite Jammers

Since the mid-2000s, China has acquired a number of foreign and indigenous ground-based satellite jammers, which are designed to disrupt an adversary's communications with a satellite by overpowering the signals being sent to or from it. The PLA could employ jammers to degrade or deny U.S. military systems' access to GPS and most satellite communications bands if they are operating within a few hundred kilometers of China.¹¹⁴ GPS is particularly easy to jam because the signals are weak; as a result, even low-power jammers can deny or degrade the acquisition of a GPS signal over long distances. Although China's employment strategy for its ground-based jammers is unknown, Mr. Pollpeter posits that "given

the relatively small size and long range of GPS jammers, [the strategy] could consist of [placing] a series of vehicle-mounted jammers . . . at intervals within the theater of operations to provide overlapping jamming zones.”¹¹⁵

Directed Energy Weapons

China has been committing substantial resources to R&D for directed energy weapons, including those that could be used for anti-satellite missions, since at least the 1990s. Directed energy weapons can deliver concentrated energy, atomic, or subatomic particles along a line-of-sight trajectory at or near the speed of light to damage or destroy equipment, facilities, and personnel.

By 2006, China had at least one ground-based laser designed to damage or blind imaging satellites.¹¹⁶ At low energies, lasers can blind or damage a satellite’s optical sensors; at high energies, lasers can cause physical damage to satellites.

In 2006, China fired a high-powered laser at a U.S. satellite, resulting in a temporary degradation to the satellite’s functionality. Although it is unclear whether China fired the laser to determine the location of the satellite* or to “dazzle” it, China’s test demonstrated a significant new capability that it almost certainly has continued to develop and improve over the last nine years.¹¹⁷

Additionally, China is researching radio frequency weapons, which are designed to damage or destroy electronic components of satellites by either overheating or short-circuiting them. Radio frequency weapons can be surface-based, space-based, or employed on missiles; they are thus useful in achieving a wide spectrum of effects against satellites in all orbits.¹¹⁸ Although China’s progress in this area is unknown, such weapons could feasibly be deployed in the next five to ten years.

Nuclear Weapons

China’s nuclear arsenal provides an inherent antisatellite capability, as China could detonate a nuclear warhead in low Earth orbit using a ballistic missile. The electromagnetic pulse generated by the blast would destroy unshielded satellites† that are in line of sight of the explosion, and the resulting persistent radiation environment would slowly damage unshielded satellites in low Earth orbit as they pass through the area. Although the blast would not directly affect satellites in higher orbits, the radiation could impede their communications with ground stations. China likely would only consider using nuclear weapons in space during an ongoing nuclear war, given that the detonation would also affect China’s satellites as well as those of other countries.¹¹⁹

*Satellite laser ranging is used to precisely determine a satellite’s location by measuring the distance from a ground station to a satellite based on the time an ultra-short laser pulse fired from the ground takes to reach and be reflected back from the satellite. Yousaf Butt, “Satellite Laser Ranging in China,” *Union of Concerned Scientists Technical Working Paper*, January 8, 2007.

†Physical shielding using sheets of aluminum, sometimes supported by other materials, reduces the risk to satellites of damage from micrometeoroid and orbital debris impact. Colin Schultz, “How Do You Shield Astronauts and Satellites from Deadly Micrometeorites?” *Smithsonian.com*, June 28, 2013.

China's Space-Based C4ISR Modernization

China's initial C4ISR modernization efforts focused on developing a robust and secure terrestrial network of fiber optic cables, mobile radios, datalinks, and microwave systems. In the mid-2000s, however, China shifted the emphasis of its C4ISR modernization program to expanding and enhancing the country's space-based infrastructure. China had approximately 142 operational satellites in orbit as of September 1, 2015, compared to about 10 in 2000 and 35 in 2008.* Approximately 95 of these satellites are owned and operated by Chinese defense organizations, including the PLA, the Ministry of Defense, and various entities under the state-owned space industry conglomerates.¹²⁰

Intelligence, Surveillance, and Reconnaissance

China is fielding sophisticated satellites that feature electro-optical (EO), synthetic aperture radar (SAR), and electronic reconnaissance (ELINT) sensors. EO sensors passively detect light images of maritime and ground-based targets. Although EO sensors can achieve the highest resolution of these types, they are adversely affected by poor weather conditions and cannot image at night. SAR sensors use a microwave transmission to create images of maritime and ground-based targets. They tend to have lower resolution than EO sensors but can image during night or day and in all weather conditions. ELINT sensors detect electronic signal emissions and then determine emitter locations.¹²¹

Combining these varying capabilities is crucial for locating and tracking a moving target. A study by authors affiliated with the PLA Navy Aerospace Engineering Academy illustrates the importance of integrating the information obtained from ISR satellites for long-range antiship ballistic missile (ASBM) strikes:

During the process of planning [to use] the fire power of an ASBM, [there is a need] for obtaining reliable target intelligence information for guiding the missile attack. This could be achieved by integrating EO imaging satellites, SAR imaging satellites, ELINT satellites, naval ocean surveillance satellites, mapping resource satellites, and highly accurate commercial remote sensing satellite imagery, which could be purchased on the international market. Through the integration of the data obtained via a number of different satellites, and with the addition of processing and data fusion, [one could] guarantee missile guidance requirements for all types of target information for a long-range ASBM strike.¹²²

China's major military-relevant ISR satellites are the Yaogan, Shijian, Gaofen, and Haiyang, each of which is examined in detail in the following paragraphs. China also has a large number of imaging and remote sensing satellites that are owned and operated by civilian or commercial entities. Given the PLA's central role in the development, launch, and operations of all of China's satellites,

*For comparison, the United States has approximately 549 active satellites in orbit and Russia has approximately 131 active satellites in orbit. Union of Concerned Scientists, "UCS Satellite Database."

these civilian and commercial satellites likely contribute to the PLA's C4ISR efforts whenever it is technically and logistically feasible for them to be so utilized,¹²³ and they would probably be directly subordinate to the PLA during a crisis or conflict.

Yaogan Satellites

The Yaogan series of satellites, the first of which was launched in 2006, serves as the core component of China's maritime ISR architecture. Chinese state-run press claims the satellites are used to conduct scientific experiments and carry out land surveys, among other functions.¹²⁴ Because the series is owned and operated by the PLA, however, it likely is used primarily for broad area maritime surveillance in support of the PLA's efforts to detect, track, and target foreign ships, such as U.S. carrier strike groups. China to date has launched 37 Yaogan satellites,¹²⁵ including EO, SAR, and ELINT variants.¹²⁶

Shijian Satellites

China's Shijian series of satellites, the first of which was launched in 1971, is owned and operated by China's Academy of Space Technology. The Shijian satellites have a variety of configurations and missions. Although some have been used for strictly civilian purposes, such as crop breeding,* many appear to be military ISR satellites based on their suspected payloads, their orbital characteristics, and the secrecy surrounding their launches. Some Shijian satellites likely feature ELINT sensors used by the PLA for broad area maritime surveillance. Others probably are equipped with infrared sensors to detect ballistic missile launches in support of a future early warning system.¹²⁷ According to Mr. Pollpeter, the development of such a system could indicate a change in China's nuclear posture:

The deployment of a space-based ballistic missile early warning system may also signal a change in China's nuclear doctrine from "no first use" to "launch on warning." China's current nuclear force doctrine relies on retaliating only after a nuclear first strike from an opponent. A "launch on warning" system would make China's nuclear force more survivable since China would have warning that an attack is imminent, but would also present the possibility for false warnings, which could be catastrophically destabilizing during a conventional conflict.¹²⁸

Gaofen Satellites

The Gaofen series of EO/SAR satellites, the first of which was launched in 2013, features China's first high-definition satellite and first satellite capable of sub-meter resolution; the series also

*According to Mr. Pollpeter, "the Shijian-8 was the world's first satellite devoted to crop breeding. Seeds were placed in the satellite and then exposed to the higher radiation levels of space in the hopes that genetic mutations [might] occur. The seeds were then removed from the satellite after it returned to Earth and grown." Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 77.

incorporates several design innovations. According to Beijing, the Gaofen-1 “has been used in land resource investigation, mineral resource management, atmospheric and water environment quality monitoring, and natural disaster emergency response and monitoring,” and its imagery has supported “tens of national ministries and agencies, local governments, research institutions, universities, enterprises and organizations in China.”¹²⁹ China also employed the Gaofen-1 to assist in the search for missing Malaysian airliner MH370 in 2014, demonstrating its ability to conduct broad maritime surveillance that could be useful for the PLA. China launched the second Gaofen in 2014 and two more in 2015, and is expected to launch as many as four more by 2016.¹³⁰

Haiyang Satellites

The Haiyang series of satellites, the first of which was launched in 2002, is owned and operated by the State Oceanic Administration. The series primarily supports China’s civilian and scientific organizations involved in monitoring the characteristics of the ocean environment, including pollution, topography, wind fields, surface temperatures, and currents. The fact that the State Oceanographic Administration oversees China’s maritime law enforcement organizations, however, suggests these satellites also play a role in monitoring and enforcing China’s maritime claims in the East and South China seas. Indeed, in 2012 a Chinese official said future Haiyang satellites will be used to monitor the disputed Senkaku Islands and Scarborough Reef. To date, China has launched three Haiyang satellites (two of which are operational) and plans to launch five more by 2020.¹³¹

Remote Sensing Commercial Satellites and Microsatellites

China launched the four-satellite Jilin-1 constellation in October 2015. These have been described as the country’s first “self-developed” remote sensing satellites intended for commercial use and were reportedly developed by a company subordinate to a research institution of the Chinese Academy of Sciences.¹³²

Since 2000, China has launched at least 28 microsatellites*, including Chuangxin/Banxing, Fengniao, Naxing, Tiantuo, and Xinyan types, most of which belong to civil users.¹³³ China launched Tiantuo-2, which carries four video cameras for data transmission and live tracking of moving objects on Earth, in September 2014.¹³⁴ Most recently, China reportedly launched 20 microsatellites assembled by universities and research institutes in September 2015.¹³⁵ Although their small size often limits their capabilities, microsatellites are significantly cheaper and easier to develop and manufacture than larger satellites that serve similar functions. Microsatellites also have lower observable signatures than larger satellites, making them harder for an adversary to track in space.¹³⁶

* “Microsatellites” are satellites with a mass between 10 and 100 kilograms. Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 23.

Positioning, Navigation, and Timing

In December 2012, China's Beidou regional satellite navigation system* became fully operational. Using 19 satellites and a network of ground stations, Beidou provides subscribers, including the PLA, with 24-hour regional position, navigation, and timing (PNT) services. Unlike other PNT systems, Beidou offers a short message service that can accommodate up to 120 Chinese characters per transmission. Beidou reportedly provides positioning accuracies of 10 meters or better, depending on the location, for civilian users. In comparison, GPS has 31 satellites and can provide positioning accuracies of several meters, depending on the location, for civilian users.† China intends to construct thousands of additional ground stations and launch additional satellites to improve Beidou's positional accuracies within China.¹³⁷

Beijing plans to expand the Beidou constellation from 19 to 35 satellites by 2020 in order to provide global coverage. If successful, China will become the third country in the world after the United States and Russia to field an independent global satellite navigation system. China launched its 18th and 19th Beidou satellites in July 2015.¹³⁸

China's Satellite Navigation Office has emphasized Beidou's importance to the PLA and to China's commercial interests, stating the system meets the "demands of China's national security, economic development, technological advances and social progress ... safeguard[s] [China's] national interests ... enhance[s] [China's] comprehensive national strength ... promote[s] the development of [China's] satellite navigation industry ... make[s] contributions to human civilization and social development ... [and] serve[s] the world and benefit[s] mankind."¹³⁹

Although Beidou has a wide and growing range of civilian applications that will benefit China's economic development,‡ China developed its indigenous PNT system primarily for military purposes. Prior to the deployment of Beidou, most PLA units used GPS for positioning and maneuver and most PLA precision weapon systems used GPS for guidance. The PLA has considered this dependence on a foreign PNT system to be a strategic vulnerability since at least the mid-1980s. These fears were exacerbated during the 1995–1996 Taiwan Strait Crisis. According to a retired PLA general, the PLA concluded that an unexpected disruption to GPS caused the PLA to lose track of some of the ballistic missiles it fired into the Taiwan Strait during the crisis. He then said that "it was a great shame for the PLA ... an unforgettable humiliation. That's how we made up our mind to develop our own global [satellite] navigation and positioning system, no matter how huge the cost. Beidou is a must for us. We learned it the hard way."¹⁴⁰

The PLA in the early 2000s began to gradually incorporate Beidou into its ground, air, and naval forces, and by the late 2000s

*The regional Beidou system, which China refers to as Beidou-2, grew out of an earlier satellite constellation, known as Beidou-1. Beidou-1 provided limited position, navigation, and timing services in China and a small portion of East Asia but served primarily as a developmental platform for future projects.

†Beidou and GPS provide higher positional accuracies for the PLA and U.S. military, respectively.

‡Civilian applications include road transport, aviation, shipping and rail transport, science, surveying and mapping, geophysics, telecommunications, financial services, and social activities.

was using Beidou for positioning and maneuvering, friendly force tracking,* and secure communications. Public information about China's incorporation of Beidou into its weapons systems is scarce, but China almost certainly is equipping its ballistic and cruise missiles to operate with both GPS and Beidou. If this is true, PLA operators could switch to Beidou to guide a missile to its target if GPS were (1) denied by the United States during a conflict or (2) deemed unusable by PLA commanders due to operational security concerns. Additionally, the availability of Beidou would allow China to attack an adversary's access to GPS without disrupting the PLA's own capabilities.¹⁴¹

China is attempting to make the Beidou system more prevalent in its domestic economy in order to compete with GPS, which dominates 95 percent of market share for satellite navigation products in China due to its earlier introduction, better known brand name, superior accuracy, and cheaper receiver costs. By 2020, China aims to gain 70–80 percent of the domestic satellite navigation market, which is estimated to reach \$65 billion. To achieve this goal, China has announced several measures to encourage or force its citizens to adopt Beidou, including the requirement that, in order to receive transportation certificates, all new heavy trucks manufactured in any of nine Chinese provinces must be equipped with Beidou. Already more than 50,000 Chinese fishing boats—many of which are supporting China's efforts to advance its maritime claims—have been equipped with the system.¹⁴²

Beijing has also taken several steps to promote Beidou to countries throughout Asia, where it currently occupies only 1 percent of the market, and to position the service to break into the global PNT market in 2020.

- China released the technical specifications of Beidou's open signal to allow for the production of ground receivers and offers free Beidou service for civilian and commercial users throughout Asia.¹⁴³
- China has reached agreements with Brunei, Laos, Pakistan, and Thailand to provide Beidou for government and military customers at heavily subsidized costs. These agreements include provisions allowing Beijing to build satellite ground stations in each country; the stations will be used to increase Beidou's range and signal strength.¹⁴⁴ China already has built three ground stations in Thailand, and plans to build more than 220 additional stations in the country. According to a senior Chinese industry official involved in the development of Beidou stations in Thailand, "with these stations, Beidou could better service local customers and will be able to gradually squeeze GPS's market share."¹⁴⁵ China ultimately aims to build a vast network of ground stations throughout Asia.
- China reportedly is pursuing various cooperative arrangements involving Beidou with other countries, including Israel, Malaysia, Mexico, North Korea, Russia, Singapore, and Sweden.¹⁴⁶

*Beidou provides automatic position reporting back to PLA command and control centers, allowing the PLA to constantly monitor the location of PLA units as well as Beidou-equipped Chinese fishing boats. U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, 2015, 22.

Additionally, according to official Chinese press citing an interview with the spokesperson for Beidou, “the Beidou satellite navigation system will tap into opportunities brought by the Belt and Road Initiative,* and will engender further cooperation with other satellites. . . . During the process, China will step up cooperation with researchers working with other satellite navigation systems.”¹⁴⁷

- In November 2014, Beidou won approval from a United Nations’ maritime body that sets standards on international shipping, joining GPS and Russia’s GLONASS as the only navigational systems recognized for operations at sea. This formal recognition could help to further promote Beidou’s use around the world by boosting brand awareness and signaling that Beidou can achieve its stated accuracy.¹⁴⁸

Communications

China in 2000 began launching dedicated military communications satellites to provide secure voice and data communications for PLA users. Today, the PLA operates at least four communications satellites: Chinasat-1A, Chinasat-2A, Chinasat-20A, and Chinasat-22A. To meet bandwidth or geographic requirements or add resilience, the PLA could leverage communications satellites owned by China’s civilian agencies or Chinese-controlled telecommunications corporations, as well as communication satellites owned by international corporations.¹⁴⁹

China’s commercial communications satellites include the Apstar-7, which is owned and operated by a Hong Kong-based subsidiary of the state-controlled China Satellite Communication Company. From 2012 to 2014, the U.S. Department of Defense (DOD) leased the Apstar-7’s services to satisfy satellite communications requirements from U.S. Africa Command.¹⁵⁰ Following media and Congressional scrutiny of the deal, however, DOD did not renew the lease for 2015. According to Doug Loverro, DOD’s deputy assistant secretary for Space Policy: “Working with [the Office of the Secretary of Defense], U.S. Africa Command has made significant progress over the last year in moving DOD [satellite communication] leases from the Chinese Apstar system to other commercial satellite providers in the region. We have already transitioned over 75 percent of the Apstar bandwidth to other satellites, and our intent is to be completely transitioned by May of [2014].”¹⁵¹

China plans to launch the world’s first experimental quantum communications † satellite in 2016. This technology could eventu-

* China’s Silk Road Economic Belt initiative is aimed at enhancing economic and cultural integration between China and Central Asia. The land-based Silk Road Economic Belt has a maritime counterpart, the “21st Century Maritime Silk Road,” which will run from China’s coast through Southeast Asia and the Indian Ocean to Africa and the Mediterranean Sea. Together, they are commonly referred to as the “One Belt, One Road” initiative. For more information on the initiative, see Chapter 3, Section 1, “China and Central Asia.”

† Quantum communications, a subset of quantum information science, refers to the transmission of a quantum state (i.e., using quantum data rather than bits) from one place to another. A quantum communication network’s key characteristic is its use of the quantum key distribution method which is, in theory, unbreakable—any attempt to intercept the encryption key would alter the physical status of the data (otherwise in a state of “superposition,” existing in two states at the same time) and trigger an alert to the communicators. Quantum communication has thus far been limited to short distances due to the technological difficulty in maintaining the quantum data’s fragile state over a long distance. Giuseppe Vallone et al., “Experimental

ally enable the PLA to instantaneously send, receive, and decipher messages around the world using a virtually unbreakable encryption key to provide secure electronic transmission of sensitive information.¹⁵²

China also has announced plans to launch its first communications satellite that uses electric propulsion around 2020, following previous demonstrations of this technology by the United States, Russia, Europe, and Japan.¹⁵³ By using electric-powered engines instead of chemical propellant, such satellites will allow China to launch larger payloads at a fraction of the cost of traditional launch vehicles and improve communications satellites' lifespan from 15 to 20 years. The main drawback of this technology will be the longer time required to bring a satellite into orbit—up to eight months instead of several weeks.¹⁵⁴ According to a deputy chief designer of China's communications satellites at the China Academy of Space Technology, the technology will also be important for future manned spaceflight missions, including China's future space station around 2022.¹⁵⁵ The PLA could eventually use the technology to launch more advanced remote sensing ISR satellites into high Earth orbit, as well as for military missions in deep space.¹⁵⁶

China's network of military communication satellites will be assisted by its Tianlian data relay satellite constellation, which was completed in 2012. As China orbits relay-capable satellites,* the Tianlian constellation will reduce the time the PLA must wait to receive data from its ISR satellites and thus enhance its ability to provide near-real-time ISR data to locate, track, and target U.S. ships operating in the Western Pacific. Without a data relay system, Chinese satellites must wait until they come into view of ground stations in China before sending ISR data, potentially causing a time lag of up to several hours and thus reducing the PLA's ability to receive time-sensitive intelligence on mobile targets.¹⁵⁷ Mr. Pollpeter explains:

A remote sensing satellite at an altitude of 600 [km], such as China's Yaogan series, can communicate with ground stations at a range of around 2,800 km. Beyond this range, they must retain their data until they come in range of a ground station. With the use of data relay satellites operating in geosynchronous [Earth] orbit above ISR satellites, an ISR satellite can transmit its data to a data relay satellite, which will then transmit the data to a ground station. In this way, time-sensitive data and communications can be immediately downloaded to a ground station for processing. They can also be used to assist with data transmission from launch vehicles to ground stations and can transfer data between aircraft, space tracking ships, and other craft.¹⁵⁸

Satellite Quantum Communications," *Physical Review Letters* 15:4 (July 20, 2015): 1; Yu Dawei, "In China, Quantum Communications Comes of Age," *Caixin*, February 6, 2015; Stephen Chen, "China to Launch Hack-Proof Quantum Communication Network in 2016," *South China Morning Post* (Hong Kong), November 4, 2014; and Michael A. Nielsen and Isaac L. Chuang, *Quantum Computation and Quantum Information*, Cambridge University Press, 2000, 14.

*The number of China's current ISR satellites that are relay-capable is unknown. However, China almost certainly will add this capability to all of its future ISR satellites.

China's Space Launch Capabilities

Since approximately 2000, China has significantly enhanced its ability to launch military, civilian, and commercial satellites. China conducted 83 known space launches from 2010 to 2014, only 10 fewer than the United States during this period (see Table 2).¹⁵⁹ This growth is expected to continue as China expands and improves its ground-based space infrastructure and launch vehicles.

Table 2: Chinese versus U.S. Space Launches, 2010–2014

	2010	2011	2012	2013	2014
Chinese Launches (Satellites Deployed)	15 (20)	19 (18)	19 (25)	14 (17)	16 (19)
U.S. Launches (Satellites Deployed)	15 (41)	19 (39)	16 (35)	20 (85)	23 (110)

Note: Estimates of the number of space launches and satellites deployed vary by source due to a number of judgment decisions involved in the calculations, such as how to determine the ownership of a satellite company belonging to a certain country, whether to count objects as satellites or as space junk, and whether to include small satellites that can separate from an object already in orbit. For the number of new Chinese satellites deployed since 2010 by type, see U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, May 8, 2015, 70.

Source: Jonathan McDowell (Astrophysicist, Harvard-Smithsonian Center for Astrophysics), interview with Commission staff, June 17, 2015.

China has eight Long March (LM) liquid-fuel space launch vehicles that provide lift capacities ranging from light- to heavy-lift and the capability to deploy payloads at altitudes ranging from low Earth orbit to geosynchronous Earth orbit. These vehicles consist of the LM-2C, LM-2D, LM-2F, LM-3A, LM-3B, LM-3C, LM-4B, and LM-4C. China has conducted more than 205 launches since its first rocket flew in 1970.¹⁶⁰

In tandem with efforts to upgrade its current launch vehicles, China is developing a new generation of liquid-fuel rockets designed to meet the country's future launch requirements. Once operational, this new generation—which will consist of the LM-5, LM-6, and LM-7—will substantially increase China's payload capacity while offering improved reliability, increased flexibility, and reduced costs.¹⁶¹ China conducted the debut launch of the LM-6, reportedly using a safer and more efficient liquid propellant, in September 2015. The rocket carried 20 microsatellites and will primarily be used to launch microsatellites in the future, according to state-run media.¹⁶²

The LM-5 will be one of the largest and most powerful space launch vehicles in the world and will more than double the size of payloads China can launch into low Earth orbit and geosynchronous Earth orbit. Although China publicly advertises the LM-5 as beneficial to its human spaceflight program, the rocket likely will also launch advanced C4ISR satellites, space station modules, and potentially reusable orbital vehicles that could be used for counter-space and ISR missions. The first LM-5 launch, which has been repeatedly delayed by manufacturing issues, could occur by the end of 2015.¹⁶³

China also is conducting preliminary research on a super-heavy-lift launcher—the LM-9—that could be used to send large payloads, such as a manned lunar lander, to the Moon; the LM-9 also would be capable of launching into deep outer space. According to a senior rocket engineer at the China Aerospace Science and Technology Corporation, which is responsible for producing China’s LM series, “estimates show the LM-5 will have to use four launches to fulfill a manned mission to the Moon while the LM-9 will need only one.”¹⁶⁴

In addition to these liquid-fuel launch vehicles, China is developing at least three types of solid-fuel rockets: the LM-11, the Kuaizhou, and the Feitian. China successfully conducted the inaugural launch of the LM-11, the largest of the developmental solid-fuel rockets, in September 2015.¹⁶⁵ China has tested the smaller Kuaizhou rocket twice, most recently in November 2014, and revealed the existence of the similarly-sized Feitian at China’s Zhuhai Airshow in November 2014.¹⁶⁶ Solid-fuel rockets lack the payload capacity of liquid-fuel rockets but are cheaper to manufacture, simpler to operate, and can be released with less preparation. Furthermore, the launchers are transportable or “road-mobile,” meaning they do not rely on fixed launch structures and are thus less vulnerable to attack. China likely is developing these new solid-fuel launch vehicles to put microsatellites into orbit on short notice. Such a capability would allow the PLA to rapidly replace or augment its satellite deployments in the event of any disruption in coverage during a conflict.¹⁶⁷

China debuted the Yuanzheng-1, described by a Chinese state-run media outlet as an “independent aircraft” or “space shuttle bus” that is “installed on [a] carrier rocket with the ability of sending one or more spacecraft into different orbits in space,” in March 2015.¹⁶⁸ The spacecraft, more accurately described as a type of potentially reusable orbital transfer vehicle (termed a “space tug” if reusable or an “upper stage” if expendable),*¹⁶⁹ uses a small thrust engine with a 6.5-hour lifetime and will be utilized with Long March-3A, 3B, and 3C vehicles primarily to insert Beidou satellites into medium Earth orbit and geostationary Earth orbit. In both the March 2015 launch and a second in July 2015, Yuanzheng-1 was used to successfully deploy Beidou satellites. As it can reportedly transfer multiple spacecraft into separate orbits, the vehicle has the potential to improve the efficiency of China’s space launches.¹⁷⁰

China’s Civilian Space Activities

Although it lacks a designated civilian space program, China since the mid-1990s has incrementally developed a series of ambitious space exploration programs, ostensibly for civilian purposes, with high-level backing and sustained financial support. China already has achieved milestones that few other countries have reached, including sending a manned mission to space and conducting a soft landing of a spacecraft on the Moon. However, China

*An orbital transfer vehicle (OTV) is defined as “a propulsion system used to transfer a payload from one orbital location to another—as, for example, from low Earth orbit to geostationary Earth orbit. Orbital transfer vehicles can be expendable or reusable . . . a reusable OTV is sometimes called a space tug.” Joseph Angelo, *Dictionary of Space Technology*, Routledge, 2013, 286.

is still largely catching up to the two premier space powers, the United States and Russia, which accomplished these feats decades ago. Nonetheless, China has made rapid progress in developing its space capabilities—exceeding regional rival space programs such as those belonging to Japan and India—and is gradually closing the technological gap with the United States and Russia.¹⁷¹

Nearly all of the technologies used in China's civilian space activities also have military applications and are therefore dual-purpose, as is the case with other countries' space programs. Alanna Krolkowski, Princeton-Harvard China and the World Program postdoctoral fellow at Harvard University, explained to the Commission:

Particular items of commercial space hardware can be repurposed for defense applications with only minor modifications. These items include entire systems, such as launch vehicles, which can launch both civil-commercial and defense payloads. They also include sub-systems, such as sensors and robotic arms on spacecraft, which can in some measure be applied or adapted to intelligence or counterspace missions. Finally, dual-use technologies also include many smaller components, such as radiation-hardened electronic elements.¹⁷²

Human Spaceflight

China's human spaceflight program is one of the country's largest and most technologically-advanced projects, involving some 3,000 organizations and several hundred thousand personnel.¹⁷³ China is only the third country behind the United States and Russia to have independently launched a human into space.

China's human spaceflight program consists of three phases. In phase one (1992–2005), China launched several unmanned Shenzhou spacecraft to develop technologies necessary for its first manned spaceflights in 2003 and 2005. In phase two (2005–2013), China conducted both manned and unmanned docking maneuvers between the Shenzhou spacecraft and the Tiangong-1 space lab. In phase three, scheduled for completion by 2022, China plans to launch a permanent manned space station into orbit.¹⁷⁴

- China has conducted 10 Shenzhou missions and plans to conduct the 11th in 2016. The Shenzhou spacecraft, which was designed by the China Academy of Space Technology, weighs approximately 7.8 tons and measures about 8.86 meters in length, and is able to support up to three people for up to seven days. It consists of three sections: an orbital module, a descent module, and a propulsion module.¹⁷⁵
- China launched the Tiangong-1 space lab into orbit in 2011. The lab, which was developed by the China Academy of Space Technology, weighs approximately 8.5 tons and has an area of about 15 cubic meters, allowing it to hold up to three astronauts. China is expected to launch the follow-on to the Tiangong-1, the Tiangong-2, in 2016.¹⁷⁶ Following the Tiangong labs, China plans to launch a permanent manned space station in several phases beginning with an experimental

“core module” in 2018. Two additional modules are scheduled for launch in 2020 and 2022.¹⁷⁷ At 60 tons, the space station will be similar in size to the United States’ first space station, Skylab, which was launched in the 1970s; it will be much smaller than the approximately 450-ton International Space Station, which is operated by the United States and Russia.¹⁷⁸ China expects to complete its space station launch around 2022, while the International Space Station is currently scheduled to complete its mission and be deorbited in 2024, potentially leaving China with the world’s only active space station.¹⁷⁹

Table 3: China’s Human Spaceflight Missions

Spacecraft	Launch Date	Flight Time	Purpose
Shenzhou-1	November 20, 1999	21 hours	Test
Shenzhou-2	January 10, 2001	7 days	Test
Shenzhou-3	March 25, 2002	8 days	Test
Shenzhou-4	December 30, 2002	7 days	Test
Shenzhou-5	October 15, 2003	21 hours	Manned (1 crew)
Shenzhou-6	October 12, 2005	4+ days	Manned (2 crew)
Shenzhou-7	September 25, 2008	2+ days	Manned (3 crew); Extravehicular activity
Tiangong-1	September 29, 2011	36 months (ongoing)	Prototype space lab
Shenzhou-8	November 1, 2011	16 days	Unmanned docking
Shenzhou-9	June 16, 2012	14 days	Manned (3 crew) docking
Shenzhou-10	June 11, 2013	15 days	Manned (3 crew) docking

Source: Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 46.

Lunar Exploration Program

China’s space experts proposed a lunar exploration program in 1991, and Beijing approved the first lunar orbiting mission in 2004.¹⁸⁰ According to the State Administration of Science, Technology, and Industry for National Defense, the program is a “major strategic decision by the CCP Central Committee, State Council, and Central Military Commission taking a broad look at [China’s] overall modernization and construction by grasping the world’s large [science and technology (S&T)] events and promoting [China’s] space enterprise development, promoting [China’s] S&T advancement and innovation, and improving [China’s] comprehensive national power.”¹⁸¹

China’s lunar exploration program consists of three phases involving the Chang’e spacecraft and several lunar landing vehicles.

- In phase one (2004–2007), the Chang’e-1 and the Chang’e-2 spacecraft orbited the Moon to map the lunar surface. The missions also tested China’s ability to control objects in deep space.
- In phase two (2007–2014), the Chang’e-3 spacecraft landed a lunar vehicle on the Moon. The vehicle deployed a rover, designated “Jade Rabbit,”* to study the lunar surface and analyze its soil. Jade Rabbit has far exceeded its expected lifespan of three months; after mechanical failures throughout the mission, the rover was still communicating with Earth as of July 2015 despite being unable to move.¹⁸² With the successful landing of the Chang’e-3, China became only the third country behind the former Soviet Union and the United States to conduct a soft landing on the Moon and the first to do so since 1976. Later in the second phase, China employed the Chang’e-5 spacecraft to test technologies required to retrieve and return a lunar sample to Earth.¹⁸³
- In phase three, China plans to send a rover to the Moon and bring it back to Earth after it collects soil samples. The mission, scheduled for 2017, will use the Chang’e-6 spacecraft and be launched from China’s new Wenchang launch center on Hainan Island.¹⁸⁴
- In a potential fourth phase, China announced in September 2015 that it would send the Chang’e-4 spacecraft—originally designed as a backup for Chang’e-3—to land on the moon’s “dark side” before 2020, which China would be the first nation to accomplish. The stated objective of this mission is to study geological conditions on the dark side, which could eventually lead to the placement of a radio telescope for use by astronomers.[†]¹⁸⁵

Jeffrey Plescia, the chairman of NASA’s Lunar Exploration Analysis Group, compared the lunar programs of China and the United States:

*China has had a well-developed, focused plan, and they are using incremental steps to [carry out] lunar exploration. I would guess that, given the pieces they have tested, [they] have a high probability of success [in phase three]. . . . They are demonstrating that they have the technical capability [to conduct] the most sophisticated deep-space activities. They have a program, and they can keep to the schedule and accomplish mission goals on time. [By comparison] the United States has been floundering around for decades, trying to figure out what to do.*¹⁸⁶

*Jade Rabbit is equipped with a set of cameras to analyze the lunar surface and a robotic arm to gather samples of lunar soil. It has less than 16 percent of the mass of NASA’s Mars rovers. Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 58–59.

†The far side or “dark side” of the moon is an ideal location for sensitive instruments, as radio transmissions from Earth are unable to reach it. Associated Press, “China Sets Its Space Exploration Sights on the Dark Side of the Moon,” September 14, 2015.

Although China's lunar program is motivated primarily by prestige and scientific objectives, China also may seek to use the program to exploit the Moon's natural resources. Chinese analysts have noted that the Moon contains large amounts of 14 elements in particular, including iron, titanium, and uranium, that could be useful for economic development. Helium-3—of which the Moon has 1–5 million tons—appears to be of specific interest to the analysts, who estimate that 100 tons of the element could supply all of the Earth's energy requirements for one year, and that the revenue derived would make the endeavor economically feasible.¹⁸⁷ Importantly, exploitation of helium-3 for energy production would require the design and production of a commercially-viable nuclear fusion reactor, a technology not yet demonstrated by any nation. Should fusion power become available, however, helium-3 provides the most promising fuel and is almost entirely unavailable on earth.¹⁸⁸

Beijing has not approved a plan to send humans to the Moon. In its 2011 white paper on space, however, Beijing acknowledged it is “researching the critical technologies for manned lunar exploration,” and it began a feasibility study that same year for a manned mission to the Moon with a potential launch date of 2020, 2025, or 2030.¹⁸⁹

Mars Exploration

Although Beijing has not approved a mission to Mars, top Chinese scientists have expressed interest in a Mars exploration program,¹⁹⁰ and China's defense industry and the Chinese Academy of Sciences are conducting studies on the feasibility of landing a robotic rover on the planet.¹⁹¹ Moreover, the China Aerospace Science and Technology Corporation's debut of a full-size Mars rover model at the 2014 Zhuhai Airshow suggests China has begun preliminary research into the necessary technology for such a mission.¹⁹²

U.S.-China Space Cooperation

Limited U.S.-China space cooperation began in the late 1970s, when the two countries signed a space exchange agreement and a memorandum of understanding on space technology cooperation.¹⁹³ U.S.-China cooperative space activities increased between 1990 and 1999, when the United States looked to China for satellite launch services. Following the loss of the space shuttle Challenger in 1986, which effectively ended the United States' plan to launch future military and commercial satellites aboard space shuttles, the United States faced a shortage of satellite launch facilities and began contracting launches out to other countries, including China. During this period, China launched a total of 19 U.S.-manufactured commercial satellites. Cooperation ended in 1999 when Congress passed a law prohibiting the launch of U.S. satellites by China, following revelations that several U.S. companies involved in the Chinese launches had illegally transferred potentially sensitive military information to China and that China had stolen classified information on advanced U.S. nuclear weapons technology.¹⁹⁴

Since this decision, aside from limited instances of cooperation, U.S.-China space relations have stagnated due to ongoing U.S. gov-

ernment concerns about China's efforts to illicitly procure U.S. space technology.* Washington also remains wary of China's intentions as a growing space power, particularly with respect to China's lack of transparency regarding its intentions in space and China's focus on developing counterspace capabilities to restrict U.S. freedom of movement in space.

Despite tensions in the U.S.-China space relationship, events prior to 2011 suggested new momentum in bilateral space cooperation. The United States and China held several high-level visits from 2004 to 2010: the administrator of the China National Space Administration visited NASA in 2004, and the NASA administrator visited the Agency in 2006 and 2010.¹⁹⁵ A joint statement produced during President Obama's visit to China in 2009 expressed that "China and the United States look forward to expanding discussions on space science cooperation and starting a dialogue on human spaceflight and space exploration."¹⁹⁶ In January 2011 the Obama Administration also invited a Chinese delegation to visit NASA headquarters and other NASA facilities later that year to reciprocate for the NASA administrator's "productive" 2010 visit to China.¹⁹⁷

In November 2011, however, Congress, based on concerns regarding China's efforts to illegally acquire U.S. space technologies, passed a prohibition against NASA conducting a range of activities with China. The law states:

*None of the funds available by this Act may be used for the National Aeronautics and Space Administration (NASA) or the Office of Science and Technology Policy (OSTP) to develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate, collaborate, or coordinate bilaterally in any way with China or any Chinese-owned company unless such activities are specifically authorized by a law enacted after the date of enactment of this Act.*¹⁹⁸

The law further applies this limitation to "any funds used to effectuate the hosting of official Chinese visitors at facilities belonging to or utilized by NASA." It only allows for NASA to engage in "activities which NASA or OSTP have certified pose no risk of resulting in technology transfer, data, or other information with national security or economic security implications to China or a Chinese-owned company," requiring the certification to be submitted to Congress 14 days beforehand.¹⁹⁹ Language added in 2013 requires that these activities also "not involve knowing interactions with officials who have been determined by the United States to have direct involvement with violations of human rights."²⁰⁰ Under this law, NASA's administrator has still been able to meet with Chinese counterparts in China and in official multilateral settings, and visits by Chinese nationals to NASA facilities are permitted if certified and presented to Congress as required.²⁰¹ The law has notably disallowed participation by Chinese astronauts in missions to

* Among China's most effective methods for acquiring sensitive U.S. technology are cyber espionage; witting and unwitting collection by Chinese students, scholars, and scientists; joint ventures; and foreign cooperation. For more information on the subject, see the U.S.-China Economic and Security Review Commission, *2014 Report to Congress*, November 2014, 294–299.

the International Space Station, though China's noninvolvement in the program predates 2011.*²⁰² Additionally, a ban mistakenly placed by NASA officials on Chinese scientists' participation at an international NASA conference in 2013 was misattributed to the law.²⁰³ China's pursuit of enhanced bilateral space cooperation has included efforts to persuade the United States to lift these restrictions, with a 2013 commentary in state-run *PLA Daily* specifically calling for the removal of the "Wolf Clause"† that bans China-U.S. space cooperation," terming it "a huge roadblock in terms of bilateral cooperation and mutual benefits."²⁰⁴

Bilateral Space Activities beyond NASA

Although the recent Congressional regulations place strict limitations on collaboration between NASA and the Chinese space industry, the United States and China since 2012 have expanded their cooperation on space activities that do not involve NASA.

- In 2012, the U.S. Geological Survey of the Department of the Interior agreed to provide imagery from its two Landsat satellites to the Center for Earth Observation and Digital Earth of the Chinese Academy of Sciences, apparently continuing China's use of Landsat imagery since 1986. Importantly, in 2008 current and archived Landsat imagery going back to 1972 had also become available online for free to users who register with the U.S. Geological Survey. These satellites image the Earth continuously and cover each point on Earth once every 16 days, and the Chinese Academy of Science reportedly uses this imagery for its research on Chinese environmental and land-use issues. Although the Landsat imagery is not sufficient to support time-sensitive military operations, the PLA could use it for map making and broad area analysis of trends in terrestrial infrastructure.²⁰⁵
- In 2014, the Space Studies Board of the U.S. National Academy of Sciences' National Research Council and the National Space Science Center of the Chinese Academy of Sciences held the first "Forum for New Leaders in Space Science." The goals of the forum are to: (1) "identify and highlight the research achievements of the best and brightest young scientists currently working at the frontiers of their respective disciplines"; (2) "build informal bridges between the space-science communities in China and the United States"; and (3) "enhance the diffusion of insights gained from participation in the Forum to the larger space-science communities in China and the United States."²⁰⁶ Despite its collaborative spirit, the forum may present opportunities for Chinese participants to collect information, whether wittingly or unwittingly, on sensitive U.S. technology on behalf of the Chinese government and military.

*In August 2015 a Houston company announced it had negotiated an agreement to carry a Chinese DNA experiment on the International Space Station, but as a commercial deal involving a U.S. business rather than a U.S. government entity, the law does not apply. Leonard David, "US-China Space Freeze May Thaw with Historic New Experiment," *Space.com*, August 21, 2015; and Eric Berger, "For the First Time Chinese Research to Fly on NASA's Space Station," *Houston Chronicle*, August 3, 2015.

†The commentary referred to the initiation of the November 2011 National Defense Authorization Act clause by then Congressman Frank Wolf.

- In late 2014, Beijing asked the U.S. Air Force to send warnings of potential satellite collisions directly to China’s space operators. In the past, such information was routed from the U.S. Air Force to the U.S. State Department, passed to China’s Ministry of Foreign Affairs, and finally conveyed to China’s space operators—a lengthy sequence. Mr. Cheng, assessing the likely reasons for this step, stated:

[The PLA] is most likely acting ... to remove an unnecessary link in the chain of information, especially important since conjunction data is perishable. ... [Additionally, China] may be [attempting] to double-check [its] own data: What are the Americans seeing that [it is] not? This may be partly a matter of [image] resolution, and partly a possible source of intelligence. There was a brouhaha a few years back where [the United States was] reporting in [its] space catalogs European satellites that the Europeans denied existed.²⁰⁷

Moreover, in late June 2015, the United States and China held the seventh round of the Strategic and Economic Dialogue in Washington, DC. The U.S. State Department spokesperson announced that the dialogue produced several areas for further space cooperation between the State Department and China:

- The United States and China stated their intention to “establish regular bilateral government-to-government consultations on civil space cooperation.” As an inaugural step in these consultations, the two countries held the first “U.S.-China Civil Space Cooperation Dialogue” in China in September 2015. At this meeting U.S. and Chinese officials exchanged information on space policies and on national plans related to space exploration, and discussed cooperation opportunities related to space debris, satellite collision avoidance, civil Earth observation, space sciences, space weather, and civil satellite navigation systems.²⁰⁸ As stated in the June announcement, the two countries additionally plan to hold “exchanges on space security matters under the framework of the U.S.-China Security Dialogue before the next meeting of the Security Dialogue.”
- The two sides reaffirmed that avoiding orbital collisions serves their common interest in exploring and using outer space for peaceful purposes, noting that further consultation is needed on the process for resolving an “orbital close approach” and that such a consultation should aim to ensure timely resolution to reduce the probability of accidental collisions. The two countries determined to “continue bilateral government-to-government consultations on satellite collision avoidance and the long-term sustainability of outer space activities as part of the U.S.-China Civil Space Cooperation Dialogue.”
- The two sides determined to undertake, among other projects, a joint project in “space security” within the East Asia Summit, the Association of Southeast Asian Nations Regional Forum, or another multilateral framework in the Asia-Pacific region, as part of their larger goal to “enhance communication and coordination” within these fora.²⁰⁹

U.S.-China Space Endeavors: Risks vs. Rewards

Although the United States and China continue to pursue opportunities to collaborate on space endeavors, such cooperation is not without its potential hazards. Mr. Cheng advised the Senate Committee on Commerce, Science, Technology, and Transportation that the United States should proceed with caution as it considers expanding space cooperation with China:

While the United States should not avoid cooperation with any country out of fear, at the same time, it is vital that cooperation occur with full understanding and awareness of whom we are cooperating with, and that such cooperation serve American interests. In the case of [China], the combination of an opaque Chinese space management structure, a heavy military role in what has been observed, and an asymmetric set of capabilities and interests raise fundamental questions about the potential benefits from cooperation between the two countries in this vital arena.

To this end, it is essential to recognize a few key characteristics of China's space program. First, that China possesses a significant space capability in its own right, and therefore is not necessarily in need of cooperation with the United States. Too often, there is an assumption that [China] is still in the early stages of space development, and that we are doing them a favor by cooperating with them. Second, that the Chinese space program is closely tied to the [PLA]. ... Therefore, any cooperation with [China] in terms of space must mean interacting, at some level, with the PLA. Third, that the Chinese space program has enjoyed high-level political support, is a source of national pride, and is therefore not likely to be easily swayed or influenced by the United States, or any other foreign actor. These three issues, in combination, suggest that any effort at cooperation between the United States and [China] will confront serious obstacles, and entail significant risks.²¹⁰

Other observers have suggested it is possible for the United States to improve space cooperation with China while also protecting U.S. security interests and supporting the U.S. space program's development. In his testimony to the Commission, Philip Saunders, director of the Center for the Study of Chinese Military Affairs of the Institute for National Strategic Studies at the National Defense University, argued, "there are other areas such as many scientific applications and manned space flight where the United States can share information and experiences without compromising national security and can benefit from growing Chinese investments in space capabilities and China's potential contributions to international space cooperation."²¹¹

Implications of China's Space and Counterspace Programs for the United States

China's improving space capabilities are challenging U.S. superiority in the information and space domains. A senior official at the PLA's Academy of Military Science underscored China's ambition to rival the world's top space powers following China's 2007 anti-satellite test: "[If there is going to be] a space superpower, it's not going to be alone. . . . It will have company."²¹² In 2013, Central Military Commission Chairman and Chinese President Xi Jinping said "the dream of space flight is an important part of the strong country dream" and "the space dream is an important component of realizing the Chinese people's mighty dream of national rejuvenation."²¹³

Space activities are critical to the United States' technological advancement, scientific discovery, security, and economic growth. As outlined in the Obama Administration's 2010 *National Space Policy*, the utilization of space has transformed every aspect of U.S. society, and the benefits of space permeate daily life in the United States:

Satellites contribute to increased transparency and stability among nations and provide a vital communications path for avoiding potential conflicts. Space systems increase our knowledge in many scientific fields, and life on Earth is far better as a result. The utilization of space has created new markets; helped save lives by warning us of natural disasters, expediting search and rescue operations, and making recovery efforts faster and more effective; made agriculture and natural resource management more efficient and sustainable; expanded our frontiers; and provided global access to advanced medicine, weather forecasting, geospatial information, financial operations, broadband and other communications, and scores of other activities worldwide. Space systems allow people and governments around the world to see with clarity, communicate with certainty, navigate with accuracy, and operate with assurance.²¹⁴

Space capabilities also have enhanced U.S. security and have been a key element of warfighting for more than 30 years—to the extent that U.S. national security is now dependent on the space domain. According to the joint DOD–Intelligence Community *National Security Space Strategy*, published in 2011:

Space capabilities provide the United States and our allies unprecedented advantages in national decision-making, military operations, and homeland security. Space systems provide national security decision-makers with unfettered global access and create a decision advantage by enabling a rapid and tailored response to global challenges. Moreover, space systems are vital to monitoring strategic and military developments as well as supporting treaty monitoring and arms control verification. Space systems are also critical in our ability to respond to natural and man-made disasters and monitor long-term environmental trends.²¹⁵

The United States' sustained success in integrating space capabilities into its military operations has encouraged China to pursue a broad and robust array of counterspace capabilities to deny, degrade, deceive, disrupt, or destroy U.S. space systems and their supporting infrastructure. This program includes direct-ascent antisatellite missiles, computer network operations, ground-based satellite jammers, and directed energy weapons. China also appears to be developing co-orbital antisatellite systems, which have not been a significant concern for the United States since the fall of the Soviet Union.

China already has demonstrated its ability to strike U.S. satellites in low Earth orbit. As China's developmental counterspace capabilities become operational, China will be able to hold at risk U.S. national security satellites in every orbital regime. According to General Hyten, commander of U.S. Air Force Space Command, the loss of U.S. space capabilities would send the U.S. military "back to World War Two . . . back to industrial age warfare."²¹⁶

Beijing also recognizes that command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) modernization is central to its "preparation for military struggle" and is rapidly expanding its space-based C4ISR assets accordingly. China currently has approximately 142 operational satellites in orbit, more than 97 percent of which have been launched since 2000 and 75 percent since 2008. In addition to serving China's economic goals, this modernization program is designed to improve the PLA's ability to command and control its forces; monitor global events and track the military activities of the United States and other potential adversaries; and increase the range at which Beijing can use conventional missile systems to place U.S. ships, aircraft, and bases at risk.

China's current system of C4ISR satellites likely allows the PLA to detect and monitor U.S. air and naval activity out to the second island chain* with sufficient accuracy and timeliness to (1) assess U.S. military force posture, and (2) cue land-, maritime-, and air-based collection assets for higher fidelity and time-sensitive tracking and targeting of U.S. military assets. As China continues to field additional C4ISR satellites, the country's space-based ISR coverage almost certainly will become more accurate, responsive, and timely and could ultimately extend beyond the second island chain into the eastern Pacific Ocean and Indian Ocean.²¹⁷ Nevertheless, the U.S. Office of Naval Intelligence points out that building a complete picture of all activities—which would rely heavily on additional space-based C4ISR—could remain a "formidable challenge" for China due to the sheer size of these areas:

Just to characterize activities in the "near seas," China must build a picture covering nearly 875,000 square nau-

*The first island chain refers to a line of islands running through the Kurile Islands, Japan and the Ryukyu Islands, Taiwan, the Philippines, Borneo, and Natuna Besar. The second island chain is farther east, running through the Kurile Islands, Japan, the Bonin Islands, the Mariana Islands, and the Caroline Islands. PLA strategists and academics have long asserted the United States relies primarily on the first island chain and the second island chain to strategically "encircle" or "contain" China and prevent the PLA Navy from operating freely in the Western Pacific. Open Source Center, "PRC Article Surveys China's Naval Rivals, Challenges," January 6, 2012. ID: CPP20120109671003; Bernard D. Cole, *The Great Wall at Sea* (Second Edition), Naval Institute Press, 2010, 174–176.

tical miles (sqnm) of water- and air-space. The Philippine Sea—a key interdiction area in the event of a conflict over Taiwan or in the South China Sea—expands the battlespace by another 1.5 million sqnm. In this vast space, navies and coast guards from seven regional countries as well as several globally-deploying nations combine with tens of thousands of fishing boats, cargo ships, oil tankers, and other commercial vessels.²¹⁸

In a 2015 report sponsored by the Commission, the RAND Corporation notes that the cyber infrastructure contributing to China's maritime domain awareness could at times be limited by technical challenges associated with integrating so many new technologies and complex systems, as well as by poor coordination among intelligence organizations, operators, and decision makers:

Another potential weakness for China ... may exist in the need to integrate all the PLA's disparate ISR capabilities and incorporate them into the targeting process. Indeed, shortcomings in China's C4ISR capabilities, which could be both organizational and technological, could hamper the speed, reduce the reliability, or otherwise diminish the effectiveness of the PLA's over-the-horizon targeting capabilities. Problems with the potential to limit the effectiveness of Chinese C4ISR and targeting could include not only technical challenges associated with integrating such a variety of new technologies and complex systems but also procedural weaknesses, such as insufficient coordination among numerous intelligence organizations, operators, and higher-level decision makers.²¹⁹

Furthermore, although China's space-based C4ISR modernization enhances the PLA's operational capabilities, it also increases PLA vulnerabilities to U.S. deception, degradation, and denial capabilities.²²⁰

In addition to the implications it poses for U.S. military interests, the rapid expansion of China's space industry could also have economic consequences for the United States.

First, China's persistent global marketing of its commercial satellite and space launch services has the potential to cut into U.S. market share in these areas, though it has had little effect on established satellite manufacturers or the international launch market thus far. Although China's current effort focuses on growing its satellite exports to lower-income buyers, it almost certainly will eventually expand to higher-end markets, following a business plan similar to that of Chinese telecommunications giant Huawei. China's launch service costs compare favorably with those of Ariane-space, the major European provider, and may match those of SpaceX, the low-cost leading U.S. private firm, as described earlier. In addition, according to one former European space executive, China has broken into the launch services market by offering prices at as low as three-quarters of the launches' cost, suggesting heavy government assistance on top of low initial costs will enable China to successfully compete for broader market share in the future. Furthermore, China often packages its satellite exports and launch services together, and also reaps cost and experience bene-

fits from blending its civilian and military space infrastructure, which is expected to provide additional competitive advantages. An executive for U.S. company SpaceX, which has led a resurgence in U.S. commercial launch market share after U.S. organizations were priced out of the market until recently, stated in 2013 that the company views China as its main competition. However, in a July 2015 meeting with the Commission, the China Great Wall Industry Corporation asserted that it is unable to compete with Western counterparts due to U.S. export controls, indicating that obstacles remain despite China's cost advantages.²²¹

Second, China's designation of the Beidou satellite navigation system—planned to provide global service by 2020—as “national infrastructure,” and introduction of preferential policies to promote its place in China's domestic satellite navigation market, will directly impact the market share of GPS and related products within China.²²² While GPS usage provides no revenues to the United States, Beidou is also intended to foster development in downstream industries such as mobile internet applications, which may affect U.S. firms' market share in these industries.²²³

Third, U.S. International Trafficking in Arms Regulations (ITAR), altered by the FY13 National Defense Authorization Act to no longer include exports of many satellites and satellite technologies but still in force for China, have prompted many European countries and their industries to pursue “ITAR-free” exports in order to reach the Chinese market—by definition necessitating the exclusion of U.S. technologies from these products. Mr. Nurkin testified to the Commission that “concern over U.S. export controls on space-related items and confusion over which items are on the list of banned items for export and, importantly, which ones will be in the future, has led international industry, especially the European space industry, which has far less severe export guidelines for space technologies, to endeavor to design ITAR-free solutions, effectively cutting out U.S. based suppliers of ITAR-restricted items from international supply chains.”²²⁴ Mr. Nurkin suggested that export control reform should “focus on increasing protection on a small number of systems and technologies that the United States is and should be unwilling to offer on the open market” instead of focusing on the many technologies that China probably already has access to from foreign partners, particularly Europe.²²⁵ In May 2015, General James Cartwright, former vice chairman of the Joint Chiefs of Staff, and the Honorable Sean O'Keefe, former NASA administrator, reiterated that U.S. ITAR regulations are not currently in line with the pace of technological innovation and are therefore in need of reform in order to protect the U.S. space industry's global competitiveness.²²⁶

China's thriving space programs have important political implications as well, most importantly in their potential to present a future challenge to the United States' position as a leading space power. China's human spaceflight program may be repeating many of the same accomplishments the United States achieved in the 1970s, but it also is tempering U.S. superiority in civilian space capabilities and lessening U.S. influence in the international space community. Roger Handberg, professor at the University of Central Florida, testified to the Commission that “psychologically, momen-

tum appears to be moving in China's favor with the possibility of actually moving ahead of the United States over the next two decades."²²⁷ China is gaining sway among lesser space nations by sharing space technologies, supplying training and financing for developing satellites, and providing launch services. Beijing's push into new space markets could undermine U.S. efforts to prevent countries from obtaining certain dual-use space technologies. China is developing capabilities that could allow it to compete in sending humans and other payloads to the Moon and beyond, even as the United States now depends on Russian launch vehicles and sites to send humans into space.²²⁸

China's new space station, slated for completion in 2022 while the deorbiting of the International Space Station is scheduled for 2024, will provide Beijing greater prestige in the international system and expand its growing space presence—concurrent with declining U.S. influence in space. Not only will China have the only space station in orbit, but it also will have the ability to choose its partners and determine the countries with which it will share technologies and experimental data. In this sense, the space station likely will serve as a diplomatic tool China can leverage to execute its broader foreign policy goals. Meanwhile, given current Congressional restrictions on U.S.-China space cooperation, the United States would not participate in China's space station program barring changes to annual appropriations legislation. For the first time in decades, the United States could be without a constant human presence in space.

Conclusions

- China has become one of the top space powers in the world after decades of high prioritization and steady investment from China's leaders, indigenous research and development, and a significant effort to buy or otherwise appropriate technologies from foreign sources, especially the United States. Although China's space capabilities still generally lag behind those of the United States and Russia, its space program is expanding and accelerating rapidly as many other nations' programs proceed with dwindling resources and limited goals.
- China's aspirations in space are driven by its judgment that space power enables the country's military modernization, drives its economic and technological advancements, allows it to challenge U.S. information superiority during a conflict, and provides the Chinese Communist Party with significant domestic legitimacy and international prestige.
- China's space program involves a wide network of entities spanning its political, military, defense industry, and commercial sectors. Unlike the United States, China does not have distinctly separate military and civilian space programs. Under this nebulous framework, even ostensibly civilian projects, such as China's human spaceflight missions, directly support the development of People's Liberation Army (PLA) space, counterspace, and conventional capabilities. Moreover, Chinese civilian and commercial satellites likely contribute to the PLA's command, control, com-

munications, computers, intelligence, surveillance, and reconnaissance (C4ISR) efforts whenever it is technically and logistically feasible for them to be so utilized, and they would probably be directly subordinate to the PLA during a crisis or conflict. Given the PLA's central role in all of China's space activities, U.S. cooperation with China on space issues could mean supporting the PLA's space and counterspace capabilities.

- China likely has capitalized on international cooperation to acquire the bulk of the technology and expertise needed for most of its space programs. China probably will continue to pursue close cooperation with international partners to overcome specific technical challenges and to meet its research and development objectives and launch timelines.
- Chinese analysts perceive that China's advances in space technology have become an important driver for the country's economic growth. Satellite and launch service sales provide China's defense industry with a growing source of revenue. Technology spin-offs offer competitive advantages in certain sectors, such as satellite navigation products. Exports of space technology-based products pose challenges to the United States not only due to the non-market-based nature of China's economy, but also due to military and security concerns.
- As China's developmental counterspace capabilities become operational, China will be able to hold at risk U.S. national security satellites in every orbital regime.
- China is testing increasingly complex co-orbital proximity capabilities. Although it may not develop or operationally deploy all of these co-orbital technologies for counterspace missions, China is setting a strong foundation for future co-orbital antisatellite systems that could include jammers, robotic arms, kinetic kill vehicles, and lasers.
- China is in the midst of an extensive space-based C4ISR modernization program that is improving the PLA's ability to command and control its forces; monitor global events and track regional military activities; and strike U.S. ships, aircraft, and bases operating as far away as Guam. As China continues to field additional intelligence, surveillance, and reconnaissance (ISR) satellites, its space-based ISR coverage almost certainly will become more accurate, responsive, and timely and could ultimately extend beyond the second island chain into the eastern Pacific Ocean and the Indian Ocean.
- China's rise as a major space power challenges decades of U.S. dominance in space—an arena in which the United States has substantial military, civilian, and commercial interests.

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218. U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, 2015, 20–21.

219. Michael Chase et al., *China’s Incomplete Military Transformation: Assessing the Weaknesses of the People’s Liberation Army* (Prepared for the U.S.-China Economic and Security Review Commission by the RAND Corporation, 2015), 116–117.

220. Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 116.

221. China Great Wall Industry Corporation, briefing to Commission, Beijing, China, July 22, 2015; Kevin Pollpeter (Deputy Director, Study of Innovation and Technology in China Project, Institute on Global Conflict and Cooperation, University of California), interview with Commission staff, July 17, 2015; and Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 112–113.

222. Kevin Pollpeter, *China Dream, Space Dream: China’s Progress in Space Technologies and Implications for the United States* (Prepared for the U.S.-China Economic and Security Review Commission by the University of California Institute on Global Conflict and Cooperation, March 2, 2015), 113.

223. U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, written testimony of Kevin Pollpeter, February 18, 2015; U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, oral testimony of Alanna Krolikowski, February 18, 2015.

224. U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, written testimony of Tate Nurkin, February 18, 2015.

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228. U.S.-China Economic and Security Review Commission, *Hearing on China’s Space and Counterspace Programs*, written testimony of Roger Handberg, February 18, 2015.

SECTION 3: CHINA'S OFFENSIVE MISSILE FORCES

Introduction

China's offensive missile forces are integral to its military modernization efforts and its objective of becoming a world-class military capable of projecting power and denying access by adversary forces to China's periphery. The People's Liberation Army's (PLA) ambitions in this area were on display in September 2015 at China's largest-ever military parade, which commemorated the 70th anniversary of the end of World War II. Nine different classes of ballistic and cruise missiles were featured, some of which had never before been publicly unveiled.* The parade highlighted the pace and sophistication of China's missile modernization, and signaled to the world China's seriousness about enhancing both its nuclear and conventional missile capabilities and its ability to hold adversary forces at greater risk.

This section examines China's modernizing missile forces, including several new methods and platforms for missile deployment. Although it includes a brief discussion of Chinese developments in long-range surface-to-air missiles and other defensive measures against adversary missiles, the focus is primarily on China's offensive missile developments. The section discusses the drivers of China's missile modernization; the capabilities and doctrines of its conventional and nuclear missile forces; selected emerging missile technologies; and the challenge of C4ISR† and targeting. Finally, it considers the implications of China's missile force modernization for the United States. This section draws on the Commission's April 2015 hearing on China's offensive missiles; consultations with experts on the Chinese military and international security affairs; and open source research and analysis.

China's Drive to Modernize the Second Artillery

Missile Warfare and the Second Artillery

The PLA's Second Artillery has been responsible for China's missile forces since its establishment in the 1960s—first as a solely nuclear force and since the 1990s as an increasingly lethal conventional missile force as well. Missile warfare is a key component of PLA “joint firepower operations,” which combine strike aviation, theater missiles, and long-range artillery. The chief objective of these operations is to asymmetrically hold enemy assets at risk at

* Missiles on display at the parade included the DF-10, DF-15B, DF-16, DF-21D, DF-26, DF-5B, DF-31A, YJ-12, and YJ-83. Andrew Erickson, “Missile March: China Parade Projects Patriotism at Home, Aims for Awe Abroad,” *China Real Time Report* (Wall Street Journal blog), September 3, 2015.

† C4ISR stands for “command, control, communications, computers, intelligence, surveillance, and reconnaissance.”

long range by weakening an adversary at key nodes—such as command and control and logistics hubs—to lay the groundwork for air, sea, and information superiority in wartime. In particular, China’s theater missiles—those missiles with ranges meant to support Pacific theater operations—create a more favorable environment for subsequent PLA Air Force and PLA Navy operations. According to PLA campaign theory, seizing the advantage in the air, maritime, and information domains are prerequisites for achieving operational objectives and terminating a military conflict on China’s terms.¹

China’s growing conventionally-armed missile inventory is taking center stage in its strategic and warfighting calculus. The Second Artillery provides China with a decisive operational advantage over regional militaries competing with China to defend maritime claims in China’s “near seas,”* as China gains a superior ability to hold its adversaries’ assets at risk.² China’s long-range precision strike capabilities also improve its ability to engage the U.S. military at longer distances from China’s coastline, eroding the United States’ ability to access the Western Pacific freely in the event of a conflict.³

China has come to view a flexible, survivable, and lethal offensive missile force as a force multiplier in achieving its strategic objectives. The Second Artillery’s conventional missiles provide an increasingly robust deterrent against other military powers, and its nuclear-armed missiles serve as a guarantor of state survival. Moreover, as Mark Stokes, executive director of the Project 2049 Institute, testified to the Commission, “China’s long-range precision strike capabilities ... support the [Chinese Communist Party’s (CCP)] quest for legitimacy. The PLA functions as the armed wing of the CCP, and the Second Artillery is the party’s instrument for achieving strategic effects through direct targeting of enemy centers of gravity.”⁴

As the Second Artillery’s missions have expanded, so has its bureaucratic status within the PLA. The 2004 promotion of the Second Artillery commander, along with the commanders of the PLA Air Force and PLA Navy, to membership on the Central Military Commission, China’s top military decision-making body, reflects efforts to make PLA operations more “joint” and less ground-force-dominated. As a result the Second Artillery, like the PLA Air Force and PLA Navy, has taken on an elevated bureaucratic stature in the decade since its promotion to the Central Military Commission,⁵ and today it plays a key role in PLA planning and operations.⁶ In addition to providing a variety of “fire support” missions for the PLA services, Second Artillery Doctrine also envisions the possibility of implementing an “independent conventional missile strike campaign” without significant coordination with the PLA services.⁷ According to Andrew Erickson, associate professor at the U.S. Naval War College, China’s upcoming military restructuring—outlined in 2013 and initiated by the 300,000-personnel troop cut announced at the September 2015 military parade—will likely not result in any demotion to the Second Artillery’s status.⁸

*China’s “near seas” are the Bohai, Yellow Sea, East China Sea, and South China Sea regions.

Context and Drivers of China's Missile Force Development

In the 1990s, China's military modernization efforts prioritized capabilities that could deter, delay, and deny the likely intervention of the United States military in a Taiwan contingency. This sole strategic emphasis has since diversified. In 2004, Beijing issued a directive to the PLA to prepare for nontraditional missions beyond China's immediate periphery, including humanitarian assistance/disaster relief, counterterrorism, and international peacekeeping operations. Such missions reflect China's strategic interest in protecting its economic development and increasing its global footprint. As the PLA's operational fluency has improved, its naval, air, and ground forces—all of which are increasingly armed with long-range missiles or integrated with the Second Artillery's missile operations—have begun to prepare for and familiarize themselves with operations beyond the Chinese mainland and near seas, demonstrating an improving ability to project power throughout the Asia Pacific region and beyond.⁹

According to Mr. Stokes, the Second Artillery's growth, modernization, and departure from its origins as a solely nuclear force have proceeded and will continue to proceed in phases. Preparation for a Taiwan contingency through the development and deployment of short-range ballistic missiles (SRBMs) with a 600 kilometer (372 mile) range along the Taiwan Strait from the late-1980s to the mid-1990s constituted the first phase. A second phase has been the expansion of SRBM ranges to 1,500–2,000 kilometers (932–1,242 miles) to develop a basic capability to strike longer-range targets on land and moving targets at sea. The next phase, which Mr. Stokes anticipates China could reach by the end of 2015, is an extension of its conventional precision strike capability to a range of 3,000 kilometers (1,864 miles) and beyond.* Finally, China could pursue an even greater extension of the Second Artillery's conventional precision strike capability to 8,000 kilometers (4,971 miles) and eventually a global conventional precision strike capability, which Mr. Stokes estimates could take place by 2020 and 2030, respectively.¹⁰

In the post-Cold War nuclear realm, China's chief strategic concern has been the United States, particularly the U.S. nuclear arsenal and modernization of missile defenses. (For more information on Chinese concerns about U.S. missile defenses, see "Increasing the Penetrability of Adversary Missile Defenses," later in this section.) Of note, China is surrounded by a number of nuclear-capable states, many of which experience varying degrees of instability or enmity with each other. In South Asia, India and Pakistan are relatively recently-declared nuclear states with mutual deep-seated tensions. In Northeast Asia, prospects for North Korea's denuclearization appear increasingly unlikely,† while Japan's recent defense reforms have led China to raise concerns about Japan's nuclear weapons potential.¹¹ Finally, although Taiwan does not itself

*The DF-26 intermediate range ballistic missile's inclusion in China's September 2015 military parade may represent the achievement of this phase; see "Ballistic Missiles: Antiship Missiles," later in this section.

†For more information on the denuclearization issue in China-North Korea relations, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 455–459.

maintain nuclear weapons, China recognizes that a conflict with Taiwan could involve the intervention of the nuclear-armed United States.¹²

Nuclear Strike: Doctrine and Capabilities

China's nuclear strike capabilities have modernized only gradually in comparison to its conventional capabilities. Moreover, China's nuclear doctrine remains largely unchanged since its establishment as a nuclear state in the 1960s. Although modern China's early leaders, especially Mao Zedong, appreciated the political utility of nuclear weapons as a deterrent, they did not view nuclear capability as a significant warfighting tool. This philosophy appears to have guided the development of China's nuclear doctrine as well as the size of China's nuclear arsenal, which is estimated to be of moderate size in comparison to other major declared nuclear states such as the United States and Russia.¹³ Nevertheless, China is improving its nuclear-armed missile capabilities and moderately increasing the size of its arsenal. Beijing does not release official data about its nuclear arsenal and its pronouncements regarding its doctrine are limited and vague. Opacity in this area helps China maintain and strengthen strategic ambiguity, and, by extension, the value of its strategic arsenal.¹⁴

China's Nuclear Doctrine

Nuclear Deterrence

The chief roles of China's nuclear arsenal are to deter an adversary from undertaking a nuclear first strike and to reduce the pressure on China to yield to an adversary's demands, or desist from aggression, under threat of nuclear attack.¹⁵ China's nuclear deterrent is premised on the concept of assured retaliation, which is the idea that "a small number of survivable weapons would be enough to accomplish deterrence by threatening retaliation and, thus, unacceptable damage on an adversary," according to M. Taylor Fravel, Associate Professor in the Department of Political Science at the Massachusetts Institute of Technology, and Evan S. Medeiros, then Director for China, Taiwan, and Mongolian Affairs at the U.S. National Security Council.*¹⁶

As the PLA has increasingly incorporated the Second Artillery into joint campaign planning, the Second Artillery's nuclear missile force is likely to be considered a backstop to support conventional missions. In a conventional conflict, the PLA could fight with the confidence that its nuclear weapons—and therefore the threat of nuclear retaliation—could prevent the conflict from escalating too far. In this sense, China believes the Second Artillery's nuclear arsenal could constrain an adversary's options in a conventional conflict, providing China with greater flexibility to conduct conven-

* Because China's declarations on its nuclear policy are vague and kept to a minimum, this assessment of China's nuclear strategy does not necessarily represent China's official views. Furthermore, some scholars, such as Wu Riqiang, associate professor at the School of International Studies at Renmin University, disagree that assured retaliation is what drives China's nuclear deterrent. Wu Riqiang, "Remarks" (Chinese Thinking on Nuclear Weapons, Carnegie Endowment for International Peace, Washington, DC, May 11, 2015); and Wu Riqiang, "Certainty of Uncertainty: Nuclear Strategy with Chinese Characteristics," *Journal of Strategic Studies* 36:4 (2013), 579–614.

tional military operations.¹⁷ However, this belief could encourage China to be more risk-acceptant during a crisis because it may not fear the prospect of escalating a conventional fight into the nuclear realm as much as it otherwise would.¹⁸

Dr. Christopher Yeaw, founder and director of the Center for Assurance, Deterrence, Escalation, and Nonproliferation Science & Education, testified to the Commission that this doctrine has been shifting.¹⁹ In an interview with Commission staff, he further explained:

I don't believe China fears nuclear coercion from the United States as it did in the Cold War years, nor does it primarily fear a highly unlikely U.S. nuclear first strike—what China fears most is losing to the United States in a “politically necessary” conventional conflict. I believe this leads [China] to desire a way to deescalate the United States out of a high-intensity regional conflict, particularly one in which the United States is imposing severe costs from a purely conventional perspective and China's victory appears elusive or in grave doubt.²⁰

Potential Reconsideration of No-First-Use

China has long pledged a policy of “no-first-use” for its nuclear weapons. As stated in Beijing's most recent defense white paper: “China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against non-nuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country.”²¹ China's no-first-use pledge appears designed to convey China's preference for using nuclear weapons for deterrence rather than warfighting purposes, as well as its stated view that nuclear warfighting is strictly firewalled from conventional warfighting.²²

It is unclear, however, under what circumstances China would use nuclear weapons and what China would consider “first use.” As a result, the outer bounds of the pledge have been under debate for some time among outside observers.²³ For example, although China's 2013 defense white paper indicates China will use nuclear weapons to respond to a nuclear *attack* but not a nuclear *threat*, it does not articulate at what point China will consider a nuclear threat to have ended and a nuclear attack to have begun.*²⁴ The 2013 *Science of Military Strategy*, an authoritative PLA doctrinal source, indicates China will not wait to absorb a nuclear strike before launching a retaliatory nuclear strike of its own: “We can, under conditions confirming the enemy has launched nuclear missiles against us, before the enemy nuclear warheads have reached their targets and effectively exploded, before they have caused us

*China's 2013 defense white paper differentiates between responses to a nuclear threat and a nuclear attack. A nuclear threat will prompt China's nuclear missile force to “go into a higher level of readiness, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons against China.” In response to a nuclear attack, however, “the nuclear missile force of the [Second Artillery] will use nuclear missiles to launch a resolute counterattack either independently or together with the nuclear forces of other services.” China's Information Office of the State Council, *The Diversified Employment of China's Armed Forces*, April 2013.

actual nuclear damage, quickly launch a nuclear missile retaliatory strike.”²⁵

No-first-use has generated debate within China as well.²⁶ In a 2013 opinion piece, PLA Major General Yao Yunzhu of the Academy of Military Science, the PLA’s preeminent research institute, acknowledged speculation in Chinese media about a possible change to no-first-use, attributing it to two concerns:

- Ballistic missile defense systems developed by the United States and its allies “would be capable of intercepting retaliatory Chinese nuclear weapons launched after [China] has already been attacked, thus potentially negating the effectiveness of China’s nuclear arsenal as a deterrent.”²⁷
- The United States’ increasingly advanced conventional capabilities could strike China’s nuclear arsenal and nullify China’s no-first-use policy.²⁸ Both Western and Chinese scholars have suggested the threshold for China’s nuclear retaliation may not be limited to a nuclear first strike, but could also include a conventional threat to its own nuclear arsenal.²⁹

The U.S. Department of Defense (DOD) has also identified additional areas of ambiguity in China’s no-first-use policy, including whether demonstration strikes, high-altitude bursts,* or strikes on what China considers its territory would constitute a first use.³⁰

Chinese and Western experts seem to agree China officially will adhere to a no-first use policy, while allowing healthy debate about the circumstances of its applicability in unofficial channels.³¹ The policy considerations shaping Beijing’s decision-making regarding when to use nuclear weapons are likely to remain unknown to the public.³²

Potential Changes to Nuclear State of Alert

Due to China’s opacity about its nuclear program, the typical state of its nuclear forces is unclear to outsiders. Most analysts assume China keeps its nuclear warheads stored separately from its missiles rather than continuously deploying a number of warheads on missiles as done by France, Russia, the United Kingdom, and the United States.† This “de-alerting”‡ policy would be in line with Beijing’s preference for highly centralized command and control over its nuclear weapons but would leave room for vulnerability to a first strike: whereas it takes additional time to ready de-alerted

*DOD is likely referring to a high-altitude nuclear explosion that creates an electromagnetic pulse, which is an intense energy field that can overload or disrupt electrical systems such as those used in critical civilian infrastructure. Non-nuclear means can also generate an electromagnetic pulse effect. U.S. Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, November 8, 2010 (as amended through June 15, 2015), 103; and Clay Wilson, “High Altitude Electromagnetic Pulse (HEMP) and High Power Microwave (HPM) Devices: Threat Assessments,” July 21, 2008, *Congressional Research Service*, Summary.

†This assumption about China’s nuclear policy is not unanimously held. Dr. Yeaw, for example, challenges the notion that China keeps the entirety of its forces de-alerted at all times, given the immense lengths it has gone to in order to acquire a more survivable force. Christopher Yeaw (Director, Center for Assurance, Deterrence, Escalation, Nonproliferation Science & Education), interview with Commission staff, June 15, 2015.

‡“De-alerting” generally refers to the adoption of measures that extend the amount of time required to launch a nuclear weapon once the order to launch is given. Storing warheads separately from delivery systems, as China does, is one of a range of possible de-alerting measures. Andrew Brown and Jeffrey Lewis, “Reframing the Nuclear De-alerting Debate: Toward Maximizing Presidential Decision Time,” *Nuclear Threat Initiative*, December 11, 2013.

nuclear weapons and launch them, nuclear weapons on “high alert”* could be launched within minutes of a launch order.³³

Experts have debated the effect of de-alerting policies such as China’s on strategic stability. Advocates of de-alerting express concerns about the risk of escalation, arguing that maintaining high-alert status removes the option of preparation and deliberation prior to firing a nuclear weapon. In their view, keeping nuclear weapons de-alerted also minimizes the risk of their accidental use, unauthorized use, and use due to miscalculation.³⁴ Advocates of high-alert status, however, reject the notion that a constant high state of nuclear readiness is destabilizing. Rather, they argue, it creates certainty for adversaries about the kind of response they should expect from a state maintaining nuclear weapons on high alert. Another argument in favor of high-alert status is that it provides the executive decision maker time to consider various responses during a crisis, knowing that nuclear weapons would be ready for launch within minutes of the decision to fire them.³⁵

In testimony to the Commission, James Acton, senior associate and co-director of the Nuclear Policy Program at the Carnegie Endowment for International Peace, suggested China’s presumptive de-alerting policy could change. As noted in the previous excerpt from the 2013 *Science of Military Strategy*, evidence in doctrinal writings indicates the PLA has considered the idea of a nuclear launch in response to an incoming nuclear attack prior to the missiles actually reaching their targets, or “launch on warning.” This suggests Chinese nuclear forces would at least be alerted in the event of a crisis. China’s stated interest in enhancing its strategic early-warning capabilities also suggests an interest in launch on warning: such capabilities, intended to provide China with the time to react to an incoming threat, would be “of little value” to a de-alerted force during a crisis, according to Dr. Acton.³⁶ Finally, the policy would change if China decides to mate nuclear warheads to its submarine-launched ballistic missiles (SLBMs)—a “potentially huge shakeup for the Chinese forces for command and control.”³⁷ For more information on China’s SLBMs, see “Submarine-Launched Ballistic Missiles,” later in this section.

Nuclear Escalation Philosophy

Another factor that sheds light on how and when China might employ nuclear weapons is its nuclear escalation philosophy—how a state might use nuclear weapons to escalate or deescalate a conflict. Dr. Yeaw testified to the Commission that China views the use of nuclear weapons not “in a warfighting fashion intended to defeat the adversary on the battlefield,” but “in the high-intensity political management of an escalating and perhaps unsustainable conflict.”³⁸ According to this escalation philosophy, China would punctuate non-nuclear operations with tactical- or theater-level nu-

* “High alert”—often termed “hair-trigger alert” by critics—generally describes the status of nuclear weapons ready for launch within minutes, or the shortest possible length of time, of a launch order. Currently the United States and Russia maintain nuclear forces on high alert while France and the United Kingdom maintain nuclear forces on “alert” but at a lower level; the nuclear forces of China, India, North Korea, and Pakistan are believed to be de-alerted. Andrew Brown and Jeffrey Lewis, “Reframing the Nuclear De-alerting Debate: Toward Maximizing Presidential Decision Time,” *Nuclear Threat Initiative*, December 11, 2013; and Hans M. Kristensen and Matthew McKinzie, “Reducing Alert Rates of Nuclear Weapons,” *United Nations Institute for Disarmament Research*, 2012, 1–8.

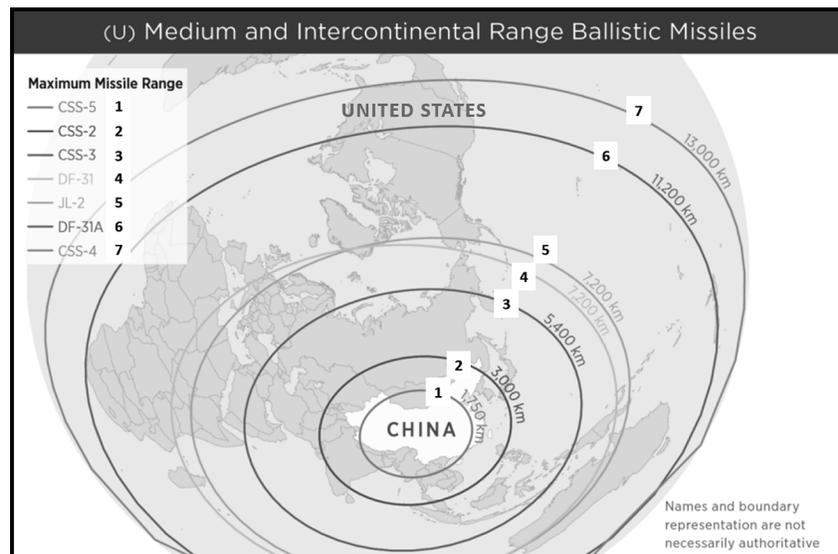
clear strikes to seek deescalation on terms favorable to China. Unlike strategic nuclear weapons, which target an adversary's homeland and population centers, tactical and theater nuclear weapons (also known as nonstrategic nuclear weapons) are designed for missions at shorter ranges, and usually carry lower-yield warheads. Because their use does not invite overwhelming nuclear retaliation in the same way as would strategic nuclear strikes on a country's homeland, tactical and theater nuclear weapons are considered to be a stronger deterrent and a more credible threat.³⁹

Elbridge Colby, senior fellow at the Center for a New American Security, elaborated on the impact of China's burgeoning theater nuclear force on the nuclear escalation dynamic between China and the United States in testimony to the Commission:

*[China's] ability to use nuclear weapons in more limited and tailored ways will make China's threats—explicit or implicit—to use nuclear forces more credible. . . . This does not mean that China will reach for the nuclear saber early or often. But a more sophisticated force will give China better options for how it might seek to use these weapons not only, as in the past, as a desperate last resort, but also to deter U.S. escalation of a conflict—escalation the United States might need to resort to if it is to prevail.*⁴⁰

A key implication of China's approach for the United States, according to Dr. Yeaw, is that China "may escalate across the nuclear threshold at a time and manner, and for a purpose, that we do not expect."⁴¹

Figure 1: China's Medium and Intercontinental Range Ballistic Missiles



Note: DOD uses a mix of both Chinese and North Atlantic Treaty Organization (NATO) designators in the above graphic. See Table 2, "Ranges of China's Nuclear Ballistic Missiles (Selected)" for a list of Chinese and NATO designators of ballistic missiles.

Source: Figure adapted from U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 88.

China's Nuclear Strike Capabilities

China describes its nuclear force structure and composition as “lean and effective,” though this guiding principle, like no-first-use, is subject to variables that enhance China’s strategic ambiguity. China does not release official data on its nuclear forces, but unofficial sources estimate China has approximately 250 nuclear warheads.*⁴² As a result of Beijing’s pursuit of a more modern nuclear force, China’s nuclear weapons are undergoing moderate quantitative increases.⁴³ These increases are such that the chief limitation on China’s nuclear force development in the near future could be China’s stockpile of fissile material (material capable of releasing nuclear energy) rather than its number of delivery vehicles.†⁴⁴

As it seeks to maintain an “effective” nuclear force guided by a no-first-use doctrine, China is pursuing a credible second-strike capability with an emphasis on survivability against an adversary’s first strike. By diversifying its nuclear strike capabilities away from liquid-fueled silo-based systems, China seeks to ensure its ability to absorb a nuclear strike and retaliate in kind.⁴⁵

Finally, China appears to be enhancing its theater nuclear force. Such a development would facilitate the theater-range strikes envisioned in a regional de-escalatory nuclear doctrine, as described earlier.‡⁴⁶

Road-Mobile Ballistic Missiles

According to the U.S. Defense Intelligence Agency, China’s nuclear arsenal consists of 50–60 intercontinental ballistic missiles (ICBMs).⁴⁷ China’s silo-based, liquid-fueled DF–5 (12,000 kilometer/7,456 mile range) and longer-range DF–5A (13,000 kilometer/8,078 mile range) have formed the core of China’s nuclear arsenal since the early 1980s.⁴⁸ With the deployment of the DF–31 in 2006 and DF–31A in 2007, the Second Artillery fielded a second generation of road-mobile, solid-fueled ICBMs.⁴⁹ The road mobility of these missiles would make it more difficult for an adversary to target them with a first strike. Solid-fueled missiles provide advantages over the liquid-fueled missiles of past generations because they do not require lengthy fueling time and their fewer and more stable fueling elements enjoy greater safety and stability over long periods of storage.⁵⁰ While the range of the DF–31 at 7,200 kilometers (4,474 miles) does not quite reach the continental United States, the DF–31A has an estimated range of 11,200 kilometers (6,959 miles), giving it the ability to target almost all of the continental United States from launch areas in China.⁵¹ Beyond these

*The Commission discussed other estimates on the size of China’s nuclear arsenal—some as high as 1,800, some as low as 100—in the 2012 *Annual Report to Congress*. U.S.-China Economic and Security Review Commission, 2012 *Annual Report to Congress*, November 2012, 176–177.

†This view is not universally held. For example, in 2012, Mark B. Schneider, senior analyst at the National Institute for Public Policy, testified to the Commission, “I do not think the availability of fissile material will be a significant constraint on China. . . . With the massive Chinese nuclear energy program now underway, China should be able to produce as many nuclear weapons as needed.” U.S.-China Economic and Security Review Commission, *Hearing on Developments in China’s Cyber and Nuclear Capabilities*, written testimony of Mark B. Schneider, March 26, 2012.

‡The United States maintained a theater nuclear strike capability in the 1980s with its ground-launched cruise missiles, but withdrew these missiles under the terms of the Intermediate Range Nuclear Forces Treaty. U.S.-China Economic and Security Review Commission, *Hearing on China’s Offensive Missile Forces*, written testimony of Christopher Yeaw, April 1, 2015.

established systems, a new generation of ICBMs is undergoing development in China, with a possible incorporation of survivability- or penetrability-enhancing attributes such as: multiple reentry vehicles (whether independently-targetable or not), reentry maneuverability, greater accuracy, greater range, and overland mobility by rail (as opposed to by road).⁵² These developments are discussed in “Increasing the Penetrability of Adversary Missile Defenses,” later in this section.

China also deploys nuclear-armed intermediate-range ballistic missiles (IRBMs) and medium-range ballistic missiles (MRBMs) for regional nuclear deterrence. These include the limited-mobility, liquid-fueled DF-3A IRBM, which is likely in the process of being phased out by the Second Artillery, as well as the road-mobile, solid-fueled DF-21 and DF-21A MRBMs.*⁵³ Official commentary during China’s September 2015 military parade indicated that the newer DF-26 IRBM, also road-mobile and solid-fueled, is nuclear-capable.⁵⁴

Submarine-Launched Ballistic Missiles

China is expected to deploy its first nuclear deterrence submarine patrols of the JIN-class (Type 094) nuclear-powered ballistic missile submarine (SSBN) by the end of 2015, marking its first credible at-sea second-strike nuclear capability.†⁵⁵ The JIN SSBN carries the nuclear JL-2 SLBM, which has a range of at least 7,400 kilometers (4,598 miles), or far enough to strike the continental United States depending on the location of the launch.⁵⁶ DOD has estimated the PLA Navy currently has three to four operational JIN SSBNs, and up to five additional JIN SSBNs will enter service by 2020.⁵⁷ In contrast with the opacity of its other nuclear capabilities, China openly touts the development of the JIN/JL-2. PLA Navy Commander Admiral Wu Shengli wrote in a CCP magazine, “This is a trump card that makes our motherland proud and our adversaries terrified. It is a strategic force symbolizing our great-power status and supporting national security.”⁵⁸

Some analysts have suggested China cannot rely upon the JIN SSBN as a survivable second-strike capability, given its noisy acoustic signature that lends itself to detection.⁵⁹ China may seek to improve on these deficiencies in its successor to the JIN SSBN and JL-2 SLBM, the Type 096 SSBN and JL-2 follow-on SLBM (official sources have confirmed the development of the submarine, but not the missile).⁶⁰

*For a description of ballistic missile ranges, as defined by the U.S. Department of Defense, see Table 1.

†The Commission’s 2014 *Annual Report to Congress* predicted China would deploy its first nuclear deterrence submarine patrols in 2014, citing DOD and intelligence community assessments. DOD has since revised this timeline to “sometime in 2015,” which informs the Commission’s current assessment. An unconfirmed report from independent Hong Kong-based news outlet *Ming Pao* asserted in September 2015 that the first of these patrols had taken place. At the time of the writing of this report, there had been no official confirmation that the patrol had taken place. Ming Pao, “First Armed Patrols of New Nuclear Submarine,” September 30, 2015. Staff translation; and U.S. Department of Defense, *Annual Report to Congress: Military Power of the People’s Republic of China 2015*, April 2015, 9.

Air-Launched Land-Attack Cruise Missiles

Although not explicitly confirmed in official sources, China may be developing a nuclear-capable air-launched cruise missile, the CJ-20, for use with a modernized version of China's longtime primary bomber, the H-6. This variant, the H-6K, has the ability to carry six land-attack cruise missiles (LACMs) and is equipped with powerful turbofan engines, giving it extended range—potentially out to the second island chain, including Guam.*⁶¹ The CJ-20 is an air-launched version of the currently fielded CJ-10 (also known as the DH-10), a theater-range LACM that appears both conventional- and nuclear-capable.⁶² A nuclear-capable CJ-20 would indicate China is developing new, air-delivered theater nuclear strike capabilities, in addition to its formidable ballistic missile theater nuclear forces and the strategic nuclear strike capability it has maintained since it became a nuclear state.

Conventional Strike: Doctrine and Capabilities

Conventional Missile Doctrine and Employment Concepts

The Second Artillery has since the mid-1990s added conventional strike capabilities to an arsenal that previously had comprised only nuclear ballistic missiles. The PLA has achieved “extraordinarily rapid” growth in its conventional missile capability, according to DOD. One decade ago, the Second Artillery only possessed the ability to target Taiwan, as well as a basic ability to strike targets within the first island chain. Today, China is fielding and developing a wide range of conventional ballistic and cruise missiles to hold targets at risk throughout the region—even as far as the second island chain.⁶³ No longer solely a nuclear force intended to be employed in the most dire of circumstances, the Second Artillery has taken on a mission of “dual deterrence, dual operations,” in which it is responsible for nuclear deterrence and nuclear counterstrikes, as well as conventional deterrence and conventional precision strikes.⁶⁴

Conventional Deterrence

According to Second Artillery doctrine, nuclear weapons serve as the ultimate deterrent; however, conventional missiles, as less destructive weapons, have fewer restraints on their use from an international public opinion perspective and are therefore more flexible instruments of deterrence and strike. The Second Artillery's concept of deterrence includes elements of what Western political scientists understand as “compellence,” or the threat or use of force to persuade an adversary to comply with demands.⁶⁵ “Campaign deterrence” is defined in the chief Second Artillery doctrinal publication as employing military activities in which units display

*The first island chain refers to a line of islands running through the Kurile Islands, Japan and the Ryukyu Islands, Taiwan, the Philippines, Borneo, and Natuna Besar. The second island chain is farther east, running through the Kurile Islands, Japan, the Bonin Islands, the Mariana Islands, and the Caroline Islands. PLA strategists and academics have long asserted the United States relies primarily on the first island chain and the second island chain to strategically “encircle” or “contain” China and prevent the PLA Navy from operating freely in the Western Pacific. Open Source Center, “PRC Article Surveys China's Naval Rivals, Challenges,” January 6, 2012. ID: CPP20120109671003; Bernard D. Cole, *The Great Wall at Sea* (Second Edition), Naval Institute Press, 2010, 174–176.

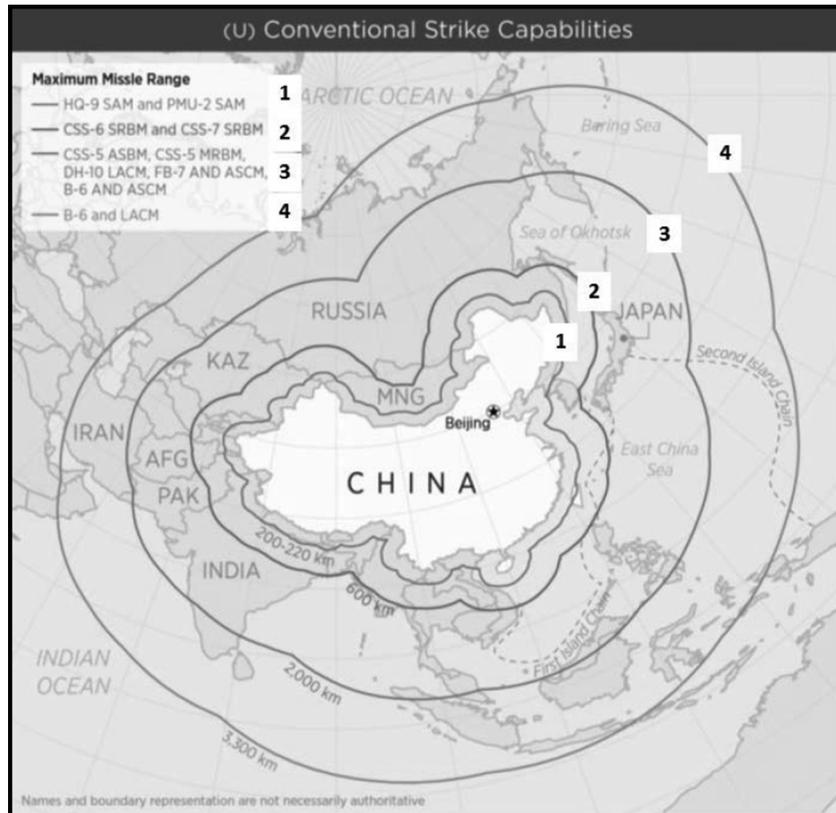
the ability to demonstrate overwhelming force to accomplish strategic objectives and “force an enemy to accept our will or contain an enemy’s hostile actions.”⁶⁶ Examples of these military activities include using conventional missiles as a show of force to intimidate the adversary or executing “surgical strikes” against important assets to coerce the adversary to yield to Chinese demands.⁶⁷ In other words, whereas the United States uses “deterrence” to mean deterring aggression, China’s use of “deterrence” includes the concept of deterring resistance to demands.

Conventional Strike

Mr. Medeiros, then senior political scientist at the RAND Corporation, writes of PLA conventional missile operations:

*The PLA emphasizes using conventional missiles to strike first, strike hard, strike precisely, and strike rapidly. The aim of this approach is to “seize the initiative” and quickly gain “campaign control” in order to speed up the process of warfare leading to the adversary’s quick capitulation.*⁶⁸

If deterrence fails, the Second Artillery would likely weaken key enemy targets with network attack and electronic warfare before launching conventional missile strikes.⁶⁹ Potential targets for conventional missile strikes, which are outlined in authoritative publications, support this theme. These include C4ISR hubs, missile positions, military transportation and logistical hubs such as ports and airfields, key military facilities, critical infrastructure, and carrier strike groups. These targets are both critical and vulnerable, and would, if destroyed, severely impede the ability of adversary forces to function and communicate smoothly.⁷⁰ In a Taiwan scenario, for example, Chinese missile strikes on such targets could suppress Taiwan air defenses as a precursor to PLA Air Force operations over the Taiwan Strait.⁷¹

Figure 2: Select Conventional Strike Capabilities

Note: DOD uses a mix of both Chinese/Russian and NATO designators in the above graphic. CSS-6 and CSS-7 are the NATO designators for the DF-15 and DF-11, respectively. CSS-5 refers to the DF-21 ballistic missile. FB-7 is the NATO designator for the PLA's JH-7 fighter bomber, and B-6 is the designator for the PLA's H-6 bomber. See Table 3, "Ranges of China's Conventional Ballistic Missiles (Selected)," for a list of Chinese and NATO designators of ballistic missiles.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 87.

Conventional Missile Capabilities

China's initial development of its conventional missile forces focused heavily on the development of its SRBM force for Taiwan contingencies. In the past decade, China's development of longer-range missiles, pursuit of advanced missile technologies, and diversification of launch platforms have enabled it to hold at risk a wider range of targets farther from its shores. The improved stealth and warhead accuracy of China's expanded range of systems and launch platforms would serve to strengthen the element of surprise if these were used in a potential conflict.

Ballistic Missiles

The PLA's significant investment in modernizing and diversifying its conventional ballistic missile forces beyond short-range

Taiwan missions has continued to bear fruit. The defining features of most ballistic missiles are an initial propulsion phase followed by a ballistic trajectory through the atmosphere, reaching an apogee in space before traveling back into the atmosphere toward a target on Earth's surface.* DOD categorizes ballistic missiles by range as follows:

Table 1: Ballistic Missile Ranges Defined by U.S. Department of Defense

Ballistic Missile Type	Missile Range
Short-Range Ballistic Missile (SRBM)	<1,000 kilometers (621 miles)
Medium-Range Ballistic Missile (MRBM)	1,000–3,000 kilometers (621–1,864 miles)
Intermediate-Range Ballistic Missile (IRBM)	3,000–5,500 kilometers (1,864–3,418 miles)
Intercontinental Ballistic Missile (ICBM)	>5,500 kilometers (3,418 miles)

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 46; U.S. National Air and Missile Intelligence Center, *Ballistic and Cruise Missile Threat*, 2013, 9.

The following discussion explains China's SRBM, MRBM, and IRBM capabilities in further detail. It also describes China's well-known antiship ballistic missile (ASBM) capability (given their ranges, China's ASBMs are best categorized as MRBMs or IRBMs under the DOD's definitions). China's ICBM force, along with certain MRBM and IRBM systems, are nuclear-armed; for more information on these weapons, see the discussion earlier in this section on China's nuclear strike capabilities.

Short Range Ballistic Missiles. China's SRBM force consists mostly of multiple variants of the DF-11 and DF-15 missiles. One source details the remarkable growth of this force from 30 to 50 missiles in the mid-1990s to approximately 900 missiles in 2006. To achieve this, the inventory grew at a rate of 50 to 100 missiles per year.⁷² In 2015, China maintains "at least 1,200" SRBMs, according to DOD.[†]⁷³

The numerical growth rate of China's SRBM force has slowed in recent years as China focuses on qualitative improvements, replacing earlier generation missiles with newer variants that have improved ranges, accuracies, and payloads.⁷⁴ The primary value of these missiles for the PLA would be their utility in a Taiwan contingency; indeed, a majority of China's SRBMs are deployed along the Taiwan Strait.⁷⁵ However, the PLA could use the extended-range variants of the DF-15 beyond the Taiwan Strait. If deployed along China's eastern coastline, for example, these missiles could target U.S. and Japanese military facilities on Okinawa.⁷⁶ Similarly, DOD assesses that the DF-16, China's most recently fielded

*Short-range ballistic missiles generally stay within the Earth's atmosphere throughout the course of their flight.

[†]For further discussion on varying estimates of China's current SRBM deployments, see Chapter 3, Section 3, "Taiwan."

SRBM, threatens not only Taiwan, but also other regional targets.*⁷⁷

Medium and Intermediate Range Ballistic Missiles. In ten years, China has gone from possessing only a limited ability to reach targets east of Taiwan to developing the ability to conduct precision strikes against land and naval targets within the first island chain. This is enabled by China's growing MRBM inventory and its progress toward developing an IRBM capability.⁷⁸

China fielded its first conventional MRBM, the DF-21C, in 2008. Its maximum range of at least 1,750 kilometers (1,087 miles) allows China to strike a wide range of targets throughout the Western Pacific theater. According to Toshi Yoshihara, chair of Asia-Pacific Studies at the U.S. Naval War College, China's currently modest inventory of DF-21Cs would limit the flexibility of its MRBM employment in a conflict: "If the MRBM inventory remains relatively unchanged, then it can be inferred that the PLA intends to concentrate the missiles against a few bases at the outset of a campaign. If, however, the Second Artillery fields a sizable DF-21C missile force in the coming years, then the PLA may be preparing for a larger-scale undertaking involving more bases across Japan."⁷⁹

In addition, China's DF-16, known to be an SRBM, appears to have a medium-range variant as well. In testimony to the U.S. Senate Armed Services Committee in 2015, Lieutenant General Vincent Stewart, director of the U.S. Defense Intelligence Agency, stated, "medium-range ballistic missiles, including the DF-16 ... will improve China's ability to strike regional targets."⁸⁰

The PLA is also developing a new conventional, road-mobile IRBM with a range of up to 4,000 kilometers (2,485 miles) from the Chinese coast. This range covers targets in the second island chain, such as U.S. bases on Guam, and could even include Northern Australia and Alaska.⁸¹ Although not confirmed by official U.S. government sources, some analysts attribute this program to a Chinese designator, DF-26, which is also capable of carrying nuclear warheads.⁸² Official commentary during China's September 2015 military parade indicated that the DF-26, clearly road-mobile, has both nuclear and conventional capabilities, fitting these descriptions.⁸³

China's advancements in theater-range conventional strike capabilities indicate the PLA's interest in an ability to secure military objectives beyond Taiwan. One of China's earliest efforts at developing a conventional strike capability was its fielding of the DF-25 MRBM in the 1980s. This missile had a reported mission of defending China's Spratly Island outposts in the South China Sea.⁸⁴ Unofficial sources have suggested this missile continues to be in

* China also continues to manufacture new SRBMs with even shorter ranges than those of the DF-11 and DF-15, including the (NATO-designated) CSS-9, CSS-14, CSS-X-16, and CSS-X-15. As discussed in the Commission's *2014 Annual Report to Congress*, these missiles are likely built to appeal to export markets, rather than for use by the PLA. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 315-316; Richard Fisher (Senior Fellow, International Assessment and Strategy Center), interview with Commission staff, June 20, 2014; and U.S. National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat*, 2013, 13.

† Current numbers of missiles and launchers are not publicly available in official sources. However, naval analyst Jon Solomon in 2014 estimated China had a maximum of 40 DF-21C missiles. Jon Solomon, "The Chinese DF-21 Arsenal: Part 2," *Information Dissemination Blog*, November 11, 2014.

service and can also be armed with a nuclear warhead.⁸⁵ As China continues to seek to consolidate and secure its maritime claims in the East and South China seas, theater-range strike capabilities such as this missile would suggest an important Second Artillery role in a near seas maritime contingency beyond the Taiwan Strait.⁸⁶

Antiship Ballistic Missiles. China fielded the world's first ASBM in 2010, a variant of the DF-21 family of MRBMs known as the DF-21D. Its range of at least 1,500 kilometers (932 miles) and maneuverable warhead give it the ability to strike moving adversary ships east of Taiwan from secure sites on the Chinese mainland. According to Mr. Erickson, China's DF-21D capability means that "in a crisis or combat situation, U.S. operators would have to draw a range ring for the DF-21D and then decide whether or not to risk sending [carrier strike groups] into that range ring."⁸⁷ Furthermore, because of the complex over-the-horizon targeting and maritime C4ISR required to successfully execute an ASBM strike, Professor Erickson argues the DF-21D is one element of a broader program to track and target ships at sea (see "China's C4ISR and Targeting Challenge," later in this section).⁸⁸

In written testimony to the Commission, Dennis Gormley, senior lecturer at the University of Pittsburgh, raised additional technical questions regarding China's deployment of the DF-21D such as "whether or not China has truly mastered the terminal guidance and maneuvering capability needed to successfully attack a moving aircraft carrier. Particularly demanding is the development of sensors and warheads that can survive the rigors of atmosphere re-entry, including high speeds and temperatures, without adversely affecting required seeker and warhead performance."⁸⁹ The ability of the Second Artillery to strike its intended target is significant because PLA doctrine appears to consider the possibility of using the DF-21D for precision strikes as well as warning shots.⁹⁰ In a tense wartime situation an error in DF-21D targeting, therefore, could mean the difference between deescalation and escalation.

Official commentary at China's September 2015 military parade stated that the DF-26 also has an antiship variant, indicating it has joined the DF-21D as an ASBM. The DF-26 represents an even longer-range option, with a credited range of 3,000–4,000 kilometers (1,800–2,500 miles).⁹¹ According to Mr. Erickson, parading both missiles indicates that they have been "tested carefully and accepted into military service as operational hardware," but "the reconnaissance strike complex [for an antiship capability] that supports them, by contrast, remains a work in progress."⁹² The additional range likely complicates the targeting challenge China already faces with the DF-21D.

Cruise Missiles

Unlike ballistic missiles, which require propulsion at launch before entering a ballistic trajectory, cruise missiles are propelled by jet engines and fly at generally level flight paths to their targets. They can be described, as in one recent report, as "pilotless airplanes" whose flights toward preplanned targets can be ad-

justed en route with data from a variety of guidance and navigation systems.⁹³ Because of their limited radar signature and low-altitude flight, cruise missiles are very stealthy weapons. Many cruise missiles are also designed to execute terminal evasive maneuvers to defeat missile defenses. For these reasons, cruise missiles can be very difficult to detect and defend against, particularly when part of a multi-axis attack of multiple cruise and ballistic missiles.⁹⁴

Cruise missiles also provide the employing force with operational and planning flexibility. One aspect of their flexibility is that cruise missiles can be placed aboard a variety of ground-, sea-, and air-based platforms. Moreover, according to the testimony of Lee Fuell, then technical director for force modernization and employment at the U.S. Air Force's National Air and Space Intelligence Center, "These weapons are likely [intended] to reduce the burden on ballistic missile forces, as well as [to create] somewhat safer strike opportunities for Chinese aircrews, allowing them to engage from much longer distances and/or from advantageous locations of their own choosing."⁹⁵ These characteristics have led U.S. defense leadership to consider more closely the threat cruise missiles pose to the homeland. In May 2015, Vice Chairman of the Joint Chiefs of Staff Admiral James Winnefeld stated, "The element of surprise is nearly impossible with an ICBM attack, and we will always have time to react. We can't necessarily say the same thing for a cruise missile attack. . . . [H]omeland cruise missile defense is shifting above regional ballistic missile defense in my mind, as far as importance goes."⁹⁶

While ballistic missiles are mostly categorized by range, cruise missiles are categorized by intended mission and launch mode. The two key types of cruise missiles are land-attack cruise missiles (LACMs) and antiship cruise missiles (ASCMs).

Land-Attack Cruise Missiles. The Second Artillery fielded the CJ-10, China's first ground-launched LACM, in 2007–2008.⁹⁷ Because of their stealth, accuracy, and route variation ability, LACMs pose challenges to adversary air and missile defense systems in ways that ballistic missiles do not. In addition to their ability to undertake radar-evading flight at low altitudes, the newest LACMs include additional radar-evading features that make them even more difficult to detect. Moreover, salvos of multiple LACMs can be preprogrammed to approach a target from multiple directions or take circuitous routes toward the target—both methods of employment that have the effect of either overwhelming, evading, or confusing radar and air defenses.⁹⁸ With a reported range of at least 1,500 kilometers (932 miles), the CJ-10 has the ability to hold U.S. forces in Japan and South Korea at risk.⁹⁹

In conjunction with developments in China's bomber fleet, China's development of the CJ-20, the air-launched version of the CJ-10, enhances the lethality of China's air-launched cruise missile arsenal. The H-6K variant of China's bomber force, as mentioned earlier in the discussion on China's nuclear capabilities, has the ability to carry six LACMs and a range potentially extending out to the second island chain, including Guam.¹⁰⁰ As described above,

while not confirmed in official sources, there are some indications that the CJ-20 is nuclear-capable.*

China probably is developing a LACM for deployment aboard future PLA Navy ships and submarines, which would give the PLA Navy its first land-attack capability.¹⁰¹ A sea-based LACM would diversify and potentially extend the range of China's strike options against U.S. facilities in the Indo-Pacific, particularly as the PLA Navy gains proficiency in long-range surface and subsurface patrols.¹⁰²

Antiship Cruise Missiles. As an integral part of the rapid development and extended reach of China's PLA Navy in the past decade, China's ASCM capabilities have advanced significantly. Because there are doubts regarding whether U.S. Navy shipboard systems could reliably and adequately defend against intense salvos of China's advanced Russian-made and indigenous ASCMs, China's advancing ASCM technologies are reason for concern.¹⁰³ In a June speech, U.S. Deputy Secretary of Defense Robert Work raised the challenge of defending U.S. ships and bases against adversary missiles in a cost-effective manner:

We dominated the guided munitions warfare regime for the past 25 years. There's no question about it: we have. But now big state powers like China and Russia are rapidly catching up. So this is going to require a fundamental rethinking of the way the joint force operates. . . . [A] demonstrated capability to win the emerging guided munitions salvo competition . . . is job number one. This demonstrated ability to win this competition will underwrite our conventional deterrence in the 21st century. . . .

*We're on the wrong end of the cost equation in this competition right now. We have been for some time. [We have been] using multi-[million]-dollar missiles . . . to defend surface ships and fixed bases against relatively cheap ballistic and cruise missiles.*¹⁰⁴

The variety of launch platforms for China's ASCMs, in addition to the range and targeting improvements China continues to make to its ASCM inventory, demonstrate China's prioritization of its antisurface warfare mission in its naval modernization efforts. Each of the PLA Navy's major surface combatants, for example, is equipped with ASCMs. As the PLA Navy has grown increasingly confident operating its surface combatants farther afield from the Mainland, it has also sought to ensure ASCM coverage closer to its shores through a rapidly growing fleet of ASCM-equipped corvettes and patrol vessels.¹⁰⁵ These vessels and most other PLA Navy surface combatants carry the subsonic YJ-83 family of ASCMs, a system that has been in service with the PLA Navy since the 1990s. Although missiles in the export versions of the YJ-83 have adver-

* Other air-launched LACMs include the YJ-63, reportedly deployed in 2004–2005, with a reported range of 200 kilometers (124 miles); and the KD-88. Although the advertised range of the KD-88 is at least 100 kilometers (62 miles), China may be developing a longer-range version of this LACM. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 46; Dennis M. Gormley, Andrew S. Erickson, and Jingdong Yuan, *A Low-Visibility Force Multiplier: Assessing China's Cruise Missile Ambitions*, National Defense University Press, 2014, 35.

tised ranges of 65–100 nautical miles (74 miles–115 miles), the domestic versions of this system likely have much longer ranges.¹⁰⁶ A more recent addition to China's inventory of ship-launched ASCMs is the 150 nautical mile (173 mile) range YJ-62, a missile China began publicizing in the mid-2000s.¹⁰⁷ China also uses ASCMs for coastal defense, and has utilized a shore-based version of the YJ-62 for this mission.¹⁰⁸

In addition to their potential use in surface-to-surface engagements, some ASCMs can be submarine-launched. According to the U.S. Navy's Office of Naval Intelligence, the PLA Navy has been increasingly equipping its submarines with modern ASCMs in the past decade: "Given the rapid pace of acquisition, well over half of China's nuclear and conventional attack submarines are now ASCM-equipped, and by 2020, the vast majority of China's submarine force will be armed with advanced, long-range ASCMs."¹⁰⁹ The YJ-18 is a domestically developed and produced ASCM with confirmed submarine- and surface-launched variants. According to DOD, the YJ-18 would extend the ASCM range of China's SONG, YUAN, and SHANG submarines to a maximum of 290 nautical miles (334 miles), which would significantly increase China's antiaccess/area denial* capabilities. Previous Chinese submarine-launched ASCM ranges were 120 nautical miles (138 miles) for the Russian SS-N-27 launched from some of China's KILO submarines, and 20 nautical miles (23 miles) for the YJ-82 launched from SONG, YUAN, and SHANG submarines.¹¹⁰ The YJ-18's longer range will significantly expand the area U.S. forces must monitor for Chinese submarine activity. The YJ-18 is almost certainly capable of supersonic speeds during the terminal phase of its flight, a feature that reduces the time shipborne defenses have to react to an incoming threat (relative to subsonic missiles).¹¹¹ Furthermore, missiles capable of achieving supersonic speeds are more challenging to defeat with hard kill countermeasures. China has fitted a surface-launched variant of the YJ-18 on its LUYANG III DDGs, and likely will deploy the YJ-18 on its Type 095 nuclear attack submarine and Type 055 DDG, which are still under development.¹¹² In addition, China probably will deploy a ground-launched variant of the YJ-18 to replace the YJ-62 ASCM in shore-based missile units.

Finally, ASCMs are the centerpiece of China's maritime strike missions. PLA Navy Aviation fighter-bombers and bombers carry a 107 nautical mile (124 mile) range version of the YJ-83 family ASCM. PLA Navy helicopters have been observed carrying ASCMs as well, though it is unclear how widespread this practice is.¹¹³ Air-launched ASCMs appear to be an area of development for the PLA Navy, as demonstrated by China's continued upgrades to its H-6 bomber. One improvement is an increase in the number of ASCMs it can carry from two to four; another is the modification

* According to the U.S. Department of Defense, "antiaccess" actions are intended to slow the deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive. U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

of some H-6 bombers to serve as tankers, increasing the range of these aircraft. Most notably, China has developed the YJ-12 long-range, supersonic ASCM capable of being launched from the H-6.¹¹⁴ The YJ-12's long range (unofficial sources have estimated its range to be 215 nautical miles (248 miles)) and ability to conduct evasive approach and maneuvers toward its target pose immense challenges for shipboard defenses, limiting the time a ship has to engage the incoming missile.¹¹⁵ As Robert Haddick, an expert on Asia Pacific security, stated in testimony to the Commission in 2015:

*The YJ-12 is the most dangerous antiship missile China has produced thus far, posing an even greater risk to the U.S. Navy's surface forces in the Western Pacific than the much-discussed DF-21D antiship ballistic missile. The arrival of the YJ-12 is just one more indication of how the U.S. Navy is falling further behind in the missile competition against China, exposing flaws in operating concepts that U.S. and allied commanders have relied on for years.*¹¹⁶

Taken together, the variety of platforms the PLA Navy has equipped with ASCMs provides China with a multilayered area denial capability in its near seas and beyond. Professor Gormley, along with co-authors Mr. Erickson and Jingdong Yuan, states in a study on Chinese cruise missiles: "ASCMs are increasingly poised to challenge U.S. surface vessels, especially in situations where the quantity of missiles fired can overwhelm Aegis air defense systems through saturation and multi-axis tactics. More advanced future Chinese aircraft carriers might be used to bring ASCM- and LACM-capable aircraft within range of U.S. targets."¹¹⁷ The U.S. Navy is currently exploring advanced ship defense technologies, such as electromagnetic railguns and directed energy weapons, that could mitigate U.S. surface vulnerability to long-range, supersonic missile strikes.¹¹⁸

China's Missile Research and Development

The research and development (R&D) structure behind China's missile programs, which has grown in both scale and capacity to deliver innovative outputs in recent years, merits a brief description on its own. Key players in this structure include:

- Top-level leadership in the Central Military Commission* and State Council,† which develop strategic requirements for aerospace technologies and determine whether each project will enter the crucial engineering R&D phase.¹¹⁹ On an ad hoc basis, the Central Special Committee—reporting to the

* China's Central Military Commission is the country's top military decision-making body. Congressional-Executive Commission on China, *China's State Organizational Structure*.

† China's State Council, headed by Premier Li Keqiang, presides over China's ministries, commissions, and direct offices. It is responsible for executing laws, supervising the government bureaucracy, and carrying out the administrative functions of the Chinese government. Congressional-Executive Commission on China, *China's State Organizational Structure*.

China's Missile Research and Development—Continued

Politburo Standing Committee, Central Military Commission, and State Council and historically led by China's top political leaders—evaluates and provides recommendations on certain strategic dual-use high-technology programs, potentially including military programs such as ballistic missiles as well.*¹²⁰

- The PLA General Staff Department and PLA Second Artillery, which develop operational and technical requirements for China's missile programs. After approval by the Central Military Commission and State Council, the Second Artillery likely develops short- to long-term (e.g., 5- to 15 or more-year) acquisition programs for missile systems.¹²¹
- The PLA General Armaments Department, which oversees the procurement process and approves contracts for these programs' four R&D stages: preliminary research, concept development and program validation, engineering R&D, and design finalization.¹²²
- Research institutes within the General Armaments Department, the Second Artillery, the defense industry, or civilian universities, which can all compete for preliminary research contracts.¹²³ The Second Artillery handles concept development, and one of the academies within China's two defense industry conglomerates—the China Aerospace Science and Industry Corporation and China Aerospace Science and Technology Corporation—conducts engineering R&D, with a Second Artillery unit embedded inside. Both the academy and the embedded unit are involved in testing, which is required before a program can proceed to design finalization.[†]¹²⁴

A joint Central Military Commission and State Council standing office ultimately approves the finalized design.¹²⁵ Overall, the heavy involvement of senior Chinese leaders throughout the process indicates the pervasiveness of central leadership guidance and approval authority while the proliferation of actors involved demonstrates China's commitment to pushing for increased civil-military integration.

China's missile R&D efforts have likely benefited from consistent funding increases concurrent with its growth in overall military spending. China likely allocates at least 10 percent and potentially up to 15 percent of its overall defense budget to R&D, comparable to that of the United States, which has allocated

*For more information regarding the Central Special Committee, see Chapter 2, Section 2, "China's Space and Counterspace Programs."

†As with all defense conglomerates, the State Administration of Science, Technology, and Industry for National Defense, part of the State Council's Ministry of Industry and Information Technology, exercises administrative oversight over these companies. Mark Stokes, "China's Evolving Space and Missile Industry: Seeking Innovation in Long-Range Precision Strike," in Tai Ming Cheung, *Forging China's Military Might: A New Framework for Assessing Innovation*, Johns Hopkins University Press, 2014, 246.

China's Missile Research and Development—Continued

roughly 10–11 percent in recent years.*¹²⁶ Further, in step with other Chinese defense conglomerates, the two corporations each now encompass numerous publicly-listed firms, enabling them to raise funds from multiple sources, including state funding, capital markets, and corporate activities.¹²⁷ Yet persistent structural challenges may limit the impact of these large cash inflows: China's defense companies produce far lower revenues per worker than U.S. counterparts, and the civilian sector's track record shows marketization to be of limited benefit to the improvement of firms' efficiency.¹²⁸

In contrast to China's first ballistic and cruise missile systems, which relied on foreign technologies and expertise, today's PLA missile development is focused on conservative, incremental upgrades to existing missile variants.¹²⁹ This indicates that China's missiles are at a low-to-medium level of innovation—one that emphasizes incremental improvements to indigenous systems originally based on foreign technology.¹³⁰ However, as Mr. Stokes states, China's defense aerospace industry may now be poised to deliver surprising breakthroughs in “disruptive technology” in some cases.¹³¹ The DF-21D ASBM, if demonstrated to perform as promised, would be the initial example of this new-found innovative capacity.¹³²

Increasing the Penetrability of Adversary Missile Defenses

China has steadily developed its offensive missile forces over the past two decades to pursue the capabilities necessary to fully execute its conventional and nuclear missions, but recognizes that adversary missile defenses pose a major challenge to the success of these operations. As a result, China is considering quantitative and qualitative measures to improve penetrability of adversary missile defenses.

Chinese Views on U.S. Missile Defense and Prompt Global Strike

Official U.S. statements emphasize that its ballistic missile defense capabilities are intended to defend the U.S. homeland from states such as North Korea and Iran and do not threaten the efficacy of China's strategic nuclear deterrent.¹³³ Nevertheless, China views these systems as a shield that could render its relatively limited nuclear arsenal impotent.¹³⁴ As Christopher Twomey, asso-

*Using new methodology created by the University of California Institute on Global Conflict and Cooperation to measure Chinese defense R&D spending, these totals are revised upward from the Commission's 2014 *Annual Report to Congress*. As a ratio of China's official defense budget, the institute assesses that China's defense R&D allocation in 2013, the latest year for which numbers are available, was 18.4 percent. However, as many items not in China's official defense budget contributed to this R&D spending measurement, a more accurate share relative to China's actual defense spending is likely 10–15 percent. Tai Ming Cheung (Director, University of California Institute on Global Conflict and Cooperation), interview with Commission staff, June 12, 2015; Tai Ming Cheung, “How Much Does China Spend on Defense-Related Research and Development” (2015 Workshop on Chinese Defense Science, Technology, and Innovation in a Period of Major Change, Washington, DC, February 9, 2015).

ciate professor at the U.S. Naval Postgraduate School, testified to the Commission, “There is a sense in Beijing that U.S. missile defense undermines a relatively stabilizing phenomenon of mutual vulnerability between the U.S. and China. . . . Other Chinese [analysts] attack missile defense as a way to escape mutual vulnerability on the grounds that it is an attempt to achieve ‘absolute security’ for the United States. By implication, this means absolute insecurity for others, China included.”¹³⁵

The 2013 *Science of Military Strategy* indicates China views the U.S. conventional prompt global strike program, envisioned to provide the United States the ability to conduct a precision strike anywhere on Earth within one hour, as a threat to China’s nuclear retaliatory capability as well.¹³⁶

In addition to its views on the strategically destabilizing effects of U.S. homeland missile defense, China has objected to the enhancement of U.S. theater missile defense in Asia.¹³⁷ It has particularly criticized the U.S. sale of the Patriot anti-missile system to Taiwan in the 1990s, as well as subsequent upgrades to the system.¹³⁸ More recently, China has objected to the potential U.S. deployment of the Terminal High-Altitude Area Defense system to South Korea, despite U.S. assurances that it would be a purely defensive system aimed at North Korea.¹³⁹ In a March 2015 press conference, a Chinese Ministry of National Defense spokesperson stated: “We think [the deployment of a] missile defense system by some countries in the Asia Pacific region is neither conducive to strategic stability and mutual trust, nor to regional peace and stability. And we hope relevant countries can be prudent in taking actions.”¹⁴⁰ The nature of China’s objections to theater missile defense suggest that its broader opposition to missile defense systems in general may be pretextual; theater missile defenses do not protect the homeland of another country from retaliatory attack and therefore do not reduce the value of China’s nuclear arsenal, the stated reason for China’s general opposition to missile defense. Theater missile defense does, however, reduce the value of China’s missile inventory in support of its regional ambitions, a more likely reason for its objections.

Advancements in Warhead Delivery Systems and Penetrability

China’s views on U.S. missile defense strongly influence its development of technologies intended to counter, overwhelm, or defeat missile defenses. China continues to research and develop both passive and active countermeasures in an effort to ensure penetrability against adversary missile defenses. Passive countermeasures include deploying chaff and decoys to confuse missile defenses and jamming missile defense radars and sensors to render them inoperable. Active countermeasures include more advanced technologies such as kinetic “hit-to-kill” intercept and directed energy intercept technologies, as well as early warning radar.¹⁴¹ These active countermeasure technologies, still under development by China, have much in common with those being developed under China’s counterspace program. For more information, see Chapter 2, Section 2, “China’s Space and Counterspace Programs.”

Sheer numbers of missiles fired in salvos, in combination with the deployment of other airborne threats, can overwhelm adversary missile defenses and act as an aid to warhead penetration as well.¹⁴² As Jeffrey Haworth, director of intelligence and security in the missile defense component of U.S. Strategic Command, stated at a 2015 conference on U.S. Army air and missile defense, “Regardless of whether we are talking about unmanned aerial systems, whether we’re talking about aircraft, whether we’re talking about missile systems . . . there is more of everything. . . . There is more of everything at every range; there is more of everything at every category of threat.”¹⁴³ In short, as Professor Yoshihara testified, “quantity matters.” Moreover, “targets that survived previous raids must be struck again. In wartime, missiles could fall prey to malfunction, outright misses, interception by enemy ballistic missile defense systems, and other low-tech methods by defenders to defeat the incoming missiles. Possessing adequate inventory to account for attrition is thus particularly crucial for ballistic missiles that can only be used once.”¹⁴⁴

Multiple Independently-Targetable Reentry Vehicles

In 2015, DOD confirmed that China’s DF-5 ICBMs have a multiple independently-targetable reentry vehicle (MIRV) capability.¹⁴⁵ Rather than containing a single warhead per missile, a MIRV-equipped missile allows for a payload of several miniaturized warheads, each of which can be targeted independently. The DF-5’s characteristics—liquid-fueled and silo-based, with a long lead-time required for fueling—make it less survivable and more susceptible to adversary attack than its road-mobile counterpart, the DF-31 ICBM. Nevertheless, these elements, combined with the DF-5’s relatively large size, also provide the missile with greater “throw weight,” or weight it is capable of launching to its target (currently between 3,000 and 3,200 kilograms (6,614 and 7,055 pounds)). China appears to have taken advantage of these characteristics of the DF-5—a missile that can definitively reach the continental United States—to deploy MIRVs in its strategic missile force, increasing its ability to penetrate adversary missile defenses and enhancing the credibility of its nuclear forces as a deterrent.¹⁴⁶

Other systems in development may also be MIRV-equipped. The DF-41, an ICBM currently in development with a reported range of 12,000 kilometers (7,456 miles), could also be capable of carrying MIRVs.¹⁴⁷ Additionally, in February, Admiral Cecil D. Haney, commander of U.S. Strategic Command, testified to the House Subcommittee on Strategic Forces that China is “[modernizing] its strategic forces by . . . developing a follow-on mobile system capable of carrying multiple warheads.”¹⁴⁸ One U.S. media report interpreted this statement to refer to the DF-31B system reportedly in development.¹⁴⁹ U.S. and Chinese government sources have not confirmed the program, but unofficial sources have suggested the DF-31B could include multiple reentry vehicles.¹⁵⁰ Finally, some analysts have speculated that the JL-2 follow-on SLBM in development may be MIRV-capable as well.¹⁵¹

Maneuverable Reentry Vehicles

China's progress in developing maneuverable warheads suggests it is also pursuing maneuverable reentry vehicle (MaRV) technology. Because MaRV-equipped warheads are capable of performing preplanned flight maneuvers during reentry, they are more difficult to intercept and better able to penetrate adversary missile defenses.¹⁵² One example of China's progress in this area is its development of the DF-21D ASBM, which features a maneuverable warhead.¹⁵³ The ability of DF-21D sensors and warheads to survive atmospheric reentry remains uncertain, calling into question its MaRV capability in the absence of successful tests against a moving target at sea.¹⁵⁴ Nevertheless, the missile's deployment suggests the PLA finds some utility in this technology for its missile forces. Some Western analysts and media reports identify reentry maneuverability as a possible attribute of the ongoing DF-41 and DF-26 and reported DF-31B missile programs as well.¹⁵⁵

Hypersonic Weapons

Three countries—the United States, China, and Russia—currently have programs underway to develop hypersonic weapons, which can sustain flight in the Mach 5 to Mach 10 speed range (roughly 3,840 to 7,680 miles per hour) and theoretically strike any target on earth in under one hour.* The very high speeds of these weapons, combined with their maneuverability and ability to travel at lower, radar-evading altitudes, would make them far less vulnerable than existing missiles to current missile defenses.¹⁵⁶

Due to limited public information, high-confidence assessments of China's hypersonic weapons program are not possible; however, it appears China's hypersonic weapons program is in its developmental stages and is progressing rapidly.¹⁵⁷ China's research into hypersonic weapons has likely focused on two types of propulsion: (1) a boost-glide weapon, which like a ballistic missile is launched from a large rocket on a relatively flat trajectory that either never leaves the atmosphere or reenters it quickly, before being released and gliding unpowered to its target; or (2) a "supersonic combustion ramjet" or scramjet engine, efficient at hypersonic speeds, which could also be activated after release from a rocket or even launched by aircraft.¹⁵⁸ According to one unconfirmed media source, China reportedly conducted a fifth glide vehicle test in August 2015, potentially its second in 2015 following three tests in 2014.¹⁵⁹ Mr. Stokes estimates China may be able to field a hypersonic glide vehicle by 2020 and a scramjet-propelled cruise vehicle with global range before 2025.¹⁶⁰

Scramjets would theoretically be slower than boost-glide vehicles, operate at shorter ranges, and present a significant engineering challenge, but would also be cheaper, more maneuverable, and, because of their non-ballistic flight profiles, potentially less prone to

*While some ballistic missiles travel in this speed range already, they do not sustain this speed for the duration that these new weapons would. In general, a "hypersonic weapon" is viewed as one able to fly at hypersonic speeds for "significant distances" and a period of time measured in minutes, meaning it reaches its target—anywhere on Earth—in under one hour. Harry Kazianis, "The Real Military Game-Changer: Hypersonic Weapons 101," *Lowy Institute for International Policy Interpreter Blog*, March 14, 2014; Robert Farley, "A Mach 5 Arms Race? Welcome to Hypersonic Weapons 101," *National Interest*, December 31, 2014.

miscalculations arising from a conventional missile launch that could be interpreted as a nuclear strike.¹⁶¹

Boost-glide vehicles are part of the same family of technologies as the terminally guided reentry vehicles on China's existing ballistic missiles. Therefore, given the relatively short ranges of China's known glider tests—such as a test in 2014 with an apparent range of 1,750 kilometers (1,087 miles), roughly the same range as the DF-21D ASBM—Dr. Acton assessed that “it is possible, though by no means certain, that the glider is essentially a ‘souped-up’ version of an existing type of terminally guided re-entry vehicle” at present.¹⁶² China likely faces significant engineering challenges in developing gliders with longer ranges of a few thousand kilometers or more; another challenge will be to ensure the reception of navigation data given the high speeds of the gliders.¹⁶³ While a 500–2,000 kilometer (311–1,243 mile) total range for the glider in 2020 would be “ambitious but not unreasonable,” the existing glider model likely could not simply be placed on an ICBM to achieve intercontinental range.¹⁶⁴

Whether China arms its hypersonic weapons with a nuclear or conventional payload will hint at how China intends to incorporate hypersonic weapons into PLA planning and operations.

- A nuclear payload could indicate the program is based on China's efforts to assure retaliatory strike capabilities against adversary missile defenses. The National Air and Space Intelligence Center assesses the glide vehicle is associated with China's nuclear program, and 2015 saw no developments that would alter this assessment.¹⁶⁵
- A conventional payload, in conjunction with an intercontinental range, could indicate a growing role for very long-range conventional weapons in PLA doctrine, according to Dr. Acton.¹⁶⁶ Hypersonic weapons are more effective at penetrating area missile defenses, such as those protecting the U.S. homeland, than are regional point defenses,* suggesting that shorter-range hypersonic weapons would likely not alter the regional balance of power in the Western Pacific.¹⁶⁷
- Alternatively, China may intend its hypersonic program for both nuclear and conventional purposes, or may simply be following the United States in pushing the technological frontier and is not yet certain which it will pursue.¹⁶⁸

*James Acton explained the distinction between area and regional defenses in testimony to the Commission as follows: “In broad terms, defenses can be divided into area defenses, which are capable of protecting large swathes of territory, and point defenses, which are capable of protecting particular targets or small clusters of targets. The Ground-Based Mid-Course Defense system deployed in Alaska and California to protect the United States against a North Korean ICBM by intercepting warheads as they pass through outer space is an example of an area defense. Patriot missiles, which are designed to intercept short-range missiles in their terminal phase, are examples of point defenses.” U.S.-China Economic and Security Review Commission, *Hearing on China's Offensive Missile Forces*, written testimony of James Acton, April 1, 2015.

China's Developing Missile Defense Capabilities

China ramped up its ballistic missile defense development efforts following the United States' withdrawal from the Anti-Ballistic Missile Treaty in 2002, culminating in several ballistic missile defense technology tests.*¹⁶⁹ China's efforts in this area are not entirely new. China began a ballistic missile defense research program soon after developing nuclear weapons in 1964,¹⁷⁰ and maintained this research even after the United States and Soviet Union signed the treaty in 1972, despite China's consistent rhetoric condemning ballistic missile defense systems during this time.¹⁷¹ Even after Deng Xiaoping reportedly canceled the program in 1983 due to technical feasibility concerns, Chinese writings indicate this research continued.¹⁷² During the past decade, Beijing's rhetoric aside, Chinese research has increasingly included efforts to develop China's own ballistic missile defense systems in addition to existing efforts to develop countermeasures to adversaries' systems.¹⁷³

Based on its intensifying research in this area, China is rapidly developing more robust missile defense capabilities to supplement its existing array of long-range surface-to-air missiles, which provide only a limited capability against ballistic missiles.¹⁷⁴ China has continued working to develop a kinetic energy intercept capability for intercepts of ballistic missiles and other aerospace vehicles at exo-atmospheric altitudes. For intercepts within the upper atmosphere, China is developing a ground-based midcourse interceptor, conducting two successful tests in 2010 and 2013.† China faces several remaining technical challenges in deploying an effective ballistic missile defense system: developing the capacity to resist electronic attack, developing the ability to respond to multiple warheads, and fielding a space-based early warning system.¹⁷⁵

Reflecting on the United States' experience with developing the Ground-based Midcourse Defense System, Frank Rose, Assistant Secretary of State for Arms Control, Verification and Compliance, stated that the State Department expects a comparable system in development in China to "provide at most a limited defense of the Chinese homeland, which would not counter the U.S. strategic deterrent and therefore would not undermine strategic stability."¹⁷⁶

*The United States announced its withdrawal from the Anti-Ballistic Missile Treaty on December 13, 2001, based on President Bush's assessment that the Treaty hindered the United States' ability to develop ways to defend against future terrorist or rogue-state missile attacks. In the Bush Administration's view the emergence of these new threats, in light of a more cooperative strategic relationship with Russia, necessitated the deployment of territorial defense systems specifically prohibited under the Treaty. George W. Bush, "Remarks by the President on National Missile Defense, ABM Withdrawal" (Rose Garden, Washington, DC, December 13, 2001); Office of the White House Press Secretary, "Announcement of Withdrawal from the ABM Treaty," December 13, 2001.

†China's government publicly described another test conducted on July 23, 2014, as a "land-based missile interception test," but the United States government assesses with "high confidence" that this was instead an anti-satellite missile test. Frank A. Rose, "Ballistic Missile Defense and Strategic Stability in East Asia" (Federation of American Scientists workshop, Washington, DC, February 20, 2015).

China's C4ISR and Targeting Challenge

ISR: Understanding the Battlespace and Obtaining Targeting Data for Precision Strike

To realize the full potential of its long-range precision strike capabilities, China requires detailed awareness of a potential battlespace as well as the ability to obtain targeting data at increasingly far distances from the Chinese mainland. As Mr. Fuell of the National Air and Space Intelligence Center stated, "One key dependency inherent to missile warfare is targeting: effective and timely target selection is an absolutely critical part of the kill chain. We have little insight into this key phase, but it is quite possible that, as with overall joint integration, it may represent an overall structural weakness, and training at the unit level may not help address it."¹⁷⁷

The PLA's primary strategic preoccupation, Taiwan, consists mostly of stationary targets located across the Taiwan Strait. However, as China has sought to project power further from its shores and developed missiles to engage targets at longer ranges, maritime C4ISR—understanding the activity taking place in waters and airspace off China's coast and integrating this data into actionable information for distribution to operational forces—has become an increasingly critical component of PLA operations. The U.S. Office of Naval Intelligence states that even building a detailed air and maritime picture of China's 875,000-square-nautical-mile "near seas" is a daunting task; the addition of the Philippine Sea, a key interdiction area in a Taiwan or South China Sea conflict, adds 1.5 million square nautical miles to the vast area China would need to monitor.¹⁷⁸ Moreover, a wide range of military, law enforcement, and commercial shipping, fishing, and oil and natural gas vessels operate in these waters, further complicating target discrimination in a potential conflict.

It remains unclear whether China can obtain targeting data and pass it to missile launch units in a timely manner, particularly for targets beyond the first island chain, according to DOD.¹⁷⁹ However, China is engaged in an effort to improve its overall C4ISR capability.¹⁸⁰ At present, China builds a maritime C4ISR picture from a variety of sources:

Tactical reporting. China's ability to track activities along its coast originates from the PLA Navy's initial operational emphasis on coastal defense.¹⁸¹ As the PLA Navy has operated farther from Chinese shores, China's maritime law enforcement agencies have taken up greater littoral-area responsibilities, mostly supplanting the role of the navy in this area. Both naval and law enforcement assets at sea directly report information to contribute to China's maritime C4ISR. However, this data is limited to the operating areas and sensor ranges of these ships and aircraft.¹⁸²

Ground-based radars. In addition to ground-based coastal radars to monitor coastal areas, China is relying on more advanced ground-based sensors to enable over-the-horizon surveillance, a necessity for the successful targeting of long-range missiles. China operates ground-based surface-wave and sky-wave radars, which can

track targets at distances much farther than conventional radars can—perhaps 1,600 nautical miles (1,841 miles) or more.¹⁸³

Airborne ISR. A variety of airborne platforms contribute to China's ability to discern air and maritime activity in its near seas and beyond. A growing fleet of fixed-wing maritime patrol, airborne early warning, and surveillance aircraft currently serve as the core of China's airborne ISR capability, but other airborne assets are also poised to play a key role. Ongoing naval shipbuilding efforts indicate prioritization of surface combatants capable of embarking helicopters, a feature that will augment China's over-the-horizon targeting capability.¹⁸⁴ Additionally, the PLA Navy is incorporating unmanned aerial vehicles into its fleet for maritime ISR missions. Unmanned aerial vehicles have a long loiter time and can provide persistent surveillance beyond the ability of manned assets. Unmanned aerial vehicle sensors could support conventional SRBM missions, and possibly MRBM, ASBM, and battle damage assessment missions as well.¹⁸⁵ Furthermore, some developmental unmanned aerial vehicles, such as the Yilong, Sky Saber, and Lijian platforms, will likely have the ability to integrate strike weapons, although no testing or employment of such systems has yet been revealed.¹⁸⁶

Space-based ISR. A maturing space-based ISR infrastructure will provide higher resolution for the PLA's tracking of air and naval activity out to the second island chain, as well as improve its ability to guide missiles to moving targets at sea. For more information on China's ISR satellites, see Chapter 2, Section 2, "China's Space and Counterspace Programs." There are also indications the Second Artillery is interested in using the near space region—the area between the atmosphere and space at 20–100 kilometers (12–62 miles) in altitude—for surveillance, communications relay, electronic warfare, and precision strike through the use of near space vehicles.¹⁸⁷

Data Fusion and Command and Control

Both data fusion and command and control are critical for the timely passing of up- and down-echelon information—such as targeting data, battle damage assessments, and launch orders—that inform missile operations.

In addition to collecting accurate targeting data, the PLA has the additional challenge of fusing the data and disseminating it to Second Artillery missile launch units. Although an ideal scenario would fuse data from all of China's ISR sensors into a single display and disseminate it to all PLA units, this scenario requires far more coordination and standardization across multiple units than exists at this time.¹⁸⁸

Command and control ensures that required information is passed in a timely manner to the appropriate units, in order to lay the groundwork for operational efforts such as missile launches. As the PLA continues to strive toward joint operations, the difficulty of managing targeting information across multiple PLA services and branches will grow significantly. Additionally, the relatively recent involvement of PLA services other than the Second Artillery in missile employment will increase the complexity of the command

and control of such missile launches. Nuclear weapons in particular have a tightly centralized release authority running from China's Central Military Commission, of which Xi Jinping is the chairman, directly to the Second Artillery. The pending deployment of submarine-launched and possible air-launched nuclear-armed missiles introduces the PLA Navy and the PLA Air Force into nuclear chains of command, potentially lengthening and complicating the decision-making and launch process in a nuclear scenario.¹⁸⁹

The limited public information about Beijing's nuclear command and control could make it more likely that an adversary's actions in a crisis could, in Beijing's view, cross the nuclear threshold, even if this was not the adversary's intent. China so highly values its nuclear command and control that the destruction or degradation of this function has been raised by outside analysts as a possible trigger for its use of nuclear weapons.¹⁹⁰ In an interview with Commission staff, Professor Twomey stated, "It assumes a lot to expect the Chinese interpret an attack on their command and control systems in an intense crisis as solely a conventional attack. A significant loss of such capabilities might appear to Beijing to presage an escalation across the strategic threshold [into the nuclear realm], whatever U.S. intentions in that regard might have been."¹⁹¹

Second Artillery Training Developments

In conjunction with technical developments to China's offensive missile forces, the Second Artillery has focused on improving training to employ its relatively new capabilities to the fullest extent. In line with PLA reforms under Xi Jinping that have emphasized training under "realistic combat scenarios," the Second Artillery in the past three years has sought to ensure its training conditions mirror those it would face in combat. As emphasized in official PLA media, the Second Artillery has sought to shift training away from scripted, predictable exercises by including features such as: unique geographic environments and extreme weather conditions, year-round training, long-range mobility operations, precision-strike practice using live fire, deviation from prepared plans, "complex electromagnetic environments," and greater usage of maneuvers and camouflage to increase survivability.¹⁹²

Additionally, based on the PLA's broader effort to master integrated joint operations, the Second Artillery has expanded training in support of or in conjunction with the PLA Army, Navy, and Air Force.¹⁹³ Second Artillery units were involved in each of China's three large-scale military-wide exercises held in 2014: Stride, Joint Action, and Firepower. DOD described these exercises, which involved multiple evolutions across all of China's seven military regions, as a "significant milestone in the PLA's long-term goal of developing into a modern, professional, and capable military force."¹⁹⁴ A July 2015 PLA Navy exercise also shed light on the role of the Second Artillery in a joint environment. Held in the South China Sea, the exercise reportedly involved over 100 naval vessels and several Second Artillery launch battalions, in addition to several PLA aircraft and information warfare forces. Official Chinese press indicated the Second Artillery likely coordinated with the PLA Navy to suppress key targets on land as well as ship targets at sea. Media reports also highlighted the PLA Navy's suc-

cess in antiship missile interception during the exercise.¹⁹⁵ Finally, of note, press on the exercise indicates training was conducted in “transporting and deploying whole units of onshore missile forces,” suggesting the significance of logistics to the Second Artillery’s operations.¹⁹⁶ As the Second Artillery has taken part in more multi-service exercises, it has also emphasized cross-region mobility and logistics, necessary skills for the coordinated and timely movement of multiple PLA elements across China.¹⁹⁷

Finally, the Second Artillery appears to be emphasizing the frequency of its training exercises, according to PLA media sources.¹⁹⁸ As the PLA seeks to shift from a training cycle based on traditional annual conscription schedules to a more continuous training cycle emphasizing year-round readiness, the Second Artillery and other services will follow suit. The increasing professionalization of PLA personnel and a growing corps of non-commissioned officers will also contribute to the ability of the Second Artillery to maintain year-round readiness.¹⁹⁹

Implications for the United States

The increasing numbers, diversity, survivability, lethality, and penetrability of China’s offensive missile forces deeply and negatively affect U.S. security interests, particularly those related to its military force structure and planning, regional alliance commitments, treaty obligations, and approach to deescalating potential crises in the U.S.-China relationship. China’s growing offensive missile capabilities are clearly intended to support its nuclear threat posture and aggressive assertions of sovereignty in the East and South China seas, which the Commission documents in other sections of this Report. Unless the United States understands China’s evolving missile doctrine and growing capabilities and responds vigorously, it runs a growing risk of being unable to deter deliberate aggression and reduce the risk of miscalculations that could lead to an escalating armed conflict.

U.S. Military Force Structure and Planning

China’s offensive missile force can threaten increasingly large portions of the Western Pacific—where the U.S. military has operated uncontested since the end of the Cold War—requiring significant alterations to U.S. military planning assumptions. China is rapidly introducing to its ballistic and cruise missile inventories weapons capable of hitting targets out to the first and second island chains, covering Guam as well the territory of U.S. allies. Some of these weapons are able to target a widening diversity of platforms, including aircraft carriers. These developments strengthen China’s ability to carry out its antiaccess/area denial strategy in the event of a conflict and complicate Washington’s efforts to promote and advance U.S. goals and objectives in Asia.

The United States faces both financial and strategic costs in defending against these new capabilities. Because it is so expensive and technically challenging to defend against relatively low-priced and high-impact missiles, a spending competition between additional Chinese offensive missiles and U.S. defensive systems would not be favorable for the United States.²⁰⁰ To address this problem, the United States is currently working to develop innovative and

lower-cost-per-shot methods to defend against the missiles of potential adversaries, including China.²⁰¹ Some U.S. defense analysts have also called for the United States to reconsider its current force structure's emphasis on short-range aircraft, and instead emphasize the procurement of long-range stealth bombers that would allow the United States to operate beyond the reach of advanced Chinese missiles.²⁰² Additionally, due to China's heavy and growing reliance on C4ISR for the targeting and guidance of its missiles, solutions to disrupt networks that would support Chinese missile and aerospace forces could be a realistic disabling option for the United States in a conflict. Rear Admiral Jesse Wilson (U.S. Navy), director of the Joint Integrated Air and Missile Defense Organization, stated in 2015, "We need to look left of launch ... if I can disrupt other [parts] of the adversary's kill chain, I don't have to fire an SM-3, I don't have to fire a Patriot, I don't have to fire a [Terminal High-Altitude Area Defense missile]," and, because of the finite and limited number of U.S. interceptors, "I don't have the numbers to do it anyway."²⁰³ The United States, however, is similarly reliant on its sensors and communications networks for its military operations, particularly those far from home—a potential drawback to this approach. As Mr. Haddick testified, "In a potential conflict in East Asia, such an exchange of blows against both sides' ISR and command networks could favor the Chinese 'home team' which could have an easier task of restoring these functions than would U.S. expeditionary forces."²⁰⁴

U.S. defense strategy, policy, planning, and budgeting must take these stark realities into account. Specifically, U.S. planners must evaluate the adequacy of U.S. national and theater missile defense policies and capabilities, as well as U.S. offensive strike policies and capabilities, to deter and deny the threat that emanates from China's evolving missile competencies.

Alliance Management

The PLA's growing inventory of theater-range missiles—both conventional and nuclear—affect the strategic calculations of U.S. allies in the region as they consider how to adjust their military strategies to account for a rising China. According to Professor Yoshihara, "For some time to come, the missile will be China's best answer to U.S. forward presence, power projection, and security commitments to treaty allies and friends."²⁰⁵ China's increasing ability to use its missile arsenal to threaten U.S. partners and allies supports its regional ambitions, improves its coercive ability, weakens the value of deterrence efforts targeted against it, and widens the range of possibilities that might draw the United States into a conflict. The nascent theater nuclear missile capability China appears to be developing could introduce uncertainty to U.S. extended deterrence in Asia, as U.S. allies falling under the U.S. nuclear umbrella likely will look to the United States for reassurance regarding the seriousness of its treaty commitments.*²⁰⁶

* For more information on the impact of China's growing influence and military modernization on U.S. alliances and security partnerships in Asia, see Chapter 3, Section 1, "China and Asia's Evolving Security Architecture," of the Commission's *2014 Annual Report to Congress*.

U.S. Treaty Obligations

China's missile force modernization has contributed to a U.S. policy debate regarding U.S. obligations as a signatory to the Intermediate Range Nuclear Forces (INF) Treaty.* The U.S. State Department confirmed in 2014 and 2015 that Russia had violated its treaty obligations by testing a prohibited missile.²⁰⁷ Meanwhile China, uninhibited by treaty obligations, has engaged in a relatively low-cost build-up of land-based theater-range missiles, giving it the ability to target a large portion of the Pacific theater. These developments have raised questions about the modern-day relevance of the INF Treaty for the United States.

Although most analysts seem to agree that completely abrogating the INF Treaty would be an overreach,²⁰⁸ given its continuing benefits for the United States,† some have argued that modifications should be made. Evan Braden Montgomery, senior fellow at the Center for Strategic and Budgetary Assessments, has suggested altering the treaty so that ground-based theater-range missiles might be permitted only in Asia. In testimony to the Commission, Dr. Montgomery offered three benefits of this “Asia option”: (1) it could enable the U.S. deployment of ground-based missiles in the Western Pacific, enhancing deterrence and improving crisis stability as China's military becomes more powerful; (2) it could provide both the United States and Russia bargaining leverage against China, which currently has no incentive to accept any limits on its offensive missile forces; and (3) it could drive a wedge between China and Russia, since Russian missile developments under such an “Asia option” would very likely be aimed at China.²⁰⁹ Other analysts, skeptical that the United States would benefit from the opportunity to re-introduce ground-based theater-range missiles and concerned that such a development would destabilize rather than stabilize the strategic balance for the United States and its allies, advocate for the maintenance of the status quo of the INF Treaty.²¹⁰ As China continues to expand its intermediate-range missile capabilities, and Russia determines whether to proceed in devel-

* Signed by the United States and Soviet Union in 1987, the INF Treaty required “destruction of both parties’ ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 kilometers (310 and 3,418 miles), along with their launchers and associated support structures and support equipment,” altogether eliminating 846 U.S. and 1846 Soviet missiles. Although titled a “Nuclear Forces” Treaty, INF’s prohibition of conventional systems is more relevant to the current discussion—China’s buildup of conventional intermediate-range ballistic and cruise missiles has been a driving force behind this debate in recent years. Amy F. Woolf, “Russian Compliance with the Intermediate Range Forces (INF) Treaty,” *Congressional Research Service*, June 2, 2015, 8; U.S. Department of State, *Treaty Between The United States Of America and The Union Of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles (INF Treaty)*, December 8, 1987.

† The treaty is regarded as both a keystone of U.S.-Russia security relations and an arms control success, having eliminated an entire class of weapons between the United States and Russia; this limited each nation’s nuclear missile arsenal to its strategic deterrent of ICBMs and removed the need to compete in deploying INF-accountable systems. Moreover, the treaty is essential to NATO’s deterrence posture, preventing Russia, at least in legal terms, from deploying inexpensive short- and medium-range ballistic and cruise missiles on its European border for purposes of political coercion, as China has done on the Taiwan Strait. Evan Braden Montgomery, “China’s Missile Forces Are Growing: Is It Time to Modify the INF Treaty?” *National Interest*, July 2, 2014; Steven Pifer, “Don’t Scrap the INF Treaty,” *National Interest*, June 9, 2014; Elbridge Colby, “The Real Trouble with Russia: Moscow Might Have Violated the Intermediate-Range Nuclear Forces Treaty—Here’s How to Respond,” *Foreign Affairs*, April 7, 2014; and Michael R. Gordon, “U.S. Says Russia Tested Missile, Despite Treaty,” *New York Times*, January 29, 2014.

oping weapons in violation of the treaty, this issue will likely continue to grow in importance.

Nuclear Strategy and Crisis Management

China's development of long-range precision strike capabilities, coupled with its assertion of sovereignty in its near seas, has resulted in a strategic environment susceptible to crisis instability. According to Avery Goldstein, professor and director for the Center for the Study of Contemporary China at the University of Pennsylvania:

In a crisis, China or the United States might believe it valued what was at stake more than the other and would therefore be willing to tolerate a higher level of risk. But because using conventional forces would only be the first step in an unpredictable process subject to misperception, missteps, and miscalculation, there is no guarantee that brinksmanship would end before it led to unanticipated nuclear catastrophe. . . . China, moreover, apparently believes that nuclear deterrence opens the door to the safe use of conventional force. Since both countries would fear a potential nuclear exchange, the Chinese seem to think that neither they nor the Americans would allow a military conflict to escalate too far.²¹¹

Since the end of the Cold War, the United States has not been faced with an adversary capable of seriously contesting U.S. dominance of a battlespace, and has had little imperative to consider how nuclear escalation could factor into a potential conflict.²¹² As multiple witnesses testified at the Commission's April hearing, the United States should consider carefully how to constrain and bring an end to hostilities in a limited conflict under the specter of nuclear escalation.²¹³ As China continues to modernize its conventional and nuclear missile forces, these questions will only become more pressing.

Table 2: Ranges of China's Nuclear Ballistic Missiles (Selected) *

Chinese Designator and Missile Type	NATO Designator	Deployment Mode	Approximate Maximum Range in kilometers (miles)
DF-3A IRBM	CSS-2	Transportable	3,000 (1,864)
DF-4 ICBM	CSS-3	Transportable	5,500 (3,418)

*The JL-1 SLBM was omitted from this chart because the Xia-class SSBN, the only Chinese submarine on which the JL-1 has been deployed, is likely currently incapable of conducting operational missions. DOD noted in 2010 that the Xia's operational status was in question, and in 2015 omitted any mention of the Xia in discussing China's SSBNs in its "Annual Report to Congress on Military and Security Developments Involving the People's Republic of China." U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 9; U.S. Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015, 16; Kyle Mizokami, "Asia's Submarine Race," *US Naval Institute News*, November 13, 2013; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2010*, April 2010, 34; Bud C. Cole, *The Great Wall at Sea*, Naval Institute Press, 2010, 108; and Richard Halloran, "Is There a Plan Behind China's Subs?" *Taipei Times*, May 2, 2007.

**Table 2: Ranges of China's Nuclear Ballistic Missiles (Selected)—
Continued**

Chinese Designator and Missile Type	NATO Designator	Deployment Mode	Approximate Maximum Range in kilometers (miles)
DF-5A ICBM	CSS-4 Mod 2	Silo	13,000 (8,078)
DF-5B ICBM	CSS-4 Mod 3	Silo	13,000 (8,078)
DF-21 MRBM	CSS-5 Mod 1	Road Mobile	1,750 (1,087)
DF-21A MRBM	CSS-5 Mod 2	Road Mobile	1,750 (1,087)
DF-26 IRBM	Unknown	Road Mobile	3,000–4,000 (1,800–2,500)
DF-31 ICBM	CSS-10 Mod 1	Road Mobile	7,000–7,200 (4,349–4,474)
DF-31A ICBM	CSS-10 Mod 2	Road Mobile	11,000–12,000 (6,834–7,455)
JL-2 SLBM	CSS-NX-14	SSBN	7,000–7,400 (4,349–4,597)

Note: China likely is in the process of phasing out the DF-3A IRBM.

Source: Commission judgments and estimates based on analysis by nongovernmental experts on China's military, consecutive versions of the annual *DOD Report to Congress on Military and Security Developments Involving the People's Republic of China*, the 2013 National Air and Space Intelligence Center report on cruise and ballistic missiles, the 2015 U.S. Office of Naval Intelligence report on the PLA Navy, and U.S. and Asian media reporting.

Table 3: Ranges of China's Conventional Ballistic Missiles (Selected)

Chinese Designator and Missile Type	NATO Designator	Deployment Mode	Approximate Maximum Range in kilometers (miles)
DF-11 SRBM	CSS-7 Mod 1	Road Mobile	300 (186)
DF-11A SRBM	CSS-7 Mod 2	Road Mobile	600 (373)
DF-15 SRBM	CSS-6 Mod 1	Road Mobile	600 (373)
DF-15A SRBM	CSS-6 Mod 2	Road Mobile	850 (528)
DF-15B SRBM	CSS-6 Mod 3	Road Mobile	725 (450)
DF-16 SRBM	CSS-11 Mod 1	Road Mobile	1,000 (621)
DF-16 MRBM	Unknown	Road Mobile	1,200 (746)
DF-21C MRBM	CSS-5 Mod 3	Road Mobile	1,750 (1,087)
DF-21D ASBM	CSS-5 Mod 5	Road Mobile	1,500 (932)
DF-26 IRBM/ASBM	Unknown	Road Mobile	3,000–4,000 (1,800–2,500)

Source: Commission judgments and estimates based on analysis by nongovernmental experts on China's military, consecutive versions of the annual *DOD Report to Congress on Military and Security Developments Involving the People's Republic of China*, the 2013 National Air and Space Intelligence Center report on cruise and ballistic missiles, the 2015 U.S. Office of Naval Intelligence report on the PLA Navy, and U.S. and Asian media reporting.

Table 4: Ranges of China's Cruise Missiles (Selected)

Chinese Designator and Missile Type	NATO or Export Designators	Launch Platform	Approximate Maximum Range in kilometers or nautical miles (nm) (miles)
KD-88 LACM	Unknown	Air	100 kilometers (62)
YJ-63 LACM	C603	Air	200 kilometers (124)
CJ-10/DH-10 LACM	Unknown	Road-mobile	1,500–2,000 kilometers (932–1,242)
CJ-20 LACM	Unknown	Air	1,500 kilometers (932)
YJ-83 ASCM Family	CSS-N-8, C802, C802A	Ship, ground, and air	100 nm (115)
YJ-62 ASCM Family	C602	Ship and ground	150 nm (172)
YJ-8 ASCM Family	CSS-N-4, C801	Ship, submarine, and air	22 nm (26)
YJ-8A ASCM Family	C801A	Ship and air	65 nm
[None; Russian Export to China]	SS-N-27B ASCM	Submarine	120 nm (138)
[None; Russian Export to China]	SS-N-22 ASCM	Ship	65–130 nm (75–150), depending on variant
YJ-12 ASCM	Unknown	Air	215 nm (250)
YJ-18 ASCM	CH-SS-NX-13	Submarine, ship	290 nm (334)

Source: Commission judgments and estimates based on analysis by nongovernmental experts on China's military, consecutive versions of the annual DOD *Report to Congress on Military and Security Developments Involving the People's Republic of China*, the 2013 National Air and Space Intelligence Center report on cruise and ballistic missiles, the 2015 U.S. Office of Naval Intelligence report on the PLA Navy, and U.S. and Asian media reporting.

Conclusions

- The chief roles of China's nuclear arsenal are to deter an adversary from undertaking a nuclear first strike and to reduce the pressure on China to yield to an adversary's demands, or desist from aggression, under threat of nuclear attack. China's belief that its nuclear arsenal would deter an adversary from taking a conventional fight into the nuclear realm could encourage it to be more adventurous in its risk-taking during a crisis because it may not sufficiently fear the prospect of nuclear escalation.
- China is secretive about the details of its official nuclear policy, leading to uncertainty regarding key principles of its nuclear weapons doctrine. Key elements of China's nuclear policy, such as its "no-first-use" pledge and presumptive de-alerting policy, may be under reconsideration but are unlikely to change officially.

- China appears to be pursuing a theater nuclear capability in addition to the strategic nuclear capability it has maintained since it became a nuclear state in the 1960s. In a conflict, China's maturing theater nuclear capability could provide it with the means to flexibly employ nuclear weapons to deescalate or otherwise shape the direction of conflict.
- China is pursuing a credible second-strike capability with an emphasis on survivability against an adversary's first strike. By diversifying its nuclear strike capabilities away from solely land-based systems in silos, China seeks to ensure its ability to absorb a nuclear strike and retaliate in kind. Examples of this diversification include road-mobile intercontinental ballistic missiles, submarine-launched ballistic missiles, and potentially air-launched land-attack cruise missiles.
- China's initial development of its conventional missile forces focused heavily on expanding its short-range ballistic missile force for Taiwan contingencies. In the past decade, China's development of longer-range missiles, pursuit of advanced missile technologies, and diversification of its launch platforms have enabled it to hold at risk a wider range of targets farther from its shores.
- China is developing cruise missiles that are increasingly difficult for the U.S. military to detect and defend against. The PLA has fielded its first ground-launched land-attack cruise missile, and also appears to be developing air-, ship-, and submarine-launched cruise missiles with land-attack and antiship missions. China is in the midst of improving the qualitative aspects of its cruise missile technologies; in the meantime, the quantitative strength of its cruise missiles poses a formidable challenge to existing U.S. Navy defenses.
- China recognizes that adversary missile defenses—particularly the U.S. ballistic missile defense architecture—pose a major challenge to the success of its missile operations. As a result, China is developing measures to improve its forces' ability to penetrate opposing missile defenses, such as multiple independently-targetable reentry vehicles, maneuverable reentry vehicles, and hypersonic weapons.
- To realize the full potential of its long-range precision strike capabilities, China requires detailed awareness of a potential battlespace as well as the ability to obtain targeting data at increasingly far distances from the Chinese mainland. Effective and timely target selection and information coordination is an area the PLA continues to seek to improve.

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RECOMMENDATIONS

China's Space and Counterspace Programs

The Commission recommends:

- Congress continue to support the U.S. Department of Defense's efforts to reduce the vulnerability of U.S. space assets through cost-effective solutions, such as the development of smaller and more distributed satellites, hardened satellite communications, and non-space intelligence, surveillance, and reconnaissance assets such as unmanned aerial vehicles.
- Congress direct the U.S. Department of Defense, U.S. Air Force, and relevant agencies within the U.S. Intelligence Community to jointly prepare a classified report that performs a net assessment of U.S. and Chinese counterspace capabilities. The report should include a strategic plan for deterring, with active and passive systems, strikes against U.S. assets in light of other countries' rapid advancements in kinetic and non-kinetic counterspace technology.
- Congress direct appropriate jurisdictional entities to undertake a review of (1) the classification of satellites and related articles on the U.S. Munitions List under the International Trafficking in Arms Regulations and (2) the prohibitions on exports of Commerce Control List satellites and related technologies to China under the Export Administration Regulations, in order to determine which systems and technologies China is likely to be able to obtain on the open market regardless of U.S. restrictions and which are critical technologies that merit continued U.S. protection.
- Congress allocate additional funds to the Director of National Intelligence Open Source Center for the translation and analysis of Chinese-language technical and military writings, in order to deepen U.S. understanding of China's defense strategy, particularly related to space.

China's Offensive Missile Forces

The Commission recommends:

- Congress direct the U.S. Department of Defense to provide an unclassified estimate of the People's Liberation Army Second Artillery Force's inventory of missiles and launchers, by type, in future iterations of its *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, as included previously but suspended following the 2010 edition.

- Congress direct the U.S. Department of Defense to prepare a report on the potential benefits and costs of incorporating ground-launched short-, medium-, and intermediate-range conventional cruise and ballistic missile systems into the United States' defensive force structure in the Asia Pacific, in order to explore how such systems might help the U.S. military sustain a cost-effective deterrence posture.
- Congress continue to support initiatives to harden U.S. bases in the Asia Pacific, including the Pacific Airpower Resiliency Initiative, in order to increase the costliness and uncertainty of conventional ballistic and cruise missile strikes against these facilities, and thereby dis-incentivize a first strike and increase regional stability.
- Congress continue to support "next-generation" missile defense initiatives such as directed energy and rail gun technologies, and require the U.S. Department of Defense to report to committees of jurisdiction on the status of current component sourcing plans for the development and production of directed energy weapons.

CHAPTER 3

CHINA AND THE WORLD

SECTION 1: CHINA AND CENTRAL ASIA

Introduction

One of the most visible manifestations of China's expanding global engagement has been its cultivation of close economic, political, and security ties with countries in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). Beijing sees Central Asia as a potential land bridge to markets in the Middle East and Europe, a source of much-needed oil and natural gas resources, and a dependable bastion of diplomatic support. But Central Asia is also a source of anxiety for Beijing, which fears Islamist groups in its economically and politically fraught western province of Xinjiang will find common cause with extremist or terrorist groups operating in the region. As the United States reshapes its own Central Asia policy in the wake of the drawdown in Afghanistan, it will have to take China's growing presence there into careful consideration.

This section surveys China's economic, energy, and security relations with Central Asia. In particular, it explores how China's engagement with the region has evolved under Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping. China's growing ties with the South Asian country of Afghanistan are also discussed. Additionally, this section examines how China's interests in Central Asia both complement and compete with the interests of the United States as well as Russia, and considers the implications for the United States of China's growing influence in the region. This section draws from the Commission's March 2015 hearing on China-Central Asia relations; its July 2015 fact-finding trip to China (Beijing and Urumqi), Kazakhstan (Astana and Almaty), and Uzbekistan (Tashkent); consultations with experts on Chinese economic, foreign policy, and security affairs; and open source research and analysis.

China's Central Asia Strategy

Since the establishment of the Silk Road during the Han dynasty (206 BC–AD 220), Central Asia has intermittently played an important role in China's economic development and foreign relations. In modern times, Beijing's view of Central Asia's strategic value has waxed and waned. Fearing Soviet encirclement, Beijing viewed the region warily while it was part of the Union of Soviet Socialist Republics (USSR).¹ After the fall of the Soviet Union in 1991, however, Beijing began the process of establishing diplomatic relations

with the new post-Soviet states, seeking to create favorable conditions for the economic development and security of its western frontier. During this time, Beijing cultivated ties with Central Asian governments, peacefully settled outstanding boundary disputes, and sought to take advantage of the region's vast mineral wealth. When the U.S. War on Terror led Washington to establish bases and strengthen its strategic links in Central Asia in the 2000s, Beijing again became concerned about encirclement—this time by the United States—and sought to strengthen its ties with Central Asian capitals to sustain Chinese influence.² Under President Xi, China's longstanding efforts to cultivate influence in Central Asia became official policy in the form of the "Silk Road Economic Belt," discussed later in this section.

Figure 1: Map of Central Asia



Decades before the Silk Road Economic Belt was announced, China approached relations with Central Asia with a clear set of interrelated objectives: (1) encouraging economic engagement between Central Asia and China's westernmost province, Xinjiang, to bolster development and stability in that province;³ (2) eradicating what it calls the "three evils" of extremism, separatism, and terrorism from the region and preventing them from taking root in Xinjiang;⁴ and (3) expanding China's economic and geostrategic in-

fluence.⁵ The dominant driver of these objectives is China's perception that unrest in Xinjiang poses a threat to China's sovereignty and stability. However, the most visible manifestation of China's engagement in Central Asia is its growing economic presence.

How Xinjiang Informs China's Central Asia Policy

Xinjiang, home to China's Islamic Uyghur ethnic group,* has experienced varying degrees of unrest in the past several decades. As in Tibet, many residents of Xinjiang do not culturally or politically identify with China, and some Uyghur groups advocate for greater autonomy or full independence for Xinjiang. Beijing views the existence of these groups as a threat to China's sovereignty and security and has sought to silence them while simultaneously integrating Xinjiang into the social, economic, and political fabric of Greater China.⁶

Chinese integration policies in Xinjiang are often violently repressive, alienating Uyghurs and fueling ethnic tensions. A decades-long government-led influx of majority Han Chinese into Xinjiang[†] was meant to bring greater economic development to the region,[‡] but had the effect of disenfranchising local Uyghurs who found themselves excluded from economically productive sectors.⁷ This mass Han migration also led to the erosion of Uyghur cultural identity and language.⁸ Fearful of the "three evils," Beijing has launched several "Strike Hard" campaigns to "root out places where criminals breed, and change the face of the public security situation" in Xinjiang.⁹ This has manifested in a heavy-handed security apparatus[§] and led to the adoption of a repressive approach to Islam in Xinjiang. Human Rights Watch cataloged the range of China's repression of religion in Xinjiang, referring to

[a] multi-tiered system of surveillance, control, and suppression of religious activity aimed at Xinjiang's Uyghurs. . . . At its most extreme, peaceful activists who practice their religion in a manner deemed unacceptable by state authorities or CCP officials are arrested, tortured, and at times executed. At a more mundane and routine level, many Uighurs experience harassment in their daily lives. Celebrating religious holidays, studying religious texts, or showing one's religion through personal appearance are

*Xinjiang has a population of 21.8 million, and is home to 13 major ethnic groups: the Uyghurs, Hans, Kazakhs, Mongolians, Huis, Kyrgyz, Manchus, Xibes, Tajiks, Daur, Uzbeks, Tatars, and Russians. The four largest ethnic groups are Uyghur (46 percent), Han (39 percent), Kazakh (7 percent), and Hui (5 percent). Sunni Islam is the most widely practiced religion in Xinjiang. Anthony Howell and C. Cindy Fan, "Migration and Inequality in Xinjiang: A Survey of Han and Uyghur Migrants in Urumqi," *Eurasian Geography and Economics* 52:1 (2011): 123; University of Michigan China Data Center, "China 2010 Census Data Released," September 29, 2011; and China.org.cn, "Ethnic Minorities of Xinjiang," August 25, 2005.

[†]A 1953 Chinese census notes Xinjiang's population was 75 percent Uyghur and 6.7 percent Han; by 2008, Han Chinese accounted for 39 percent of the population. Anthony Howell and C. Cindy Fan, "Migration and Inequality in Xinjiang: A Survey of Han and Uighur Migrants in Urumqi," *Eurasian Geography and Economics* 52:1 (2011): 119–122.

[‡]While the stated objective of Beijing's immigration program was economic development, one observer cites political drivers as well, namely: "counteracting political pressure from Uyghurs . . . to import a loyal Han constituency." Gardner Bovingdon, "Autonomy in Xinjiang: Han Nationalist Imperatives and Uyghur Discontent," *East-West Center*, 2004, 23. See also Congressional-Executive Commission on China, *2007 Annual Report to Congress*, 2007, 107.

[§]For an in-depth examination of China's recent security and stability maintenance efforts in Xinjiang and elsewhere, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 365–368.

*strictly forbidden at state schools. The Chinese government has instituted controls over who can be a cleric, what version of the Koran may be used, where religious gatherings may be held, and what may be said on religious occasions.*¹⁰

In recent years, the Chinese government has implemented a number of repressive measures, including banning Islamic veils and long beards, prohibiting some Muslims from celebrating Ramadan, and, although many Muslims do not drink alcohol, organizing a beer festival in a heavily Muslim-populated town in an effort to prevent “illegal religious promotion . . . and guarantee the village’s harmony and stability,” among other restrictions.*¹¹

Predictably, these policies have fostered resentment that has frequently bubbled over into protests, unrest, and violence, which Beijing in turn often violently suppresses with police and paramilitary forces.†¹² This cycle of distrust, resentment, fear, and violence has been a prominent feature of Xinjiang’s governance, particularly since 2009, when anti-Chinese protests and riots in Xinjiang’s capital, Urumqi, caused the deaths of at least 197 people.¹³ A string of particularly violent incidents between 2013 and 2014 led to the deaths of hundreds more.¹⁴ China invariably refers to such incidents as acts of terrorism. Some undoubtedly are,‡ but in many cases it is nearly impossible for outsiders to assess the veracity of the Chinese government’s accounts of “terrorist” incidents, which likely exaggerate the “three evils” threat to justify crackdowns. According to Andrew Small, transatlantic fellow at the German Marshall Fund of the United States:

*Beijing’s tendency to attribute almost any act of violence in Xinjiang to “separatists,” to claim malevolent intent behind even the most peaceful of protests, and to criminalize political groups . . . leaves the line between the terrorist, the activist, and the aggrieved citizenry permanently blurred. However, this well-founded skepticism about Beijing’s approach should not obscure the fact that there is, and has long been, organized militant opposition to Chinese rule in Xinjiang.*¹⁵

Beijing fears extremist groups outside China seek to spread their ideology and activities to Xinjiang, and Chinese officials often claim “hostile foreign forces” encourage the spread of the “three evils” there.¹⁶ These fears are not unfounded. Central Asia is spotted

*Such abusive policies are likely to increase if China perceives the threat of instability in Xinjiang is growing. For example, Human Rights Watch writes that a draft counterterrorism law currently under consideration by China’s legislature “makes clear the government’s intent to establish a counterterrorism structure with enormous discretionary powers, define terrorism and terrorist activities so broadly as to easily include peaceful dissent or criticism of the government or the Communist Party’s ethnic and religious policies, and set up a total digital surveillance architecture subject to no legal or legislative control.” Human Rights Watch, “China: Draft Counterterrorism Law a Recipe for Abuses,” January 20, 2015.

†In the absence of reliable Chinese government statistics, a report by the Washington, DC-based Uyghur Human Rights Project estimated that 656–715 people were violently killed in Xinjiang from 2013 to 2014, with Uyghurs accounting for more than 75 percent of the deaths. Uyghur Human Rights Project, “Legitimizing Repression: China’s ‘War on Terror’ under Xi Jinping and State Policy in East Turkestan,” March 3, 2015, 8.

‡For example, four bombings and a knife attack occurred in China between October 2013 and September 2014. In each incident, Uyghurs or Uyghur groups appear to have been involved. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 367.

with extremist groups and terrorist organizations that share ethnic, religious, cultural, political, and linguistic similarities with Uyghurs in Xinjiang. Members of the East Turkestan Islamic Movement, a Uyghur separatist organization labeled a terrorist group by China and the United States, reportedly have resided in or been trained by terrorist groups in Pakistan, Afghanistan, and Kyrgyzstan.¹⁷ In 2014, from his hideout in Pakistan, the leader of the East Turkestan Islamic Movement gave an interview to Reuters in which he said: “China is not only our enemy, but it is the enemy of all Muslims. . . . We have plans for many attacks in China.”¹⁸ Beijing also fears Chinese extremists will join terrorist groups and mount attacks overseas; according to Chinese officials and media reports, several Chinese citizens, including some from Xinjiang, have joined the Islamic State of Iraq and the Levant (ISIL, also known as ISIS, or IS).¹⁹ China’s Middle East Envoy Wu Sike acknowledged that approximately 100 Chinese citizens may be fighting or receiving training in the Middle East.²⁰ One of two suspects in the August 2015 bombing of the popular Erawan Shrine in Thailand, which killed 20 people, is a Chinese Uyghur.²¹

This reality drives much of China’s engagement with Central Asia. Xinjiang shares 1,750 miles of border with Kazakhstan, Kyrgyzstan, and Tajikistan, and hundreds of thousands of Uyghurs live in Central Asia (primarily in Kazakhstan and Kyrgyzstan). According to Marlene Laruelle, professor and director of the Central Asia Program at the Elliott School of International Affairs at George Washington University, Kazakhstan at times represses its Uyghur population because “Kazakhstan understood that if it wants to have good relations with China, there is no way it can look like it is welcoming any kind of Uyghur independence or autonomous movements.”²² In strengthening ties with its western neighbors, China seeks to create conditions for stability and development in Xinjiang by pursuing a two-pronged, almost contradictory approach: integrating its economy with those of Central Asia while ensuring Xinjiang is insulated from the region’s pervasive problem of ethnic and religious conflict and the spread of the “three evils.” It remains to be seen whether China will be successful in its efforts to close Xinjiang’s borders to transnational threats while simultaneously opening them to regional commerce and investment.

China’s New Silk Road Policy

President Xi announced the Silk Road Economic Belt in a 2013 speech at Kazakhstan’s Nazarbayev University. According to President Xi, the initiative is aimed at enhancing regional economic and cultural integration by “building policy communication,” “having full discussions on development strategies and policy response[s],” “improving road connectivity,” “promoting unimpeded trade,” and “increasing understanding” through people-to-people exchanges.²³ China also envisions the Silk Road as a region of “more capital convergence and currency integration,” promoting the use of the renminbi (RMB) and facilitating its internationalization.²⁴

The most immediate objective of the initiative is to encourage economic development and stability in Xinjiang. According to re-

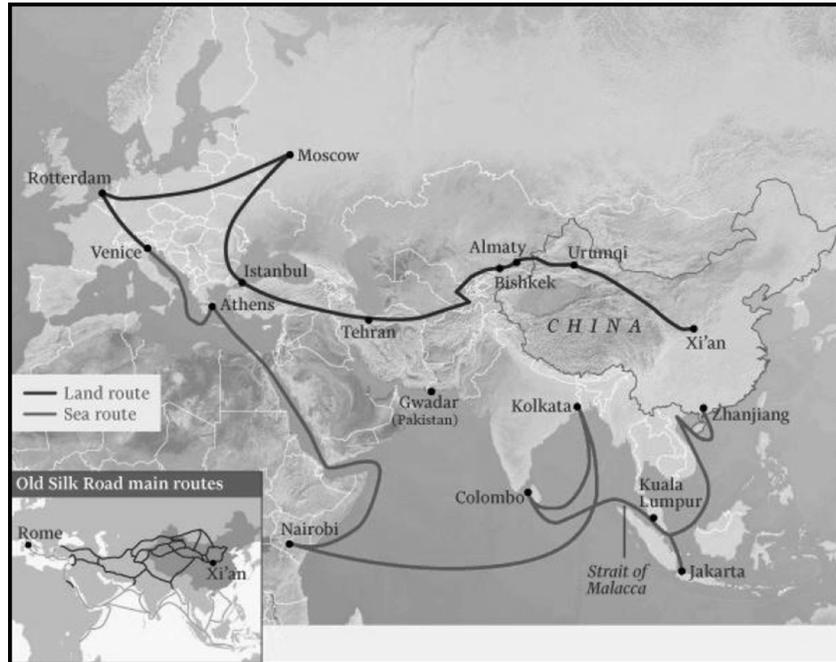
searchers who met with the Commission in Xinjiang, Urumqi is “taking direction from President Xi” to become the “centerpiece” of the Silk Road Economic Belt.²⁵ Currently, some 78 percent of Xinjiang exports go to Central Asian states.²⁶ Authorities in Beijing believe increased economic activity and trade ties with the region will benefit the Uyghur population and diminish ethnic unrest. China hopes that with construction of new roads, railways, and related infrastructure, Urumqi may be transformed into a regional and financial hub.²⁷ China has already invested more than \$91 billion in trade-related infrastructure in Xinjiang.²⁸

Although fostering economic development in Xinjiang is one of the stated objectives of the Silk Road Economic Belt,²⁹ it remains to be seen if the initiative will bring significant economic benefits to China’s Uyghurs. Raffaello Pantucci, director of International Security Studies at the Royal United Services Institute for Defense and Security Studies in London, testified to the Commission that the vast majority of Uyghurs live in southern Xinjiang, while the majority of the new Silk Road projects and trade routes traverse the northern part of Xinjiang.³⁰

China’s Silk Road initiatives are not new; they are a culmination and a rebranding of several previous policies and projects aimed at linking China with its trading partners.*³¹ The land-based Silk Road Economic Belt has a maritime counterpart, the “21st Century Maritime Silk Road,” which will run from China’s coast through Southeast Asia and the Indian Ocean to Africa and the Mediterranean Sea (see Figure 2). Together, they are commonly referred to as the “One Belt, One Road” initiative. Speaking in March 2015 at the Boao Forum held in Hainan Province—Asia’s response to the World Economic Forum held in Davos, Switzerland—President Xi said he hopes the annual volume of trade between China and countries along One Belt, One Road will be over \$2.5 trillion in a decade.³² (For more on the 21st Century Maritime Silk Road initiative, see Chapter 3, Section 2, “China and Southeast Asia.”)

* Although China’s engagement with Central Asia had been ongoing for some time, a Kazakhstani government researcher told the Commission that China’s Central Asia policy prior to 2013 had been “chaotic and ad hoc,” but that China’s approach has been “much more deliberate and strategic” in the years since. Kazakhstan Presidential Library, discussion with Commission, Astana, Kazakhstan, July 27, 2015.

Figure 2: China's Silk Road Economic Belt and 21st Century Maritime Silk Road



Source: Charles Clover and Lucy Hornby, "China's Great Game: Road to a New Empire," *Financial Times*, October 12, 2015.

During the Boao Forum, China's National Development and Reform Commission (the paramount state economic planning agency), the Ministry of Foreign Affairs, and the Ministry of Commerce released a joint action plan for the One Belt, One Road initiative. Though the plan did not detail prospective projects, it envisions a future where China and other countries coordinate their economic policies, open free trade areas, and lower nontariff barriers.³³ The plan also calls for the expansion of bilateral currency swaps and development of a bond market in Asia.

Although the initial impact of the One Belt, One Road initiative is on China's neighbors in Asia, the Chinese government's official action plan calls for bringing together "China, Central Asia, Russia and Europe (the Baltic); linking China with the Persian Gulf and the Mediterranean Sea through Central Asia and West Asia; and connecting China with Southeast Asia, South Asia and the Indian Ocean."³⁴ In other words, the scope of the project is global, and will require buy-in from countries in Europe and the Middle East to be effective. In June 2015, Hungary became the first European country to sign a cooperation agreement with China on promoting the Silk Road initiatives.³⁵

To facilitate its engagement with countries that fall within One Belt, One Road, China's State Council created the \$40 billion Silk Road Fund, which went into operation in February 2015. The fund

is financed from China's foreign currency reserves (accounting for about 65 percent of the fund), with the rest coming from the government's sovereign wealth fund, China Investment Corporation (15 percent); and from two policy banks, the Export-Import Bank of China (China Exim Bank) (15 percent) and the China Development Bank (CDB) (5 percent).³⁶ Unlike other recent financing vehicles spearheaded by China (the New Development Bank, also known as the BRICS* Bank, and the Asian Infrastructure Investment Bank), China is the sole founder and funding source for the Silk Road Fund. This arrangement will give absolute control over the various projects to Chinese policymakers. In addition, the National Development and Reform Commission's action plan for One Belt, One Road calls for the establishment of a financing institution administered by the Shanghai Cooperation Organization (SCO, discussed later in this section).³⁷ Funding is expected to come from other sources as well, varying by project and location. For example, the CDB announced it will invest over \$890 billion into more than 900 projects to bolster the One Belt, One Road initiative.³⁸

Trade, Infrastructure, and Natural Resources in China's Central Asia Engagement

Although the primary objective of China's economic engagement with Central Asia is to promote the security and development of Xinjiang, this policy has significant benefits for China's overall economic growth. First, China intends to diversify its energy portfolio by gaining access to Central Asian resources. Second, Beijing seeks to develop new markets for its companies through construction of roads and railways, with the ultimate goal of reaching Russia, Iran, and Europe. This has an added corollary of creating outlets for Chinese industries, such as iron, steel, and cement, which are experiencing overcapacity and slackening domestic demand due to China's economic slowdown (for more on China's economic slowdown, see Chapter 1, Section 3, "China's Economic Reforms"). Finally, China seeks to engender political goodwill and influence by fostering economically based "good neighborly relations."³⁹ For landlocked Central Asia, China's economic largesse is an opportunity to upgrade its outdated infrastructure and connect to the global economy. Central Asian states also welcome China as a counterbalance to Russia, which until recently tended to dominate the former Soviet republics.⁴⁰

While China's economic engagement with Central Asia appears most often in imports of natural resources or investment in energy companies and energy-related infrastructure, China has also become an important source of exports of manufactured goods and loans to non-energy-related projects. The structure of the trade shows a lack of diversity, with China exporting finished goods and importing natural resources. Despite the strength of its energy exports, Central Asia as a whole tends to run trade deficits with China (see Table 1). Yet trade data do not tell the full tale. For most of these countries, China is not just an important trade partner; it is the largest by a wide margin (see Table 2).

* BRICS is the acronym for five major emerging economies: Brazil, Russia, India, China, and South Africa.

Table 1: China's Exports to and Imports from Central Asia
(US\$ millions)

		Amount				Share of Central Asia			
		2005	2008	2011	2014	2005	2008	2011	2014
Central Asia Total	Exports	5,229.3	22,593.5	18,588.7	24,065.7	—	—	—	—
	Imports	3,491.0	8,226.5	20,998.5	20,914.0	—	—	—	—
	Balance	1,738.3	14,367.0	(2,409.7)	3,151.8	—	—	—	—
Kazakhstan	Exports	3,898.9	9,819.6	9,567.8	12,722.3	74.6%	43.5%	51.5%	52.9%
	Imports	2,902.3	7,726.2	15,329.0	9,698.5	83.1%	93.9%	73.0%	46.4%
	Balance	996.6	2,093.4	(5,761.2)	3,023.8	—	—	—	—
Kyrgyzstan	Exports	865.9	9,213.8	4,878.8	5,245.1	16.6%	40.8%	26.2%	21.8%
	Imports	104.6	121.2	97.5	54.4	3.0%	1.5%	0.5%	0.3%
	Balance	761.4	9,092.6	4,781.3	5,190.7	—	—	—	—
Tajikistan	Exports	143.9	1,479.7	1,997.0	2,469.2	2.8%	6.5%	10.7%	10.3%
	Imports	14.2	20.2	72.0	47.7	0.4%	0.2%	0.3%	0.2%
	Balance	129.7	1,459.5	1,925.0	2,421.5	—	—	—	—
Turkmenistan	Exports	90.4	803.0	785.8	954.4	1.7%	3.6%	4.2%	4.0%
	Imports	19.0	28.4	4,693.2	9,516.2	0.5%	0.3%	22.4%	45.5%
	Balance	71.5	774.5	(3,907.4)	(8,561.7)	—	—	—	—
Uzbekistan	Exports	230.2	1,277.4	1,359.4	2,674.7	4.4%	5.7%	7.3%	11.1%
	Imports	451.0	330.4	806.8	1,597.1	12.9%	4.0%	3.8%	7.6%
	Balance	(220.8)	947.0	552.7	1,077.5	—	—	—	—

Note: The table describes China's exports to, imports from, and trade balance with each country. Amounts in parentheses indicate a trade deficit.

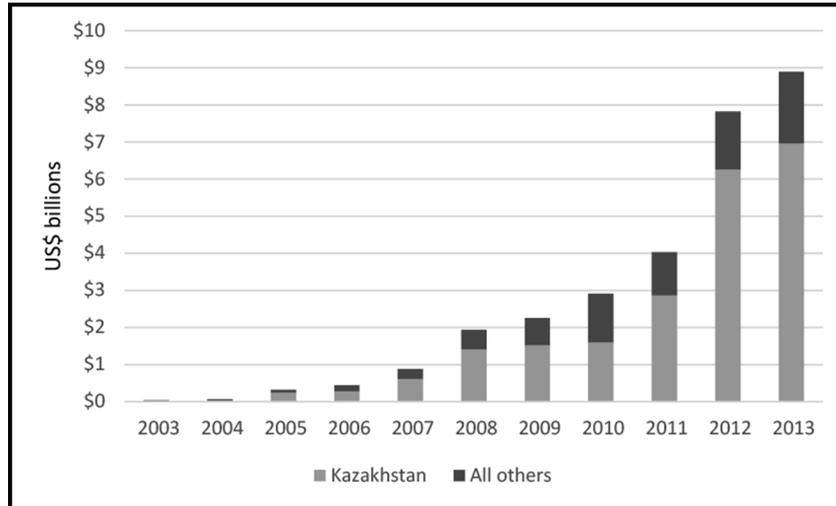
Source: China Ministry of Commerce via CEIC database.

Table 2: China's Place in Exports and Imports of Central Asian States, 2013

	Exports		Imports	
	Share	Rank	Share	Rank
Kazakhstan	19.5%	1	17%	2
Kyrgyzstan	4%	7	34%	1
Tajikistan	11%	2	46%	1
Turkmenistan	77%	1	15%	3
Uzbekistan	31%	1	21%	2

Source: The Atlas of Economic Complexity. <http://atlas.cid.harvard.edu/>.

Although official statistics often understate the true magnitude of Chinese foreign direct investment (FDI) in Central Asia, they demonstrate a clear upward trend. As Figure 3 shows, the global financial crisis of 2008 was a turning point, after which Chinese investment soared, especially in Kazakhstan, where it reached \$7 billion by the end of 2013.

Figure 3: Accumulation of Chinese FDI in Central Asia, 2003–2013

Source: China's Ministry of Commerce via CEIC database.

When it comes to trade, investment, and loans, Kazakhstan, the region's largest economy, is the dominant player. In 2014, Kazakhstan accounted for 53 percent of China's exports to Central Asia, and 46 percent of imports (see Table 1). Kazakhstan's importance is evident on many fronts. In September 2013, President Xi chose to inaugurate his Silk Road vision in Astana, Kazakhstan's capital. During that visit, Kazakhstan received the lion's share of signed agreements (up to \$30 billion), compared with \$8 billion in Turkmenistan, \$15 billion in Uzbekistan, and \$3 billion in Kyrgyzstan.⁴¹ Since then, Kazakhstan has continued receiving significant Chinese investment. During Chinese Premier Li Keqiang's 2014 visit to Kazakhstan, the two countries signed \$14 billion worth of economic deals, and in March 2015, Kazakhstan's Prime Minister Karim Masimov concluded his visit to China with deals worth another \$23.6 billion.⁴²

Kyrgyzstan is the second-largest destination for Chinese exports. Turkmenistan is the only country in Central Asia that has had a trade surplus with China, due to exports of natural gas. Uzbekistan, less important than Turkmenistan in terms of gas exports, is courting Chinese investment. In 2014, Uzbekistan's President Islam Karimov and President Xi signed an agreement for cooperation in diverse sectors, including energy, high technology, and finance, with deals worth \$6 billion between 2015 and 2018.⁴³

Kyrgyzstan and Tajikistan, the two smaller, energy-poor states in the region, have benefited less from China's expansion in Central Asia than the other countries, though both are adapting in unique ways. Kyrgyzstan has exploited its central geographical position to become a regional wholesale market.⁴⁴ Two-thirds of Kyrgyzstan's imports come from China; Kyrgyzstan then re-exports three-quarters of these goods (primarily clothes and electrical products), mostly to Uzbekistan and Kazakhstan.⁴⁵ So great is Kyrgyz-

stan's dependence on China that re-exports of Chinese goods account for about 15 percent of its gross domestic product (GDP).⁴⁶

Tajikistan, Central Asia's poorest country, has traditionally depended on remittances from Russia for economic survival (according to World Bank estimates, remittances—90 percent of which originate from Russia—represent nearly half of the country's GDP).⁴⁷ However, with Russia's economy hit by U.S. and European sanctions over annexation of Crimea, and the economy further weakened by the falling price of oil, Russian remittances to Tajikistan have been declining rapidly: in U.S. dollar value, remittances dropped 8.3 percent in 2014 year-on-year, and 40 percent the first two months of 2015 over the same period of 2014.⁴⁸ Wedged between China, Afghanistan, and Turkmenistan, making it advantageous for transport routes, Tajikistan hopes to leverage its geographic position to attract Chinese investment.⁴⁹ In 2014, China committed to invest at least \$6 billion in Tajikistan over the next three years—a sum equivalent to two-thirds of Tajikistan's 2013 GDP and more than 40 times its annual foreign direct investment.⁵⁰ As of July 2014, China Exim Bank, the largest single creditor to Tajikistan, held over 40 percent of Tajikistan's external debt, compared with the World Bank and Asian Development Bank, which held 16 percent and 14 percent, respectively.⁵¹

As China's trade with the region rises exponentially, its engagement has become more comprehensive. According to Alexander Cooley, professor of political science at Barnard College, Columbia University, China's role in Central Asia is shifting from a mere commercial partner to a “regional provider of collective goods—including economic mediation and governance, development financing and even emergency lending.”⁵² In fact, according to Dr. Cooley, with its massive investments in Central Asia's infrastructure, China had become the region's “de facto development assistance provider.”⁵³ The rest of this section considers this broader regional engagement.

Strengthening Energy Security

China has shifted from energy self-sufficiency in the 1980s to dependence on external sources of oil for about half of its consumption needs. Eighty percent of China's energy imports arrive from the Middle East and West Africa by passing through the narrow Strait of Malacca, which China perceives is vulnerable to blockade (the so-called “Malacca dilemma”).⁵⁴ Chinese leaders therefore look to oil- and natural-gas-rich Central Asian countries to diversify China's energy sources and bypass critical maritime chokepoints.⁵⁵

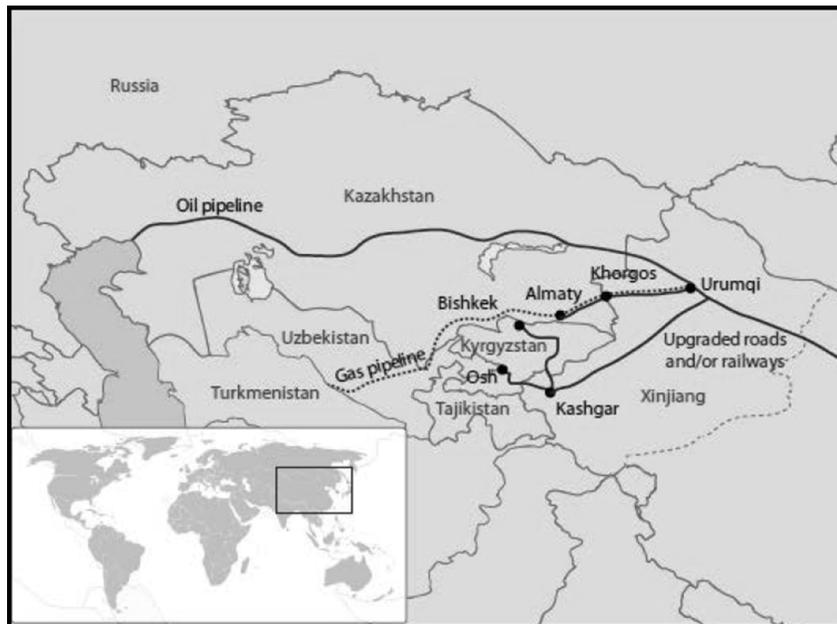
Kazakhstan is the primary recipient of Chinese investment in Central Asian oil. China's largest national oil company, China National Petroleum Corporation, is the majority owner of two of Kazakhstan's major oil companies (it owns 85.42 percent of AktobeMunaiGas and 67 percent of PetroKazakhstan) and is involved in several oil exploration and production projects throughout the country.⁵⁶ China's sovereign wealth fund, China Investment Corporation, also invested almost \$1 billion in Kazakh energy in 2009.⁵⁷ Chinese companies control up to half of Kazakhstan's oil production.⁵⁸ During his September 2013 tour of Central Asia, President Xi reportedly signed agreements for \$8 billion in loans

from the CDB and China Exim Bank to Kazakhstan⁵⁹—loans that will likely finance energy projects as well.

Chinese investment in Central Asian natural gas focuses on Turkmenistan, which has the sixth-largest natural gas reserves in the world.⁶⁰ In 2012, over half of Turkmenistan's 1.6 trillion cubic feet of natural gas exports went to China, and the two countries signed several natural gas contracts to increase exports to 2.3 trillion cubic feet by 2020.⁶¹ In 2014, China National Petroleum Corporation, the dominant foreign player in Turkmenistan's hydrocarbon sector, invested around \$4 billion in the industrial development of Turkmenistan's natural-gas-rich Bagtyyarlyk field.⁶²

All of China's Central Asian energy imports are transported via two pipeline networks: the Kazakhstan-China oil pipeline delivers Kazakh oil to Xinjiang, and the Central Asia-China natural gas pipeline delivers Turkmen (and to a lesser extent, Uzbek) natural gas to China by way of Turkmenistan, Uzbekistan, and Kazakhstan (see Figure 4). Chinese companies played a major role in funding, construction, and operation of these pipelines, with China National Petroleum Corporation occupying the lead position. Other companies, including Sinopec (another state-owned oil company) and CITIC (a state-owned conglomerate) are minor players by comparison.⁶³ China also backs new oil refineries in Central Asia, or finances upgrades to old ones, since Central Asian states lack sufficient refinery capacity.⁶⁴

Figure 4: Oil and Natural Gas Pipelines from Central Asia to China



Source: Tom Miller, "Travels along the New Silk Road: The Economics of Power," *Gavekal Dragonomics*, October 24, 2014.

The Central Asia-China natural gas pipeline consists of three lines (known as Lines A, B, and C), the latest of which came online in 2014. Construction of the fourth line, Line D, is scheduled to start in December 2015.⁶⁵ All lines originate in Turkmenistan, but where Lines A, B, and C run parallel to each other through Uzbekistan and Kazakhstan, Line D will bypass Kazakhstan, going through Kyrgyzstan and Tajikistan instead, allowing Central Asia's poorest countries to collect transit fees.⁶⁶ China has not provided a clear explanation for the inclusion of these energy-deficient countries in the pipeline network, though statements by China National Petroleum Corporation point to the desire to boost regional presence.⁶⁷ The corporation said by 2020 the four lines of the Central Asia-China pipeline will carry over 2.8 trillion cubic feet of natural gas per year.⁶⁸

Though China's energy needs are such that China will never overcome the "Malacca dilemma" with imports of Central Asian energy, some diversification is taking place. In 2004, China imported 26,000 barrels per day of oil from Kazakhstan; in 2014, the Kazakhstan-China oil pipeline shipped 240,000 barrels per day to China (approximately 100,000 barrels of Kazakh oil and 140,000 barrels of Russian oil), accounting for just 4 percent of China's total crude oil imports.⁶⁹ By comparison, for the same year Saudi Arabia supplied 20 percent of total crude imports and was China's top oil supplier.⁷⁰

Turkmenistan, on the other hand, has emerged as China's largest supplier of natural gas after the Central Asia-China pipeline went into operation in 2009. In 2014, Turkmenistan delivered 911 billion cubic feet of natural gas, accounting for 44 percent of China's imports.⁷¹ Uzbekistan, a relative latecomer, started exporting natural gas to China in 2012, though there are plans for growing the relationship.⁷² For example, Uzbekneftegaz announced that gas supplies to China will be increased from 211 billion cubic feet to 353 billion cubic feet per year in 2015.⁷³

In addition to directly purchasing or investing in hydrocarbon projects, China provides energy-backed loans to Central Asian states. During the 2008 financial crisis, China provided two loans to Turkmenistan, valued at about \$8 billion, in exchange for natural gas delivery commitments. China also concluded \$13 billion worth of loans for energy deals with Kazakhstan, including a \$3 billion loan in 2013 after China National Petroleum Corporation acquired a stake in an international oil consortium developing the offshore Kashagan oil field, the world's largest oil field discovery in 35 years.⁷⁴

Transportation Infrastructure and Other Sectors

According to S. Frederick Starr, chairman of the Central Asia-Caucasus Institute and Silk Road Studies Program at the Johns Hopkins University School for Advanced International Studies, China "elevates transport to the level of a geopolitical project of prime importance" in Central Asia.⁷⁵ Most countries targeted by China's Silk Road initiatives have outdated or failing infrastructure, and lack the funds for upgrades. Seeking to fill this gap, China has invested heavily in Central Asian transportation systems. China stands to benefit from infrastructure improvement in

Central Asia in several ways: First, it facilitates trade with Europe and other regions.* Second, routes heading to China's border posts will reach isolated regions, boosting development and enhancing domestic connectivity.⁷⁶ Third, Chinese companies, including the state-owned railway enterprises, heavy equipment manufacturers, and construction specialists, will profit from overseas infrastructure projects.⁷⁷

Several existing and new transportation infrastructure projects exemplify this trend:

- A \$79.8 billion road project launched in 2015 in northwestern Gansu Province will add 60,000 kilometers (37,282 miles) to the existing transportation network connecting China's westernmost provinces to North and Central Asia.⁷⁸
- A railway stretching 13,000 kilometers (over 8,000 miles), inaugurated in 2014, connects Yiwu, a small consumer goods hub located on China's coast, with Madrid. This railway, the world's longest, traverses China, Kazakhstan, Russia, Belarus, Poland, Germany, and France before reaching Spain.⁷⁹

Kazakhstan, which shares a border with China and Russia, thus presenting the most direct land route to Europe, had become the focus of China's infrastructure efforts in Central Asia even before the inauguration of the Silk Road Economic Belt. China has built a series of rail links connecting Urumqi to the Chinese city of Khorgos, which borders Kazakhstan, and is an important hub along the existing Soviet-era railway networks.⁸⁰ The first rail services along this "New Eurasian Land Bridge" began in 2012, with passage from western China to western Europe taking up to three weeks depending on destination, instead of five weeks using trucks and ships.⁸¹ Companies like HP, Acer, and Foxconn use the route to export computers from their manufacturing bases inland.⁸²

China also built a free trade zone in Khorgos, though it has not been well used because it is five hours away from the next nearest city, Almaty.⁸³ China is working on addressing that transportation concern as well, with plans to upgrade the highway to Almaty—the last section of a transcontinental highway from China's east coast port of Lianyungang to Russia's St. Petersburg—to be opened by 2016.⁸⁴ In addition, researchers at the Xinjiang Academy of Social Sciences told the Commission the central government in Beijing would like to expand high-speed rail in Xinjiang, linking the province with Central Asia (particularly from Urumqi to Kazakhstan) and with China's eastern provinces.⁸⁵

In Kyrgyzstan, an \$850 million allocation from the state-owned China Exim Bank is financing construction and reconstruction of major highways expected to facilitate regional trade.⁸⁶ In Tajikistan, using a \$900 million loan from China, Chinese companies built roads linking the capital, Dushanbe, with important provincial towns.⁸⁷ In 2013, President Xi signed with Uzbekistan a contract for the construction of a \$455 million railway tunnel in Uz-

* Goods traveling to Europe via the maritime route take anywhere from 20 to 40 days; the inland route, by contrast, would allow Chinese products to reach European markets in 11 days. Camille Brugier, "China's Way: The New Silk Road," *European Union Institute Security Studies*, May 2014.

bekistan.⁸⁸ Central Asian countries have also been purchasing locomotives and passenger carriages from Chinese suppliers.⁸⁹

In his testimony before the Commission, George Washington University professor Sebastien Peyrouse documented extensive investment by Chinese companies in other sectors as well—from hydroelectricity to communications. These projects are usually financed by China Exim Bank, the CDB, or funds secured in joint venture partnerships.⁹⁰ Some examples of these projects are outlined here:

- *Telecommunications:* Chinese telecommunications companies ZTE and Huawei are engaged in the development of wireless telephone networks in Kazakhstan, Tajikistan, and Turkmenistan.⁹¹
- *Hydroelectricity:* Chinese companies have entered partnerships with Central Asian states in the interest of having hydroelectricity delivered to Xinjiang or exported to countries farther south, including Afghanistan and Pakistan.⁹²
- *Uranium:* Uranium plays an important role in China's economic partnership with Kazakhstan. After signing several cooperation agreements and strategic partnerships between Chinese companies and Kazatomprom, the Kazakhstani national company, Kazakhstan became China's main foreign supplier of uranium. Kazakhstan has agreed to supply a total of about 24,000 tons of uranium to China by 2020.⁹³ China is also active in Uzbekistan: in 2009, the Guangdong Nuclear Uranium Corp. signed an agreement with the State Committee of Geology and Mineral Resources to establish a joint venture for the exploration of deposits in the Navoy region, whose uranium will be commercialized by the Chinese company.⁹⁴
- *Cement:* Chinese firms are involved in the construction of many large cement factories in Tajikistan and Kyrgyzstan. Beijing has also proposed small-scale projects for the construction of mini-mills and factories for the production of bricks.⁹⁵

It is worth noting that road and rail infrastructure have military applications as well.* Many of China's highways and rail systems have been designed to military specifications.⁹⁶ China's new highway and rail projects in Xinjiang—a large yet remote region with a smaller and more dispersed military presence relative to China's eastern regions⁹⁷—likely are being designed with these applications in mind.

China's promise of enhanced interconnectedness and improved infrastructure leaves Central Asian states with a dilemma. Although they welcome Chinese trade and investment, many Central Asians—particularly in Kazakhstan and Kyrgyzstan, which have long borders with China—are wary of Chinese people migrating to the region. Statistics on Chinese migration patterns to Central Asia are unreliable, but Dr. Laruelle testified that “figures are mod-

*For example, the U.S. Strategic Highway Coordinator Network, consisting of more than 1,700 miles of corridors and interstate highways planned jointly by the U.S. Department of Defense and U.S. Department of Transportation, was designed to facilitate rapid deployment of troops and equipment for national security purposes. Rodney E. Slater, “The National Highway System: A Commitment to America's Future,” *Federal Highway Administration*, 1996.

est.”⁹⁸ Nevertheless, Dr. Laruelle noted anxieties persist because the “potential for a Chinese ‘migration invasion’ into Central Asia would mean a fundamental undermining of the new states’ autonomy. Whereas the region has fewer than 60 million inhabitants, an over-populated China contains over 1.3 billion people.”⁹⁹ As a result, most Central Asian countries have enacted strict visa restrictions for Chinese travelers.¹⁰⁰ A Kazakhstani foreign policy analyst with whom the Commission met in Almaty noted that Kazakhstan has been reluctant to incentivize Chinese tourism to the country for fear that Chinese tourists would overstay their visas, causing Kazakhstan to “become too dependent on Chinese tourism for its economy and thus lose leverage to Beijing.”¹⁰¹

China’s Security Engagement with Central Asia

As with its economic engagement, China crafts its approach to security relations with Central Asian countries with the domestic security situation in Xinjiang in mind. China-Central Asia security cooperation is designed largely to address shared concerns about terrorism and extremism. According to Zhang Xinfeng, one of China’s top officials with responsibility for Central Asia, “Terrorism attacks in Xinjiang are closely related to the activities of terrorist, separatist, and extremist forces in Central Asia, so joint anti-terrorist efforts from the [Central Asian] countries are crucial to China’s stability.”¹⁰² This cooperation is facilitated in part by Central Asian and Chinese governments’ shared willingness to use repression and government control—in varying degrees—to defend sovereignty and maintain stability.¹⁰³

The Shanghai Cooperation Organization

The SCO, established in 2001 by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan (and which agreed to admit India and Pakistan as new members in June 2015), is the primary vehicle for China’s security engagement with Central Asia.* Although the SCO ostensibly concerns itself with a wide range of issues, including economic cooperation, energy ties, counternarcotics, tourism, cultural exchanges, and international affairs, counterterrorism is the stated primary focus of the organization.¹⁰⁴ One of the SCO’s foundational documents, the 2005 Concept of Cooperation, states SCO cooperation on counterterrorism focuses on developing unified political, legal, and law enforcement approaches to counterterrorism; conducting joint counterterrorism exercises and developing counterterrorism personnel; sharing information about terrorists and suspected terrorists and developing shared capacity for counterterrorism research and analysis; and collaborating with civil society and mass media to combat terrorism, among other activities.¹⁰⁵ In some respects, this list of objectives remains aspirational, as illustrated below.

* Turkmenistan, in keeping with its isolationist foreign policy, is the only Central Asian country that is not a member of the SCO. There currently are four SCO observers (Afghanistan, Belarus, Iran, and Mongolia), six dialogue partners (Armenia, Azerbaijan, Cambodia, Nepal, Sri Lanka, and Turkey), and three guests (the Association of Southeast Asian Nations, Turkmenistan, and the Commonwealth of Independent States). The SCO’s predecessor, the Shanghai Five (China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan), was established in 1996.

Aside from frequent joint statements and regular high-level meetings, military exercises are the most visible manifestation of the SCO's activities. China has participated in 15 military drills or exercises under the auspices of the SCO since 2002, when China conducted its first-ever military exercise with another country, Kyrgyzstan.¹⁰⁶ These exercises always include China and at least one other SCO country, and have included anywhere from a few hundred to 10,000 personnel.¹⁰⁷ All but one of these exercises have focused explicitly on counterterrorism; various activities have included apprehending illegal border crossers, rescuing hostages, recovering a hijacked airplane, subduing ethnic conflict, engaging in close combat, and conducting reconnaissance, electronic warfare, and psychological warfare.¹⁰⁸

On the whole, these exercises are not particularly sophisticated, and observers point out that they are largely scripted events with minimal interoperability demonstrated by troops from the participating countries. Interoperability is hindered in part by language barriers: Russian is the common operating language used in the exercises, requiring the Chinese participants to rely heavily on translators, which can be time consuming and cumbersome.¹⁰⁹ Nevertheless, the SCO has been a valuable vehicle for the People's Liberation Army (PLA) to gain much-needed experience.* Close to half of China's military exercises with other countries have been held under SCO auspices, enabling the PLA to interact with political and military leadership of other countries; operate in unfamiliar environments outside China; address linguistic, cultural, and other logistical barriers to effective communication with foreign troops; and practice battlefield tactics and combat methods.¹¹⁰ The PLA has also achieved a number of firsts in its SCO exercises: in its Co-ordination-2006 exercise with Tajikistan, the PLA Air Force for the first time transported troops across the Chinese border; and in the Peace Mission-2007 exercise, the PLA conducted its first joint land-air exercise outside Chinese territory.¹¹¹

The SCO's Regional Anti-Terrorism Structure

The SCO's only permanent operational entity, the Regional Anti-Terrorist Structure (RATS) headquartered in Tashkent, Uzbekistan, is the organization's clearinghouse for exchanging information on suspected terrorists and promoting common counterterrorism practices. RATS is notoriously opaque, but is known for its role in the extradition of suspected terrorists to and from member countries, and for its secret "black list" of approximately 1,000 individuals and 40 organizations.¹¹² In their 2012 book, *The Chinese Question in Central Asia: Domestic Order, Social Change, and the Chinese Factor*, Drs. Laruelle and Peyrouse write:

*The PLA was joined in several of these exercises by People's Armed Police border troops, anti-terror reconnaissance units, and militia personnel. Dennis J. Blasko, "People's Liberation Army and People's Armed Police Ground Exercises with Foreign Forces, 2002–2009," in Roy Kamphausen et al., *The PLA at Home and Abroad: Assessing the Operational Capabilities of China's Military*, Strategic Studies Institute, 2010, 384–387.

The SCO's Regional Anti-Terrorism Structure—Continued

It seems that on several occasions the Chinese authorities have requested their Central Asian partners to arrest and deport some Uyghur opponents, and when alleged Islamists cross the border, they are followed by the RATS joint procedures set up to monitor them. However, it is difficult to say whether this type of information exchange has been made possible thanks to RATS, or rather whether it took place in a bilateral framework. Truly sensitive matters, such as the expulsion of Uyghur opponents to China, are generally managed at the highest levels of bilateral relations.¹¹³

Testifying in 2011 to the Tom Lantos Human Rights Commission of the U.S. House of Representatives, Martin Scheinin, then UN special rapporteur on human rights and counterterrorism, asserted RATS' activities (and those of the SCO in general) pose serious human rights concerns.¹¹⁴ For example, the SCO charter conflates acts of extremism, separatism, or terrorism, and considers all three to be extraditable offenses, whereas international law follows the principle that only acts of terrorism—not to include crimes related to extremism or separatism, no matter how serious—may be targeted by counterterror legislation.¹¹⁵ China regularly pressures neighboring countries to detain and deport Chinese Uyghurs (many of whom are refugees) back to China. China often refers to these individuals as criminals or terrorists, but in many cases they appear to be ordinary citizens seeking economic opportunity or fleeing religious and cultural repression in China. Once back in the country, these forcibly returned individuals often “disappear” into China's secretive security apparatus.¹¹⁶

China is by far the dominant actor in the SCO, and its priorities drive the organization's agenda.¹¹⁷ The SCO serves three main purposes for China: First, in adopting China's “three evils” construct¹¹⁸ and sharing its heavy-handed approach to ethnic unrest, the SCO lends a veneer of international legitimacy to China's brand of stability maintenance.¹¹⁹ Second, it provides China the opportunity to use intelligence and resources from neighboring countries to inform and augment its domestic security activities in Xinjiang. Third, as the first intergovernmental organization with Chinese leadership, the SCO provides Beijing an avenue to demonstrate regional leadership and goodwill. In particular, it provides an opportunity for China to seek a larger security role in what has long been Russia's sphere of influence.

For all its utility to China, the SCO has avoided taking on some of the region's most pressing challenges, like cross-border water conflicts, civil unrest, and participating in postwar Afghanistan reconstruction efforts.¹²⁰ The reluctance of SCO countries to be perceived as interfering in the internal affairs of other countries also contributes to its ineffectiveness. According to Drs. Laruelle and Peyrouse, even RATS, arguably the most tangible manifestation of

SCO action, is apparently viewed by China as “an empty shell with virtually no efficacy.”¹²¹ As SCO membership is set to expand with the inclusion of regional rivals India and Pakistan, achieving consensus on sensitive issues may be even more difficult.¹²² Moreover, Russia actively seeks to undermine the efficacy of the SCO (see “China in Russia’s Backyard?” later in this section).

China’s Bilateral Security Cooperation with Central Asian Countries

China’s security engagement with Central Asian countries is limited outside the umbrella of the SCO. This is due in large part to China’s preference to conduct even its bilateral security engagements with these countries through the SCO, presumably to lend substance to the organization and avoid creating the impression that China is unilaterally pursuing self-interested objectives in the region.¹²³ When bilateral engagement does occur, it is usually in the form of border security cooperation, arms sales, and military education and training.

China and Central Asian countries sometimes cooperate on non-traditional security issues like drug trafficking and organized crime. For example, Chinese and Kazakhstani border security forces have conducted drug-seizing operations along their shared border since 2008 (in 2012, 70 percent of drugs in Urumqi were from South and Central Asia).¹²⁴ Efforts in this area remain minimal, however, despite hopeful pronouncements during bilateral meetings that the two sides will enhance cooperation on drug trafficking.¹²⁵ China also cooperates with Tajikistan on counter-narcotics (Tajikistan is a major conduit for opium trafficked from Central and South Asia to China).¹²⁶ In 2014, a joint force of more than 5,000 Tajikistani and Chinese police seized 181 kilograms of heroin and other illegal drugs and arrested 38 suspected drug manufacturers and dealers.¹²⁷

Reports indicate China allocated approximately \$40 million worth of military aid (including equipment sales, construction of military facilities, loans for purchases of military equipment, and other forms of military assistance) to Central Asia from the 1990s to 2014. Equipment transfers have mostly included small arms (such as sniper rifles), communications equipment, vehicles, mobile scanning equipment to monitor border crossings, and other unspecified military hardware.¹²⁸ According to U.S. diplomats who met with the Commission in Uzbekistan, China is among Uzbekistan’s biggest suppliers of security-related products, which since 2013 have included surface-to-air missiles and at least one unmanned aerial vehicle (the cost of which is not included in the aforementioned \$40 million figure).¹²⁹ China’s arms sales to Central Asia represent a small share of China’s global arms sales, and pale in comparison to Russian arms sales to the region.¹³⁰ China also provides military education and training to Central Asian troops, although language barriers limit the efficacy of such interactions.¹³¹

China’s ability to expand its security presence in Central Asia may grow over time, particularly if a new draft counterterrorism law under consideration by China’s National People’s Congress passes. The draft law stipulates that the PLA or China’s police force could send troops outside the country to perform counter-

terror missions with a host country's approval.¹³² If passed, this law could have broad applicability in Central Asia given China's terrorism concerns there and existing structures for collaboration and information sharing between Beijing and Central Asian capitals.

The Question of Afghanistan

Since 2012, China has pursued an increasingly proactive policy toward Afghanistan. This marks a decisive shift from previous years, during which China largely avoided engagement with Afghanistan.*¹³³

China for several decades perceived Afghanistan through the lens of ongoing competition with Russia and the United States for influence in Central Asia, though China's engagement in the country was minimal.† After September 11, 2001, the threat of terrorism emanating from Afghanistan and the consequent U.S. military presence in the region caused Afghanistan's strategic importance to China to grow; but even then, bilateral engagement remained limited. Since 2012, however, China appears to have come to terms with the fact that creating conditions for stability in Xinjiang requires it to take greater responsibility for the security and stability of Afghanistan as the United States and International Security Assistance Force withdraw from the country and the region.¹³⁴ Still, China's security engagement with Afghanistan is in a nascent stage.

Drivers of China's Shifting Approach to Afghanistan

As with its Central Asian neighbors, China seeks to ensure terrorist or other groups in Afghanistan do not contribute to instability in Xinjiang or provide a safe haven for militant Uyghurs. Estimates of militant Uyghurs operating from Afghanistan range from the tens to the low hundreds. They affiliate largely with the Islamic Movement of Uzbekistan, a terrorist organization that operates primarily from Afghanistan.¹³⁵ One senior Afghan Taliban commander told Reuters in 2014 that “[Chinese Uyghurs] live here with us but are always concerned about their people and mission in China. They are nice people, good Muslims and the best fighters.”¹³⁶ It is unclear, though, whether Taliban-affiliated Uyghurs have participated in any terrorist activity in China.

Beyond the immediate concern related to China's Uyghurs, Beijing is increasingly worried the International Security Assistance Force's departure from Afghanistan will leave the country in chaos, and fears the potential implications for stability in Afghanistan, South and Central Asia, and—ultimately—China.¹³⁷ As noted above, however, China had been reluctant to play any role in Afghanistan, largely rebuffing requests by the international community to contribute to security activities in the country.¹³⁸ This was

* China had robust relations with Afghanistan's *mujahedeen* in the 1980s, but Afghanistan was largely absent from China's foreign policy in the 1990s. Andrew Small, *The China-Pakistan Axis: Asia's New Geopolitics*, Oxford University Press, 2015, 123.

† China's Afghanistan policy also is closely tied to its relations with Pakistan. In his 2015 book, *The China-Pakistan Axis: Asia's New Geopolitics*, Andrew Small asserts that for several decades, “much of Beijing's Afghanistan policy was effectively run through Pakistan.” Andrew Small, *The China-Pakistan Axis: Asia's New Geopolitics*, Oxford University Press, 2015, 162.

in large part due to deep skepticism and fears of encirclement as the U.S. military quickly established a robust presence in Afghanistan and Central Asia in the early 2000s. After the Obama Administration announced its plan to gradually withdraw forces from the region in 2011, China's concerns shifted from the U.S. presence to the uncertain future of a post-occupation Afghanistan.¹³⁹ Starting in 2012, China began to signal greater willingness to contribute to Afghanistan's security. Recent engagement in the region includes:

- In September 2012, then Chinese Minister of Public Security and Politburo Standing Committee member Zhou Yongkang traveled to Afghanistan—the highest-level visit by a Chinese official since 1966—and pledged China would train about 300 Afghan police officers over the next four years.¹⁴⁰
- Also in 2012, China and the United States began an annual collaborative program to train Afghan diplomats in either Beijing or Washington, DC.¹⁴¹ In 2013, bilateral cooperation became more institutionalized, with the two sides establishing regular meetings on Afghanistan through the biannual Strategic & Economic Dialogue.¹⁴²
- During Afghan President Ashraf Ghani's 2014 state visit to Beijing (his first foreign trip after becoming president), Chinese Foreign Minister Wang Yi pledged, "We will help Afghanistan to enhance its counterterrorism capabilities."¹⁴³ It is unclear, however, what form this assistance will take. That same year, Beijing appointed a special envoy for Afghanistan under the Ministry of Foreign Affairs.¹⁴⁴
- In November 2014, China sent a military equipment package worth \$1 million to the Afghan Ministry of Interior Affairs. The equipment package included 17 types of military equipment to increase Afghan police force capabilities and assist them in seizing narcotics and drugs.¹⁴⁵
- In addition to strengthening bilateral diplomatic relations, China increasingly seeks to engage Afghanistan in multilateral contexts, primarily via the SCO-Afghanistan Contact Group (established in November 2005).¹⁴⁶ Afghanistan became an observer to the SCO in 2012.¹⁴⁷
- Chinese Ambassador to Afghanistan Deng Xijun remarked in November 2014 that China supports "the 'Afghan-led and Afghan-owned' peace and reconciliation process,"¹⁴⁸ referring to Afghanistan's internal peace process between the government and opposition groups, including the Taliban, with which Beijing is increasingly engaging.*¹⁴⁹ China in the past year has publicly indicated its interest in hosting or mediating political talks between the Afghan civilian government and the Taliban, and in July 2015 participated (along with the United States and Pakistan) in the first of a series of planned talks between the two sides.¹⁵⁰ It is unclear, however, whether China can

*A high-level Taliban delegation visited Beijing as recently as December 2014, according to media reports. Nathan Hodge, Habib Khan Totakhil, and Josh Chin, "China Creates New Avenue for Afghan Peace Talks," *Wall Street Journal*, January 6, 2015.

provide the diplomatic prowess and leadership required to make meaningful progress toward reconciliation,¹⁵¹ especially given the death—reported in late July 2015—of longtime Taliban leader Mullah Omar, who had been Beijing’s most important contact with the group.¹⁵²

China’s relationship with the Taliban is complicated. Before September 11, 2001, Beijing maintained good relations with the Afghan Taliban, offering engagement in exchange for the Taliban’s promise that it would not provide cover or assistance to Chinese Uyghurs engaging in militant or extremist activities.¹⁵³ Following the September 11 attacks and the start of the U.S. war in Afghanistan, China became more circumspect in its dealings with the Taliban, but it continued to quietly maintain ties.¹⁵⁴ Now that reconciliation between Kabul and the Taliban is a stated priority for the Afghan government, China is reaching out as well, not least of all because it seeks a favorable position in the event the Taliban emerges as a major political player in Afghanistan.¹⁵⁵

China also has economic interests in Afghanistan, but instability and violence have limited investment so far. China’s two major projects in the country—the Aynak copper mine and the Amu Darya oil field—have significant economic potential but have suffered major delays in the past several years due to instability and terror threats.¹⁵⁶ Chinese investment in the Aynak copper mine, for instance, has stalled due to an uptick in violence—including rocket attacks and improvised explosive devices—in nearby areas in 2014.¹⁵⁷ China’s economic interests in Afghanistan are thus likely to remain aspirational until the security environment improves considerably.

China in Russia’s Backyard?

One of the consequences of China’s growing influence in Central Asia has been the relative weakening of Russia’s preeminence in the region. This has particularly been the case in the economic realm, where China is establishing itself as a provider of development assistance and a reliable consumer of Central Asian resources as Russia’s relative economic power declines. China’s security presence is growing as well, though Russia remains the region’s dominant security actor and cultural influence.¹⁵⁸

Russia has been reluctant to embrace China’s economic plans for the region, seeing in them the diminution of its own influence over its former republics in Central Asia. During the 2008 financial crisis, China surpassed Russia as the region’s leading trading partner, and Russia’s recent economic troubles have contributed to the perception that China, not Russia, is the “regional economic stabilizer.”¹⁵⁹ Russia has other reasons to dislike China’s growing economic presence. According to Erica Downs, senior analyst at Eurasia Group, China’s investment in Central Asia’s energy sector has contributed to the “erosion of Russian influence over Central Asian states by providing them with non-Russian export routes and sources of financing.”¹⁶⁰

Russia has been actively promoting its own regional economic integration effort, the Eurasian Economic Union, which comprises Russia, Belarus, Kazakhstan, Armenia, and—as of May 2015—Kyr-

gyzstan. Still, Moscow has found it prudent to link this effort with China's economic plans for the region. In May 2015 during a summit in Moscow, Russian President Vladimir Putin and President Xi signed a declaration on cooperation between the Eurasian Economic Union and China's Silk Road initiative.¹⁶¹ As part of this cooperation, China agreed to invest \$5.8 billion in a \$21.4 billion project to extend the Moscow-Kazan high-speed railway through Kazakhstan to China.¹⁶²

The Eurasian Economic Union had an unexpected benefit for China: because it created a customs union among its members that took effect in January 2012, the Eurasian Economic Union eliminated lengthy inspections at each border; cargo traveling from China needs to be inspected only once upon entering the customs union—through Russia or Kazakhstan—and can proceed to Europe unimpeded.¹⁶³

The SCO is perhaps the most compelling illustration of emerging Sino-Russian competition in Central Asia.¹⁶⁴ Dr. Cooley testified to the Commission that “Russia has at every point dragged its feet [in] signing off on major Chinese economic initiatives, especially through the SCO.”¹⁶⁵ For example, Russia prevented China from creating an SCO emergency crisis fund in the wake of the global financial crisis (though China went on to provide unilateral assistance to several Central Asian countries, as noted earlier) and blocked China from establishing an SCO development bank.¹⁶⁶

Similarly, Russia has sought to downplay the SCO's role in the Central Asian security realm to maintain its place as the region's top security provider.¹⁶⁷ Niklas Swanström, director of the Institute for Security and Development Policy in Stockholm, Sweden, told the Commission that China's SCO leadership “has arguably only been accepted by Russia for the purpose of monitoring the Chinese expansion into the region.”¹⁶⁸ By virtue of its legacy of military influence during the Soviet era, Russia's security ties with Central Asia remain robust* (Russia has military bases in Kazakhstan, Kyrgyzstan, and Tajikistan and is the primary source of military equipment and training for Central Asian countries).¹⁶⁹ Further, the Russia-led Collective Security Treaty Organization has been the dominant security organization in the region, a position Moscow does not wish to cede to a China-led organization.† Yet China and Russia both seek to downplay this growing rivalry. China in particular is careful not to create the impression that it has military ambitions in Central Asia, and recognizes that attracting suspicion from the Central Asian countries and Russia would tarnish its reputation.¹⁷⁰ According to Mr. Pantucci, “Whenever Chinese officials and experts talk of Russia in a Central Asian context, they go to great lengths to highlight the fact that they would do nothing that would contradict their Russian counterparts' inter-

* For example, the Baikonur Cosmodrome—the launching site of Sputnik and the world's first and largest space launch facility—was established in 1955 in what is now Kazakhstan. Russia, which now leases Baikonur from Kazakhstan, continues to operate it.

† Established in 1992, the Collective Security Treaty Organization is a Russia-led intergovernmental military alliance among Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

ests in Central Asia.”*¹⁷¹ For its part, Moscow avoids publicly expressing dissatisfaction with the SCO or Beijing’s role in it.¹⁷²

Central Asian capitals generally welcome this emerging competition for influence. All of these countries are adept at extracting gains by playing the two big powers (in addition to the United States and Europe) off each other.¹⁷³ For example, the opening of the Central Asia-China natural gas pipeline broke Russia’s monopoly on transit of natural gas in the region, and allowed Turkmenistan to gain leverage in negotiations with Russia over prices and volume of gas supplies.¹⁷⁴ One Kazakhstani government researcher told the Commission, however, that China’s new economic initiatives in the region can sometimes “put Kazakhstan in a difficult place,” and “[ask] Astana to choose China over Russia.”¹⁷⁵

Enhanced Sino-Russian competition in Central Asia occurs in the context of a growing disparity of power between the two countries more generally, and the emergence of a relationship in which Russia is highly dependent on China, a reality of which Moscow is painfully aware. According to the RAND Corporation, “Many Chinese analysts view Russia as a weak great power that is likely to weaken even further in the future.”¹⁷⁶ In the economic realm, Russia relies heavily on China as a market for its oil and natural gas exports.¹⁷⁷ Particularly after its intervention in Ukraine, Russia has been economically and politically isolated and forced to depend on China to withstand economic sanctions and alienation by the international community.¹⁷⁸ Still, ethnic Russians are a prominent group in populations across Central Asia,† and Russia’s deeply rooted cultural influence in the region—through language, media, and shared history—cannot be underestimated.¹⁷⁹ For example, as Commissioners heard during their 2015 trip to Kazakhstan, most Kazakhstanis obtain their news from Russian television and newspapers.¹⁸⁰

Implications for the United States

The United States has identified “four critical areas of cooperation and concentration in Central Asia—security cooperation, economic ties, promotion of human rights and good governance, and efforts to bolster each country’s sovereignty and independence.”¹⁸¹ From an economic perspective, China’s efforts to promote development and connectivity in Central Asia may offer opportunities for U.S.-China cooperation.

To its Central Asian neighbors, China emphasizes the “win-win” aspect of its economic engagement with the region. To be sure, creation of new infrastructure in landlocked Central Asia has broad benefits, such as improved transportation and communication, which could ultimately lead to greater integration of the region into the global economy. But the focus on infrastructure aids China’s own economic interests first: the new trade routes will serve pri-

* For example, Xinjiang public security officials stressed to the Commission that China’s Silk Road Economic Belt did not affect China-Russia relations or Russian economic interests in the region. Border Department, Xinjiang Foreign/Public Affairs Office, Xinjiang Provincial Government, discussion with Commission, Ürumqi, China, July 24, 2015.

† In parts of Kazakhstan, for example, ethnic Russians constitute as much as half of the population. Robert Coalson, “Putin Pledges to Protect All Ethnic Russians Everywhere. So Where Are They?” *Radio Free Europe*, September 20, 2015.

marily to transport Central Asian oil and natural gas to China, while facilitating export of Chinese goods west, ultimately reaching Europe. Chinese companies are expected to be big beneficiaries of the new push for infrastructure building in Central Asia, especially as it will absorb China's excess capacity in industries such as steel and heavy machinery.¹⁸²

By building roads and railways, purchasing the region's natural resources, and promoting the use of the RMB, China is ultimately tying its Central Asian neighbors' prosperity to their relationship with China, potentially creating an unhealthy dependency. Indeed, there have been instances of public backlash in some countries, driven by lack of opportunities and fear of being overwhelmed by the Chinese presence.¹⁸³ For example, as Commissioners heard during their fact-finding trip to Kazakhstan, China often uses its own workers for projects, which increases resentment of China and, on occasion, has led to minor clashes between locals and the Chinese workers.¹⁸⁴ Environmental concerns also inform these fears, as in the case of Kyrgyzstan, which temporarily suspended operations at a Chinese-built oil refinery in 2014, after public protests over pollution.¹⁸⁵ Xinjiang-based researchers told the Commission that Beijing is becoming more sensitive to these concerns, however, and is trying to address them by hiring more local workers at Chinese embassies in the region; establishing more cultural exchanges, including opening Confucius Institutes and "build[ing] bridges" between Uyghurs in Xinjiang and their counterparts in Central Asia; and highlighting Chinese investments that bring economic benefits to the region.¹⁸⁶

It is not clear if the economic benefits from Chinese engagement extend beyond Chinese companies getting valuable tenders and rent-seeking by local elites. Central Asian countries have severe corruption problems. According to Transparency International's 2014 Corruption Perceptions Index, of 175 countries and territories surveyed, Central Asian states were some of the most corrupt.* Growing economic linkages with China may exacerbate the situation, since Chinese enterprises are perceived to be very corrupt.¹⁸⁷ According to Transparency International's 2011 Bribe Payers Index, of 28 countries surveyed, China was the second most likely country (after Russia) to have firms that pay bribes while operating abroad.¹⁸⁸ In his book on Central Asia, Dr. Cooley documented multiple instances of corrupt dealings by Chinese companies in Central Asia, centered primarily on getting access to natural resources.¹⁸⁹ The Commission was told during its trip to Kazakhstan that Chinese companies are "more than willing to pay bribes" to close business deals in Kazakhstan.¹⁹⁰

When it comes to U.S. goals of advancing human rights and good governance in Central Asia, China's presence poses several challenges. China, with its poor record on human rights, transparency, and corruption, is unlikely to be a force for good governance in Central Asian countries, which already have similarly poor records

*The Corruption Perceptions Index ranks countries and territories based on how corrupt their public sector is perceived to be. Ranked from 1 (very clean) to 175 (highly corrupt), Central Asian states fall at the corrupt end of the spectrum: Kazakhstan (126), Kyrgyzstan (136), Tajikistan (152), Uzbekistan (166), and Turkmenistan (169). Transparency International, "Corruption Perceptions Index 2014: Results."

in these areas. As Dr. Cooley pointed out in his testimony to the Commission, Chinese investment tends to focus on “hardware” rather than “software”:

*The current assumption of Chinese leaders is that better “hardware,” in the form of modern infrastructure, will spur economic development and improve market-oriented practices. But the region is challenged as much by its poor “software”—particularly corruption and rent-seeking—at all levels of government. We should not underestimate the extent of these governance challenges, for Central Asia today remains one of the [most] trade-unfriendly regions in the world.*¹⁹¹

This poses a direct challenge to U.S. and Western efforts to encourage the adoption of transparent and democratic processes in Central Asia. According to Dr. Cooley, for governments in the region—all of which exhibit varying degrees of authoritarianism—the presence of Chinese patronage creates an opportunity “to push back and bargain against the conditions and terms demanded of them by more traditional Western lenders.”¹⁹² One consequence of this is that U.S. companies are disincentivized from trading with and investing in this risky environment, which in turn weakens overall U.S. influence in the region and reinforces Central Asian countries’ preferences for working with Chinese companies.¹⁹³

In the security realm as well, China’s lack of transparency, heavy-handed approach to securing its western frontier, and preference for security and stability over fundamental human rights and religious freedom could have lasting impacts on the direction of Central Asia’s development.

It remains to be seen how China’s Silk Road initiatives will impact U.S. objectives in the region, and whether China’s Silk Road Economic Belt and the United States’ “New Silk Road” initiative will complement or compete with each other. Currently, China’s well-funded projects appear to be outshining the United States’ initiative. The U.S. program, announced by the Obama Administration in 2011, aims to foster communication and economic growth between Central Asia and Afghanistan, but it receives little attention and limited resources.¹⁹⁴ For example, the U.S. New Silk Road initiative’s cornerstone project, the Turkmenistan-Afghanistan-Pakistan-India natural gas pipeline, has yet to attract any energy companies. Notably, the U.S. New Silk Road’s central goal is to integrate Afghanistan with the rest of the region, whereas China has made no effort to incorporate Afghanistan into its many regional integration efforts. Part of the challenge the United States faces in realizing this goal is Central Asian countries’ desire to distance themselves from Afghanistan, which they perceive to be a highly unstable neighbor.¹⁹⁵

U.S. State Department officials told the Commission that the United States and China have held “remarkably candid and friendly consultations” on potential areas of cooperation in Central Asia,¹⁹⁶ and China’s ambassador to Kazakhstan told the Commission that Beijing “is ready to foster close cooperation with the United States in Central Asia.”¹⁹⁷ In an influential 2012 article urging China to “march westwards” and engage more with Central

Asia, Wang Jisi, dean of the School for International Studies at Beijing's Peking University, pointed out that "if China 'marches westwards,' the potential for U.S.-China cooperation in the fields of investment, energy, terrorism, non-proliferation, and the maintenance of regional stability will increase."¹⁹⁸ Indeed, China and the United States appear to have converging interests in the region: enhancing stability, promoting economic growth, and discouraging patterns of extremism, militancy, and terrorism. Nevertheless, the two countries' preferred means to reach these similar ends vary greatly. On the whole, Washington's policies in Central Asia seek to encourage the development of good governance and discourage authoritarianism and corruption. China's preferred approach appears more appealing to Central Asian leaders, many of whom share China's views on counterterrorism and understand China will support their efforts to remain in power and ignore corruption and human rights violations. This divergence in principles both undermines U.S. policy in Central Asia and will make it difficult for China and the United States to cooperate, particularly on counterterrorism, where Chinese practices may not be morally or legally compatible with U.S. practices and international standards.

Conclusions

- Although engagement with Central Asia has been a longstanding endeavor for the Chinese government, Chinese President Xi Jinping has recently elevated the region in China's foreign policy in the form of the Silk Road Economic Belt initiative, which envisions a massive network of trade and infrastructure connecting China with Europe by way of Central Asia.
- China's overarching objective for engagement with Central Asia is to encourage economic development and stability in its westernmost province, Xinjiang, which shares an extensive border with Kazakhstan, Kyrgyzstan, and Tajikistan. Chinese leaders perceive ethnic tensions, separatist movements, and related violent activity in Xinjiang to be among the greatest security threats facing China today, and fear patterns of religious extremism and terrorism in Central Asia enable this unstable environment. Therefore, Beijing uses its relations with Central Asian governments to seek to neutralize and eradicate these perceived threats.
- China's security cooperation with Central Asia is designed to augment domestic security policies in Xinjiang, and therefore focuses on counterterrorism and information sharing about extremist and terrorist groups and individuals. China's security engagement with the region occurs primarily via the Shanghai Cooperation Organization, which China uses as a tool to influence and demonstrate leadership in the region, but which has yet to play a significant security-providing role.
- Although the primary objective of China's economic engagement with Central Asia is to promote the security and development of Xinjiang, this domestic-oriented policy also promotes China's overall economic growth by (1) allowing China to diversify its

energy portfolio by gaining access to Central Asian resources, (2) developing new markets for its companies in industries experiencing overcapacity at home, and (3) engendering goodwill toward its policies in the region.

- China's trade with the region is growing rapidly, but it is very unbalanced, with China exporting finished goods and importing natural resources. Despite the strength of its energy exports, Central Asia as a whole tends to run trade deficits with China. For most countries in the region, China is the biggest trade partner. Kazakhstan, the region's largest economy, is the biggest recipient of Chinese trade, investment, and loans. Through its massive investments in Central Asia's infrastructure—including roads, railways, hydroelectricity, and telecommunications—China has also become a de facto provider of development assistance.
- Chinese leaders look to oil- and natural gas-rich Central Asian countries to diversify China's energy sources, though the volumes involved will not be sufficient to overcome China's dependence on traditional sources of hydrocarbon imports, particularly Middle Eastern oil. One notable exception is Turkmenistan, which in recent years has emerged as China's largest supplier of natural gas, accounting for 44 percent of China's imports in 2014.
- As China's influence in Central Asia grows, it increasingly is competing with Russia, which has long dominated the region in the economic, security, and cultural realms. China now dominates in the economic realm, though Russia is still the primary military and cultural power in the region. Beijing, which seeks stable ties with Moscow, avoids creating the perception of overt competition between the two countries.
- After several years of relative disinterest, China has been increasing engagement with Afghanistan since 2012. As with Central Asia, China fears extremist and terrorist elements in Afghanistan contribute to instability in Xinjiang. Anticipating the U.S. withdrawal from Afghanistan, China is starting to realize it will have to involve itself in the country's reconstruction and stabilization to preserve stability and security in Xinjiang.
- China and the United States appear to share similar priorities in Central Asia, such as promoting economic growth and connectivity and preventing the spread of extremism and terrorism. Yet Beijing and Washington pursue these goals in very different ways, which could make meaningful cooperation in the region challenging. In particular, while the United States seeks to encourage democratization and discourage corruption in government and business, China supports the region's authoritarian governments and is more tolerant of the region's widespread corruption.

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SECTION 2: CHINA AND SOUTHEAST ASIA

Introduction

China's relations with Southeast Asia are complex and dynamic. Some of China's strongest and weakest bilateral relationships are with Southeast Asian countries, and Southeast Asia is a useful prism through which to observe how Beijing perceives its place in the Asia Pacific and in the world. Currently, China-Southeast Asia relations are characterized by seemingly contradictory trends: China is aggressively advancing its territorial claims in the South China Sea at the expense of its Southeast Asian neighbors while simultaneously seeking to strengthen relations with the region, often through economic diplomacy.¹

Since December 2013, China has expanded seven land features it controls in the Spratly Islands, which the Philippines and Vietnam also claim, by more than 2,900 acres—the equivalent size of more than 2,000 football fields.² The scale and speed of these activities have far outpaced the activities of other claimants on the land features they control, and China intends to use its enhanced land features for military and other purposes. At the same time, however, China has sought to improve relations with Southeast Asian countries, primarily through economic initiatives and engagement with the Association of Southeast Asian Nations (ASEAN).^{*} China established the Asian Infrastructure Investment Bank (AIIB), which all the countries in ASEAN joined, and the “21st Century Maritime Silk Road,” a massive (and thus far largely conceptual) initiative that aims to enhance regional connectivity through infrastructure and other projects, traversing all of Southeast Asia and beyond once it is established.³ China appears to view economic cooperation through such initiatives as a way to ease tensions arising from China's actions in the South China Sea.⁴ Moreover, China uses its engagement with ASEAN as a means of improving its relations with Southeast Asian countries and trying to reassure them that it seeks to be a peaceful and cooperative partner, while also promoting its own economic development.⁵ Among other ASEAN and ASEAN-related fora, China participates annually in the ASEAN-China Summit, the ASEAN Plus Three Summit, the ASEAN Regional Forum, and the East Asia Summit.[†] At the

^{*}ASEAN is comprised of Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

[†]In these fora, representatives of the member countries discuss regional and international issues and promote economic, political, and security cooperation and people-to-people and cultural exchange, among other things. The ASEAN-China Summit is attended by the heads of state of ASEAN member countries and China's premier. The ASEAN Plus Three Summit consists of ASEAN member countries and China, Japan, and South Korea. The ASEAN Regional Forum is comprised of the ASEAN Plus Three member countries as well as Australia, Bangladesh, Canada, the EU, India, Mongolia, New Zealand, North Korea, Pakistan, Papua New Guinea, Russia, Sri Lanka, Timor-Leste, and the United States. The East Asia Summit consists of the ASEAN Plus Three member countries as well as Australia, India, New Zealand, Russia,

China-ASEAN Summit in November 2014, Chinese Premier Li Keqiang announced that China would provide loans and development aid to Southeast Asia and take further steps to develop the China-ASEAN Investment Cooperation Fund, which is focused on investment in natural resources, energy, and infrastructure in ASEAN countries.⁶ He also promoted the idea of a “China-ASEAN Treaty on Good Neighborliness, Friendship and Cooperation,” which he said would “provide an institutional framework and legal guarantee for the peaceful coexistence of both sides from generation to generation.”⁷

This section explores this dynamic of competition and cooperation, discussing the South China Sea disputes, China-Southeast Asia economic relations, and China’s security cooperation with Southeast Asia. The findings in this section are based on a May 2015 Commission hearing on the security, diplomatic, and economic elements of China’s relations with Southeast Asia; the Commission’s July 2015 fact-finding trip to China and Vietnam; and open source research and analysis.

The South China Sea Disputes: New Developments and China’s Relations with the Southeast Asian Claimants

Among security and geopolitical challenges in Southeast Asia, the South China Sea disputes are the most contentious.* In the past six years, China has taken a more assertive approach to its territorial claims in the South China Sea.† China has largely employed a gradual, “salami-slicing” approach to consolidating its claims, which Bonnie Glaser, a senior adviser for Asia at the Center for Strategic and International Studies, describes as “using small, incremental actions, none of which by itself is a *casus belli*.”⁸ Starting in late 2013, however, Beijing’s efforts took on increased urgency as it began to use land reclamation and construction on the land features it controls to vastly expand its civilian and military presence in contested waters (see Figure 1).

and the United States. Association of Southeast Asian Nations, “Chairman’s Statement of the 17th ASEAN-China Summit,” December 27, 2014; Association of Southeast Asian Nations, “ASEAN Plus Three Cooperation,” January 22, 2014; ASEAN Regional Forum, “About the ASEAN Regional Forum”; and Association of Southeast Asian Nations, “Chairman’s Statement of the Ninth East Asia Summit,” November 13, 2014.

* Six countries have overlapping claims to territory in the South China Sea: Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam. China delineates its claims on its South China Sea maps using a nine-dash line, which encompasses almost all of the South China Sea (see Figure 1). China occupies the Paracel Islands, though Taiwan and Vietnam also claim them. All the claimants, except Brunei, have military outposts in the Spratly Islands. (See Chapter 3, Section 3, “Taiwan,” for further discussion of Taiwan’s role in the South China Sea disputes.)

† For an in-depth look at China’s growing assertiveness in the South China Sea since 2009, see U.S.-China Economic and Security Review Commission, *2009 Annual Report to Congress*, November 2009, 123–124; U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress*, November 2010, 132–137; U.S.-China Economic and Security Review Commission, *2011 Annual Report to Congress*, November 2011, 166–172; U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, 215–240; U.S.-China Economic and Security Review Commission, *2013 Annual Report to Congress*, November 2013, 266, 268–276, 278–284; and U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 244–252, 411–412.

The United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS) specifies up to four main sovereign territorial or jurisdictional zones to which coastal states are entitled. A coastal state is entitled to a “territorial sea” of no more than 12 nautical miles (nm) extending out from its coast, over which the state has full sovereignty, subject to the right of innocent passage. Extending out an additional 12 nm is a “contiguous zone,” in which a coastal state can prescribe and enforce customs-related laws.⁹ A coastal state is also entitled to an “exclusive economic zone” (EEZ), a 200-nautical-mile zone extending from its coastline within which that state can exercise exclusive sovereign rights and jurisdiction over living and nonliving resources, but not full sovereignty.¹⁰ In addition, if a state’s continental shelf extends beyond its EEZ, it can submit a claim for an outer limit to its continental shelf to an UNCLOS governing body, which will provide recommendations on its delimitation.¹¹ According to UNCLOS, “The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin. . . .”¹²

UNCLOS stipulates that only a country’s coastline and islands may generate an EEZ and a continental shelf.¹³ Islands, as defined by UNCLOS, must be above water at high tide and be capable of sustaining human habitation or economic activity of their own.¹⁴ Rocks, which are defined as being above water at high tide but unable to sustain human habitation or economic activity, only generate a 12-nm territorial sea.¹⁵ “Low-tide elevations,” which are submerged at high tide, do not generate a territorial sea (unless they are located within the territorial sea of an island or mainland coastline).¹⁶ Artificial islands, with the exception of those that are built on rocks, do not generate a territorial sea.¹⁷

Under UNCLOS, foreign civilian and military ships may transit through a country’s territorial sea according to the principle of “innocent passage.” Passage is innocent so long as it does not involve activities that are “prejudicial to the peace, good order or security of the coastal State,” such as military exercises or intelligence gathering.¹⁸ Foreign aircraft do not have the right of innocent passage above a country’s territorial sea.¹⁹ China asserts that it has the right to require foreign ships to obtain permission or provide notification before conducting innocent passage, though UNCLOS does not include such a provision.²⁰

UNCLOS also entitles both foreign military ships and aircraft to conduct freedom of navigation and overflight and “other internationally lawful uses of the sea” such as conducting military exercises and collecting intelligence in the EEZ.²¹ In contrast, China and a minority of other states²² assert a right to restrict military activity in their EEZs.²³ Although China does not object to foreign military vessels or aircraft merely transiting through

**The United Nations Convention on the Law of the Sea—
Continued**

or flying over its EEZ, China rejects their right to conduct military activities, including intelligence gathering, while in the EEZ.²⁴

U.S. law and practice is generally compatible with UNCLOS, but the United States has not ratified the treaty due to concerns in Congress. Proponents of ratifying the treaty argue that doing so would be economically beneficial and, by giving the United States a “seat at the table,” would enable the United States to have greater influence over international discussions and negotiations related to the treaty.²⁵ Opponents of ratification argue that the treaty would impinge on U.S. sovereignty, and that signing it would be detrimental to U.S. economic interests.²⁶

Figure 1: South China Sea Map



Source: Economist, “The South China Sea: Making Waves,” May 2, 2015.

***China’s Land Reclamation and Construction Activities in the
Spratly Islands***

China’s recent land reclamation activities in the Spratly Islands began in late 2013.²⁷ Since then, China has conducted land reclamation activities on Johnson South, Cuarteron, Gaven, Subi, Mis-

chief, Hughes, and Fiery Cross reefs (see Table 1).^{*} Although the land reclamation phase appears to be nearing completion, China continues to build, expand, and upgrade infrastructure on these reclaimed sites.²⁸ At the time of the writing of this Report, available satellite imagery and reporting suggests this infrastructure includes at least one and up to three airstrips, helipads, port facilities, radars, and satellite communication equipment.²⁹ The *New York Times* reported in May 2015 that, according to U.S. officials, two mobile artillery vehicles had been observed on one of China's artificial islands. Another U.S. official said that these weapons were detected about a month before and that China later removed or hid them. That official also noted that some islands occupied by other countries were within range of these weapons, but they could not threaten U.S. ships or aircraft.³⁰ In July 2015, Admiral Harry Harris, commander of the U.S. Pacific Command, said China is "building revetted aircraft hangars at some of the facilities there that are clearly designed, in my view, to host tactical fighter aircraft."³¹ Although China built structures on some of these reefs prior to 2014, the structures were small and could not accommodate combat aircraft or major surface combatants, as Fiery Cross Reef appears able to do now.³²

Table 1: China's Recent Land Reclamation and Construction Activities in the Spratly Islands

Land Feature	Approximate Date Reclamation Began	Change in Size	Preexisting Infrastructure (Selected)	New Infrastructure (Selected)
Mischief Reef	Early 2015	5,580,000 square meters	Two military facilities and a shelter for fishermen.	Reinforced seawalls, and airstrip (potential).
Subi Reef	July 2014	3,950,000 square meters	Helipad, military facility, and probable radar facility.	Reinforced seawalls and airstrip (potential).
Fiery Cross Reef	August 2014	2,740,000 square meters	Oceanic observation station, communications equipment, helipad, pier, air-defense guns, and garrison for approximately 200 soldiers.	Airstrip, administrative facility and support building, harbor, port, a second helipad, radar tower (potential), and circular antenna array.
Cuarteron Reef	Summer 2014	231,100 square meters	Military facility and satellite communication antenna.	Helipad, sensor array, and support buildings.
Gaven Reef	Spring 2014	136,000 square meters	Military facility.	A second military facility, port, and helipad.

^{*}Since beginning land reclamation on Fiery Cross Reef in August 2014, China has multiplied the size of that land feature by 11. Mira Rapp Hooper, "Before and After: The South China Sea Transformed," *Center for Strategic and International Studies*, February 18, 2015.

Table 1: China's Recent Land Reclamation and Construction Activities in the Spratly Islands—Continued

Land Feature	Approximate Date Reclamation Began	Change in Size	Preexisting Infrastructure (Selected)	New Infrastructure (Selected)
Johnson South Reef	January 2014	109,000 square meters	Military facility, pier, helipad, communications facility, and garrison building.	A second military facility, harbor, port, fuel dump, desalination pumps, radar tower, and defensive towers.
Hughes Reef	Summer 2014	76,000 square meters	Lighthouse and helipad.	Harbor, port, military facility, and defensive towers.

Source: Center for Strategic and International Studies, "Island Tracker" (Last accessed on October 8, 2015); Victor Robert Lee, "South China Sea: Satellite Imagery Shows China's Build-up on Fiery Cross Reef," *Diplomat* (Tokyo), September 16, 2015.

Although China correctly points out that other countries in the region have also engaged in land reclamation and construction on land features in the South China Sea, China's activities differ from those of the other claimants in the pace at which they have occurred and the amount by which they have enlarged the features. For example, in contrast to the more than 2,900 acres China has reclaimed since 2013, Vietnam's reclamation activities in the South China Sea since 2009 have yielded around 60 acres of land.³³ Although the Philippines military developed a plan to upgrade facilities on the eight Philippines-controlled islands and reefs in the Spratly Islands, it apparently did not carry out these plans.³⁴

The number of land features in the Spratly Islands that are occupied by each of the claimants is as follows: China, 8; Malaysia, 5; the Philippines, 8; and Taiwan, 1. Reports vary as to the number of features occupied by Vietnam, with the number ranging between 22 and 27.*³⁵ Available information indicates that at least Fiery Cross Reef (China), Gaven Reef (China), Mischief Reef (China), Johnson South Reef (China), Subi Reef (China), Swallow Reef (Malaysia), Thitu Island (Philippines), Itu Aba Island (Taiwan), Spratly Island (Vietnam), and Sand Cay (Vietnam) are inhabited by military or coast guard personnel. Civilians not affiliated with government agencies also live on several of these islands.³⁶ Reporting on the human population of the Spratly Islands is limited; a comprehensive listing of the number of people living on each land feature is unavailable. Among the facilities the other claimants have built or are building on the land features they administer in the Spratly Islands are airstrips, port facilities, lighthouses, a surveillance facility, radar and communications equipment, hangers, helipads, gun emplacements, schools, and medical clinics.³⁷

* According to a map of the Spratly Islands produced by the U.S. Department of Defense, Vietnam occupies 48 "outposts," but this refers to the number of structures that Vietnam has built on the land features it controls. U.S. Department of Defense, *Asia-Pacific Maritime Security Strategy*, August 2015, 7; Gregory Poling, "Sophistry and Bad Messaging in the South China Sea," *Center for Strategic and International Studies, Asia Maritime Transparency Initiative*, July 1, 2015.

The Contentious China-Philippines Dispute and the Philippines' South China Sea Arbitration Case

The China-Philippines dispute is among the most volatile of the South China Sea disputes. In recent years, China has taken advantage of its superior maritime presence and greater economic, political, and military footprint in the region to gain the upper hand in the competition for territory. China-Philippine relations came under stress in 2011 with a tense encounter between Chinese maritime law enforcement ships and a French ship conducting seismic testing in oil and gas fields for the Philippines government.³⁸ In 2012, after a standoff between Philippine and Chinese ships, China effectively secured control of Scarborough Reef,* a contested fishing ground approximately 500 nm from Hainan Island, China's southernmost province, and 124 nm from the Philippines' province of Zambales.†³⁹ Although accounts of how the standoff ended differ widely, U.S. officials assert that in a meeting with Chinese counterparts in June 2012 they reached an understanding for both sides' ships to simultaneously withdraw from the reef.⁴⁰ According to China's Vice Foreign Minister Fu Ying, who participated in the meeting in June 2012, there was no such understanding. U.S. officials told the *Financial Times* "there was a clear understanding at the 2012 meeting that the Chinese would take the idea of a mutual withdrawal from Scarborough [Reef] back to senior leaders in Beijing. They say it is unclear whether Ms. Fu really tried to sell the agreement in Beijing or whether the foreign ministry was overruled by more hawkish elements in the Chinese system, including the military."⁴¹ The Philippines later accused China of renegeing on this "agreement."⁴² According to one report, the Chinese ships initially left Scarborough Reef, but they returned shortly thereafter.⁴³ In 2014, China Coast Guard (CCG) ships attempted to block the Philippines from resupplying its South China Sea outpost aboard the *Sierra Madre*, a navy ship the Philippines intentionally grounded in 1999 to mark its claim to

* For an in-depth examination of the Scarborough Reef standoff, see U.S.-China Economic and Security Review Commission, *2012 Annual Report to Congress*, November 2012, 231–233.

† Chinese maritime law enforcement ships continue to patrol the vicinity of Scarborough Reef. According to a spokesperson for China's Ministry of Foreign Affairs, "Chinese government vessels perform guard duty in waters off the Huangyan Island [the Chinese name for Scarborough Reef] to maintain the normal order of these waters in accordance with the law." The Philippine government claimed the China Coast Guard rammed Filipino fishing boats in Scarborough Reef in January 2015 and deployed a water cannon against Filipino fishing boats there in April 2015. Regarding the events of January 2015, a spokesperson for China's Ministry of Foreign Affairs said, "The Chinese coast guard sent a dinghy to lawfully drive away the Philippine vessels, and the dinghy slightly rubbed against one of the vessels during its operation." When asked about the events of April 2015 during a regular press conference on April 22, 2015, a spokesperson for the Ministry neither confirmed nor denied the allegations. Will Englund, "For Some Filipino Fishermen, the South China Sea Dispute Is Personal," *Washington Post*, June 7, 2015; U.S. Department of Defense, *Annual Report to Congress on the Military and Security Developments Involving the People's Republic of China 2015*, May 2015, 4; China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 22, 2015*, April 22, 2015; Manny Mogato, "Philippines Accuses China of Turning Water Cannon on Its Fishing Boats," Reuters, April 21, 2015; Philippines' Department of Foreign Affairs, *Statement on Recent Incidents in the Philippines' Bajo de Masinloc*, February 4, 2015; and China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on February 5, 2015*, February 5, 2015.

**The Contentious China-Philippines Dispute and the
Philippines' South China Sea Arbitration Case—
*Continued***

Second Thomas Shoal. Since then, CCG ships have continued to patrol in that area, and the Philippine Navy has air-dropped supplies by parachute or delivered supplies by small boat.⁴⁴

Economically, diplomatically, and militarily outmatched by China, the Philippines turned to legal arbitration. In 2013, the Philippines, among other requests, asked an arbitral tribunal at the Permanent Court of Arbitration in The Hague to: (1) declare whether China's claims based on the nine-dash line* are invalid under UNCLOS; (2) declare whether certain land features in the South China Sea are rocks rather than islands and whether certain features are low-tide elevations; and (3) declare whether China has interfered with the Philippines' right to exploit resources within the Philippines' EEZ and continental shelf.⁴⁵ Before the tribunal can rule on the Philippines' case, it must first decide whether it has jurisdiction over such a case.† In July 2015, the tribunal convened and the Philippines' delegation presented its arguments in support of the tribunal's jurisdiction.⁴⁶ The Philippines' legal consul estimated the tribunal would issue a ruling on the question of jurisdiction by October 2015.⁴⁷ At the time of the writing of this Report a ruling had not been issued. Should the tribunal decide it has jurisdiction over the Philippines' case, it is expected to rule on the case by June 2016.⁴⁸

China's land reclamation may complicate the ability of the tribunal to rule on the status of the land features. Mira Rapp Hooper, then director of the Asia Maritime Transparency Initiative at the Center for Strategic and International Studies, told the Commission that "while China will surely not convince the [arbitral tribunal of the Permanent Court of Arbitration in The Hague] that these artificial features deserve to be treated as full-fledged islands under UNCLOS, its rapid-fire building may make it more difficult for the tribunal to rule on their previous status."⁴⁹

Beijing has rejected the arbitration process as "manifestly unfounded" under UNCLOS and declined to participate, rejecting the involvement of third parties.⁵⁰ China's leaders likely fear the tribunal will rule, at least partially, in the Philippines' favor, and seek to avoid tacitly affirming the arbitration's legitimacy by participating in the case.

China's rapid land reclamation and construction activities appear to be driven by several factors: China's desire to unilaterally im-

* Although China's claim in the South China Sea is often depicted by a nine-dash line, Beijing in recent years has issued new maps with ten dashes. Ishaan Tharoor, "Could This Map of China Start a War?" *Washington Post*, June 27, 2014; Euan Graham, "China's New Map: Just another Dash?" Australian Strategic Policy Institute (*The Strategist* blog), September 17, 2013.

† If the tribunal decides the Philippines is seeking a ruling on territorial sovereignty, a question over which the tribunal does not have jurisdiction, it will refuse to allow the case to proceed. Center for Strategic and International Studies, Asia Maritime Transparency Initiative, "Arbitration on the South China Sea: Rulings from The Hague."

pose its claims and avoid arbitration or negotiation with other parties over the disputes; China's ambition to enhance its ability to project power into the South China Sea; and, potentially, China's intention to establish an air defense identification zone (ADIZ) over part of the South China Sea.*†

China's land reclamation and construction projects present the other claimants with a *fait accompli*.⁵¹ Regardless of the protestations of other countries, once the work is completed China will have significantly enhanced its control over these features and its presence in the South China Sea.

China will be able to use these land features to bolster its ability to sustain its military and maritime law enforcement presence in the South China Sea. Currently, the ability of the People's Liberation Army (PLA) Air and Naval Aviation forces to conduct combat air patrols near the Spratly Islands is limited not only by the long distance from China's airbases, but also by the PLA's nascent aircraft carrier aviation capability and its limited capacity for aerial refueling.⁵² The recently completed airstrip on Fiery Cross Reef is 10,250 feet (3,125 meters) in length, which should allow it to accommodate most PLA combat and support aircraft.‡⁵³ There are indications that China also may be preparing to build airstrips on Subi Reef and Mischief Reef.⁵⁴ In addition, China appears to be building a seaport at Fiery Cross Reef, with a harbor that could be large enough to allow large Chinese naval and maritime law enforcement ships to dock to replenish supplies.⁵⁵ The newly upgraded islands also enable the PLA Navy and maritime law enforcement entities to enhance maritime domain awareness and improve intelligence, surveillance, and reconnaissance capabilities farther from China's coast.⁵⁶ At a November 2014 international defense forum in China, a senior PLA officer said, "There is a need for a base [in the Spratly Islands] to support our radar system and intelligence-gathering activities."⁵⁷ China appears to already have or to be building radar facilities on Fiery Cross, Johnson South, and Subi reefs, and Fiery Cross Reef will be able to accommodate surveillance aircraft once the airstrip is completed.⁵⁸

China also may use the facilities it is building on these land features in the Spratly Islands to establish an ADIZ over part of the South China Sea.⁵⁹ In December 2013, after China declared an ADIZ over the Senkaku Islands in the East China Sea, China's then ambassador to the Philippines responded to questions about whether China might declare an ADIZ in the South China Sea, saying China was entitled to decide "where and when to set up the new air identification zone."⁶⁰ During the International Institute

*For more information on the drivers of China's approach to the maritime disputes in the South China Sea, including nationalism and natural resources, see U.S.-China Economic and Security Review Commission, *2013 Annual Report to Congress*, November 2013, 270–272.

†An ADIZ is a publicly declared area established in international airspace adjacent to a state's national airspace, in which civil aircraft must be prepared to submit to local air traffic control and provide aircraft identifiers and location. Its purpose is to allow a state the time and space to identify the nature of approaching aircraft prior to entering national airspace in order to prepare defensive measures if necessary. For an in-depth examination of China's East China Sea ADIZ, see Kimberly Hsu, "Air Defense Identification Zone Intended to Provide China Greater Flexibility to Enforce East China Sea Claims," *U.S.-China Economic and Security Review Commission*, January 14, 2014.

‡China has one other airstrip in the South China Sea on Woody Island in the Paracel Islands.

for Strategic Studies' May 2015 Shangri-La Dialogue,* Chinese Admiral Sun Jianguo, the head of China's delegation to the dialogue and deputy director of the PLA's General Staff Department, said China would only establish an ADIZ in the South China Sea if faced with security threats.⁶¹ This remark followed a similar statement by Ouyang Yujing, the director general of the Department of Boundary and Ocean Affairs of China's Ministry of Foreign Affairs. He said, "Whether China will set up an ADIZ in the South China Sea depends on whether and to what extent the security of airspace is threatened as well as other factors. Currently, the situation in the South China Sea is stable on the whole."⁶² These statements indicate China is positioning itself to justify the establishment of an ADIZ as a defensive response to the actions of other countries.

Figure 2: Comparison of Airstrips by Claimant in the South China Sea's Spratly Islands



Source: Center for Strategic and International Studies, Asia Maritime Transparency Initiative, "Airpower in the South China Sea."

China has stated its land reclamation and construction activities are primarily for civilian purposes, such as providing services to Chinese and foreign ships transiting the South China Sea; facilitating oceanic research and meteorological observation; and providing fisheries services.⁶³ The Chinese government acknowledged in April 2015 that the islands have military purposes as well, when a Ministry of Foreign Affairs spokesperson stated that the islands are intended to satisfy China's "military defense needs" and to "better safeguard territorial sovereignty and maritime rights and interests."⁶⁴

*The Shangri-La Dialogue is a high-profile meeting of regional defense leaders held annually in Singapore.

China has consistently argued that it has the right to conduct these activities.⁶⁵ Beijing frequently asserts that it has “indisputable sovereignty over the Nansha Islands [China’s name for the Spratly Islands] and their adjacent waters” and that “the relevant construction, which is reasonable, justified and lawful, is well within China’s sovereignty. It does not impact or target any country, and is thus beyond reproach.”⁶⁶ In written responses to questions submitted by the *Wall Street Journal* before his state visit to the United States in September 2015, Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping reiterated China’s stance that “the [Spratly Islands] have been China’s territory since ancient times. This is fully backed by historical and legal evidence.”⁶⁷ In fact, China argues that the United States, not China, is increasing tensions in the region through its surveillance flights and criticism of China. In addition, China regularly asserts that the United States is not acting like a neutral party in the South China Sea disputes.⁶⁸

Perhaps recognizing the alarm the land reclamation and construction has caused in the region, China also has begun to stress how the islands help it meet its international obligations in areas such as maritime search and rescue.⁶⁹ China’s Ministry of Transportation noted that its construction of lighthouses on both Cuarteron and Johnson South reefs will “immensely improve the navigation safety” in the South China Sea.⁷⁰ Ms. Glaser explained that “the Chinese are now attempting to assuage concerns about their artificial island building by claiming that these activities are aimed at providing public goods.”⁷¹

China also appears to be seeking to legitimize some of the civilian facilities it is building in the Spratly Islands by suggesting they are endorsed by international organizations. For example, during the 2015 Shangri-La Dialogue, Admiral Sun remarked that “China has built an oceanic survey station for the United Nations on the Yongshu Jiao [the Chinese name for Fiery Cross Reef].”⁷² Admiral Sun was referring to China’s construction of an observation station that began in 1988 in response to a directive by the UN Educational, Scientific, and Cultural Organization for its members to build monitoring stations for a study of oceans around the world.⁷³

Ecological Impacts of China’s Land Reclamation

Despite China’s claims about the benefits of its land reclamation and construction activities in the Spratly Islands, the damage to the coral reefs caused by China’s land reclamation may have a major impact on the South China Sea’s ecosystem, particularly its fish, which are a critical protein source for the populations of Southeast Asia.*⁷⁴ Since China’s enhanced land features are intended in part to support Chinese fishermen,† they will lead to in-

*For example, more than a quarter of the Philippines’ fishing grounds are located in the South China Sea, where around 12,200 Filipino fishermen pursue their livelihoods. Pia Ranada, “China Reclamation Poses P4.8-B Economic Loss for PH,” *Rappler* (Philippines), April 23, 2015.

†A spokesperson for China’s Ministry of Foreign Affairs said these land features will support “fishery production and service,” and China’s National Development and Reform Commission announced it will provide fishing boats with shelter during storms and repair and replenishment services. China’s National Development and Reform Commission, *National Development and Reform Commission Draws up a Plan for the Construction of Civilian Infrastructure on the Islands and Reefs in the Spratly Islands*, June 17, 2015. Staff translation; Open Source Center, “Tran-

creased Chinese fishing in the South China Sea and greater depletion of local fisheries. Given the massive size of China's fishing fleet and its record of overfishing along China's coast, greater capacity for Chinese fishermen to fish in the South China Sea bodes ill for the fish stocks there.⁷⁵

According to the Philippines Bureau of Fisheries and Aquatic Resources, China's land reclamation activities on five land features have buried 768 acres of coral reef.⁷⁶ Since the coral reefs contribute to food production as well as to "raw materials, waste treatment, erosion prevention, and tourism," Edgardo Gomez, professor emeritus at the University of the Philippines' Marine Science Institute, estimates that China's destruction of the reefs through reclamation will result in about \$110 million in economic losses annually.⁷⁷ In addition, land reclamation may result in ecological damage that extends beyond the South China Sea. For example, some marine species spawn in the coral reefs of the South China Sea and the young fish then swim to adjacent seas and the coastal areas of Southeast Asia. Moreover, the reefs in the South China Sea are home to significant biodiversity and China's activities could lead to the extinction of some marine species.⁷⁸

China's land reclamation activities also may have violated its obligation as a signatory to UNCLOS to "protect and preserve the marine environment."⁷⁹ China dismisses concerns about the environmental impact of its land reclamation activities.⁸⁰

Different Claimants, Different Approach

China tailors its approach to its maritime and territorial disputes depending on the claimant. As discussed previously, China's approach to the Philippines involves bullying and intimidation. China's approach to Vietnam, as discussed later, is also hardline. On the other hand, China handles its disputes with Malaysia and Brunei more quietly, and has avoided publicly clashing with these claimants. China's approach to Taiwan's claims is altogether different given the unique cross-Strait relationship (see Chapter 3, Section 3, "Taiwan," for more information regarding the South China Sea disputes in cross-Strait relations.)

China's "Soft Approach" to Malaysia

China takes a "soft approach" to Malaysia, according to Pek Koon Heng, assistant professor and director of the ASEAN Studies Initiative at American University's School of International Service.⁸¹ In its relations with Malaysia, Beijing has not confronted Kuala Lumpur in public over Malaysia's oil and gas exploration in the South China Sea, and Kuala Lumpur has adopted a similarly low-profile approach to China.⁸² The two sides appear to have reached a consensus to not air their grievances through the media.*⁸³ After a meeting with President Xi Jinping

script of PRC FM Spokesman News Conference 9 April 2015," April 9, 2015. ID: CHO20150409 28753011.

* However, recent events suggest Malaysia may be departing from this approach. (See "A Change in Southeast Asia's Strategy?" later in this section.)

China's "Soft Approach" to Malaysia—Continued

in November 2014, Malaysian Prime Minister Najib Razak said President Xi "acknowledged that the quiet diplomacy approach adopted by Malaysia was the best method, as it stressed on discussion rather than confrontation."⁸⁴ This statement illustrates Beijing's preference to avoid "megaphone diplomacy."⁸⁵

Concerns about indirectly pushing neighbors to enhance relations with the United States also may be a factor that moderates China's approach to its territorial dispute with Malaysia. Malaysia has enhanced its relations with the United States in recent years, especially in the security realm.⁸⁶ Beijing likely perceives it has more to lose if Malaysia, which is not a U.S. treaty ally and has more amicable relations with China than the Philippines, becomes closer to the United States than if the Philippines, which is a U.S. ally and already has rocky relations with China, enhances its relations with the United States.

China, ASEAN, and the South China Sea Disputes

Although it actively participates in and promotes multilateral cooperation in Southeast Asia, China prefers to handle the South China Sea disputes on a strictly bilateral basis.⁸⁷ China assesses it is disadvantaged by negotiating multilaterally—which could expose China to unified or near-unified opposition—rather than on a bilateral basis, where it can rely on its overwhelming economic, geopolitical, and military strength to influence outcomes.⁸⁸ China therefore refuses to negotiate a resolution to the disputes through ASEAN. It insists the disputes are bilateral, between China and individual claimants, not multilateral.⁸⁹ China even tries to limit discussion of the disputes in ASEAN fora. At the ASEAN Defense Senior Officials Meeting Plus in February 2015, China's delegation rejected ASEAN's proposal that the next ASEAN Defense Ministers Meeting Plus, which will be held in November 2015, discuss the China-ASEAN Declaration of Conduct on the South China Sea and a proposed Code of Conduct.*⁹⁰ Prior to the August 2015 ASEAN foreign ministers meeting, China's vice foreign minister said the ASEAN countries should not discuss the South China Sea during the meeting.⁹¹

Furthermore, China has nurtured and exploited divisions between Southeast Asian countries to prevent them from presenting a united front in opposition to China's actions in the South China Sea. Southeast Asian countries' national interests, concern about China, and level of economic development vary widely. For example, some ASEAN countries, such as Cambodia, are more closely tied to China than others, and have no claim in the territorial disputes; other countries, such as Vietnam, are claimants, and feel

*In 2002, ASEAN and China signed a nonbinding "Declaration on the Conduct of Parties in the South China Sea," and the parties intend to elevate this declaration to a binding Code of Conduct. This document, known as the Declaration of Conduct, expresses ten principles aimed to build trust and avoid escalation in disputed areas. ASEAN still seeks to sign a Code of Conduct on the South China Sea with China, but China is unlikely to agree to such a code at present. U.S.-China Economic and Security Review Commission, *Hearing on China's Relations with Southeast Asia*, written testimony of Bonnie Glaser, May 13, 2015.

threatened by China's actions.⁹² At the 2012 ASEAN foreign ministers summit, disagreement over whether to include a reference to the standoff at Scarborough Reef led to a failure of ASEAN to issue its usual joint communiqué. Cambodia, which held the chair of ASEAN that year, reportedly prevented consensus in response to overtures from China not to include a statement on the South China Sea in the communiqué.⁹³ In what appears to have been an effort to cement Cambodia's support for China's stance on ASEAN's involvement in the South China Sea disputes, days before the ASEAN summit, then Chinese President Hu Jintao visited Cambodia and announced that China's trade with Cambodia would increase by \$5 billion by 2017 and promised additional aid to Cambodia.⁹⁴

Like Cambodia, Laos appears to be subject to Chinese influence. In her oral remarks to the Commission, Dr. Heng said, "We don't know what Laos is going to do as ASEAN chair [in 2016]. That is a concern. For Malaysia [the 2015 ASEAN chair], we know that there will be a consensus and Malaysia will uphold the consensus, and will articulate or communicate Vietnam's and the Philippines' concerns [related to the South China Sea disputes], but Laos is a different story. And that's where we're going to see problems in ASEAN."⁹⁵

China does not have the same level of influence over most members of ASEAN. In written testimony to the Commission, Priscilla Clapp, senior advisor to the U.S. Institute of Peace and the Asia Society and former U.S. charge d'affaires in Burma (Myanmar), said even Burma, which once was widely believed to be beholden to China, "can be expected to remain a loyal, if not particularly dynamic, member of ASEAN."⁹⁶ She elaborated on this point in her oral remarks to the Commission, saying Burma "would stand by ASEAN over China on some of these issues, because ASEAN is [its] protection against China."⁹⁷ Accordingly, during the 2014 oil rig crisis between China and Vietnam, ASEAN countries—with Burma as the chair—reached a consensus on the South China Sea, issuing a statement that "expressed their serious concerns over the ongoing developments in the South China Sea, which have increased tensions in the area."⁹⁸ (For more information on the oil rig crisis, see "China-Vietnam Relations: A Case Study," later in this section.) In 2015, Malaysia presided over the strongest ASEAN statements about the South China Sea yet, despite Kuala Lumpur's preference for dealing with disputes with Beijing in private. The chairman's statement issued at the end of the April 2015 summit of ASEAN heads of state declared that China's land reclamation activities "eroded trust and confidence and may undermine peace, security and stability in the South China Sea."⁹⁹ Several months later, the joint communiqué issued at the conclusion of the August 2015 ASEAN foreign ministers meeting included the same language, with the addition of the sentiment that these activities have "increased tensions" in the South China Sea.¹⁰⁰

Chinese Cyber Intrusions Targeting Southeast Asian Countries

In 2015, reports by companies that conduct cyber intelligence research revealed that China-based cyber actors have carried out intrusions into the computer networks of a wide range of targets across Southeast Asia, including ASEAN. ThreatConnect Inc. and Defense Group Inc. published a report in September that associated the activities of an advanced persistent threat (APT) group commonly referred to as “Naikon” with PLA Unit 78020, the Second Technical Reconnaissance Bureau under the Chengdu Military Region.¹⁰¹ According to the report, “Unit 78020 conducts cyber espionage against Southeast Asian military, diplomatic, and economic targets. The targets include government entities in Cambodia, Indonesia, Laos, Malaysia, Myanmar, Nepal, the Philippines, Singapore, Thailand, and Vietnam as well as international bodies such as United Nations Development Program (UNDP) and [ASEAN].”¹⁰² Prior to the release of this report, in April, FireEye detailed the activities of another China-based APT group focused on Southeast Asia which it calls APT 30. Although FireEye could not conclusively link APT 30 to the Chinese government, it states that the group’s activities are likely sponsored by the Chinese government.¹⁰³

Southeast Asia’s Response to China’s Activities in the South China Sea

While each Southeast Asian claimant’s approach to maritime and territorial disputes with China varies, Southeast Asian countries have reacted with increasing alarm to China’s activities in the South China Sea. In response to China’s assertiveness in the South China Sea and its massive military modernization program, Southeast Asian countries are enhancing their military and civilian maritime patrol capabilities and strengthening security cooperation with the United States and other countries in the Asia Pacific.¹⁰⁴

Of all the Southeast Asian countries, Vietnam has taken the boldest measures to enhance its deterrent capability against China’s military. Hanoi has already received 4 of 6 KILo-class submarines, and 28 of 50 submarine-launched antiship and land-attack missiles, purchased from Russia.¹⁰⁵ Vietnam’s acquisition of land-attack missiles—which have a range of 300 kilometers (186 miles)—enhances its ability not only to hold PLA Navy ships at risk, but also to threaten PLA airfields and ports. Carlyle A. Thayer, professor emeritus at the University of New South Wales in Canberra, Australia, said by acquiring land-attack missiles the Vietnamese have “given themselves a much more powerful deterrent that complicates China’s strategic calculations.”¹⁰⁶ Vietnam is the first Southeast Asian country to acquire submarines with a land-attack capability.¹⁰⁷

Among the most recent developments, in what appears to be driven in part by China’s assertive actions in the South China Sea, Indonesia’s Defense Minister announced in September 2015 that the country would proceed with plans to enhance military infra-

structure and capabilities on Natuna Island,¹⁰⁸ the surrounding waters of which are partially within China's nine-dash line.*¹⁰⁹ The Defense Minister said that Indonesia would build a port, lengthen its existing military runway, and station more fighter aircraft on Natuna Island.¹¹⁰ Although these measures may be driven by concerns about various threats, tensions in the South China Sea appear to be one factor that is prompting this action.¹¹¹ "We are not in a war situation, but the South China Sea is very close to us. We have to be prepared," the Defense Minister explained.¹¹²

Japan—which is currently embroiled in a dispute with China in the East China Sea—is emerging as a key source of support to Southeast Asian countries on maritime security. In 2015, the Philippines reached an agreement to purchase ten patrol vessels for the Philippine Coast Guard from a Japanese shipbuilding company, and the Japanese government agreed to give the Philippines a \$150 million low-interest loan to facilitate the transaction.¹¹³ These ships likely will patrol Philippines-claimed waters disputed by Beijing. In 2014, Japan also pledged to give Vietnam six used patrol vessels valued at a total of \$5 million, a transfer that will be completed in 2015, according to the Japanese embassy in Vietnam.¹¹⁴ As of August 2015, Japan had delivered one vessel to the Fisheries Resources Surveillance Department under Vietnam's Ministry of Agriculture and Rural Development, and another vessel to the Vietnam Marine Police.¹¹⁵

Southeast Asian countries and Japan are also expanding opportunities for joint exercises, information sharing, and cooperation on defense technology. The Philippines and Japan conducted the first-ever exercise between their navies in June 2015.¹¹⁶ The exercise focused on search and rescue operations and included a flight over the South China Sea by a Japanese P-3C Orion surveillance aircraft with three Philippine Navy personnel aboard.¹¹⁷ Before the exercise, a Philippine Navy spokesperson explained that the two sides also planned to conduct "staff-to-staff talks" to "strengthen and institutionalize information-sharing between the [Philippine Navy] and [Japan Maritime Self Defense Force] to step-up maritime situational awareness."† Moreover, during his visit to Japan in June 2015, Philippines President Benigno Aquino said that he and Japanese Prime Minister Shinzo Abe agreed to begin talks on a potential Philippines-Japan visiting forces agreement.¹¹⁸ These steps build upon a defense cooperation agreement signed by the two countries' defense ministers in January 2015.¹¹⁹ Malaysia and the Philippines respectively reached agreements with Japan to initiate negotiations regarding cooperation on defense equipment and technology transfer in May and June 2015.¹²⁰

Southeast Asian claimants are also enhancing their security relations with one another. The most notable example is the strengthened relationship between the Philippines and Vietnam, the two

* Although Indonesia's claimed waters overlap with China's claimed waters, it does not consider itself party to the South China Sea disputes because it has no disputes with China over land features.

† In May 2015, the Philippine and Japanese navies conducted a test of the Code for Unplanned Encounters at Sea, an agreement reached by 21 Pacific countries in 2014 with the purpose of reducing the risk of accidents at sea. Uel Balenia, "Philippine Navy Confirms Upcoming Activity with Japan Maritime Self-Defense Force," *Ang Malaya Net* (Philippines), June 9, 2015; Ruser Mallari, "PHL, Japan to Hold First Full-Fledged Military Exercise in West PHL Sea," *Ang Malaya Net* (Philippines), June 9, 2015.

countries with the tensest relations with China over the South China Sea.¹²¹ The countries are negotiating a strategic partnership agreement, a draft of which included a pledge to conduct confidence-building measures and, eventually, joint naval exercises, as well as scientific cooperation in the South China Sea.¹²²

A Change in Southeast Asia's Strategy?

Rising concern in Southeast Asian countries about China's land reclamation and construction activities and intentions in the South China Sea raises questions about whether the trajectory of these countries' relations with China and the United States and their approach to the Southeast Asia-China-U.S. triangular relationship is changing. Analysts have widely noted that Southeast Asian countries pursue an "engage-and-hedge" strategy toward China and do not want to choose sides between the United States and China.¹²³ However, in response to China's recent activities, some Southeast Asian countries are becoming more vocal regarding their concerns about China and are enhancing their relations with the United States and with other countries in the region.¹²⁴

Interlocutors at many governmental and nongovernmental organizations with which the Commission met during its July 2015 trip to Vietnam expressed concern about China,¹²⁵ and several interlocutors during the trip argued that the trust that had previously existed between the two countries had been broken in recent years.¹²⁶ Many interlocutors emphasized the need for the United States to provide assistance to Vietnam and other Southeast Asian countries in light of China's assertiveness in the South China Sea.¹²⁷ (See "China-Vietnam Relations: A Case Study" later in this section for more detail.)

In June 2015, Malaysia responded to the presence of a CCG ship near Luconia Shoal, which is located within Malaysia's EEZ, with rare public displeasure. Shahidan Kassim, the official in the prime minister's office who oversees the Malaysian National Security Council and Malaysian Maritime Enforcement Agency, posted photos of the ship on his personal Facebook page and declared that Malaysia was taking "diplomatic action," including that Prime Minister Najib would broach Malaysia's concern with President Xi.¹²⁸ The CCG began patrolling near Luconia Shoal in August 2013 and, according to China's State Oceanic Administration, was "on guard" there in 2014.¹²⁹ In August 2015, Minister Shahidan told reporters that Malaysia has been submitting protests to the Chinese government once a week. He said, "They have to get out of our national waters. . . . No parties should try to trespass [sic] the territorial right of this country."¹³⁰

Singapore, which like Malaysia maintains positive relations with both China and the United States, has also expressed concerns about China's activities. At the 2015 Shangri-La Dialogue, Singapore's Prime Minister Lee Hsien Loong acknowledged that

A Change in Southeast Asia's Strategy?—Continued

China's behavior was alienating and alarming other countries, including the United States. He said, "Each country feels compelled to react to what others have done in order to protect its own interests."¹³¹

Nevertheless, despite growing worry among Southeast Asian countries about China's intentions and increased willingness to express these concerns, they still seek to preserve positive relations with China and do not appear to have chosen to align exclusively with the United States.¹³² In fact, they may seek to avoid becoming too close to the United States. In his written testimony to the Commission, Patrick M. Cronin, senior advisor and senior director of the Asia-Pacific Security Program at the Center for a New American Security, asserted:

*Attempts by the United States to provide military reassurance and presence, or to offer assurances to particular members [of ASEAN] such as the Philippines, incur a predictable backlash out of fear that America's stabilization efforts may also roil the region. That is why it is incumbent on U.S. officials to calibrate efforts to strengthen our access and security cooperation in Southeast Asia with a sharp understanding of how far the region will go based on the balance of political forces.*¹³³

Other Developments in China's South China Sea Efforts

Aside from land reclamation, China continues to use other methods to promote its interests in the South China Sea.

China Coast Guard Patrols

Beijing enforces its territorial claims through an approach in which civilian maritime law enforcement ships are at the forefront with support from naval ships.*¹³⁴ According to the U.S. Office of Naval Intelligence's 2015 report *The PLA Navy: New Capabilities and Missions for the 21st Century*:

*When deployed, the CCG sometimes coordinates with the [PLA Navy], which, when necessary, will deploy destroyers and frigates several dozen miles from the incident to provide a nearby, but indirect presence. . . . In recent years the [PLA Navy] has reduced its overt participation in coastal patrols, law enforcement, EEZ enforcement, and territorial claim issues as the CCG assumed these operations. China prefers using its Coast Guard as the primary enforcer of its maritime claims. This approach limits the potential for confrontational incidents to escalate since most CCG ships are unarmed, and those that are have relatively light weapons. This approach also helps Beijing manage the public optic of any enforcement actions.*¹³⁵

*For an in-depth assessment of China's naval capabilities and how they advance China's South China Sea objectives, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 299–308, 328–332.

China's commitment to this strategy is reflected in its enhancement of the size and capabilities of its maritime law enforcement forces. China has acquired around 100 new ships—including patrol combatants, large patrol ships, and support ships—over the past ten years and is expected to supplement these ships with more than 20 patrol combatants and more than 30 large patrol ships by 2015.¹³⁶ In November 2014, Chinese military websites featured images of a CCG ship based on the hull of the PLA Navy's JIANGDAO-class corvette.¹³⁷ The adaptation of the JIANGDAO hull for coast guard use suggests China seeks to increase systems compatibility between the CCG and the PLA Navy, likely to cut costs and increase interoperability. Furthermore, media reports from October 2014 showed images of two coast guard ships under construction, with displacements over 10,000 tons.¹³⁸ The CCG's acquisition of these larger, more capable ships will increase the range, seaworthiness, and firepower of its fleet. Furthermore, according to an article on the website of *People's Daily*, a Chinese state-run publication, China's new-generation 12,000-ton coast guard ship "has the power to smash into a vessel weighing more than 20,000 tons and will not cause any damage to itself when confronting a vessel weighing under 9,000 tons. It can also destroy a 5,000 ton ship and sink it to the sea floor."¹³⁹ Most of the Philippines' and Vietnam's maritime law enforcement ships are between 500 and 1,000 tons.¹⁴⁰

Filipino and Vietnamese fishermen complain they have been harassed by Chinese ships, threatening not only the fishermen's livelihood but also their personal safety. For example, Filipino fishermen say they are no longer able to fish at Scarborough Reef because Chinese ships block their access or harass them, ramming their fishing boats or spraying them with water cannons.*¹⁴¹ In June 2015, Vietnamese fishermen said Chinese ships used water cannons to spray Vietnamese fishing boats near the Paracel Islands (which China administers but Vietnam claims), breaking the leg of one of the fishermen.¹⁴² Vietnamese fishermen also allege that a few days later, Chinese vessels confronted them and the individuals on board took away their communications devices and other equipment, as well as their fish.¹⁴³ Such instances of harassment, if true, may increase as China's maritime law enforcement forces' ability to operate in the Spratly Islands grows due to the land reclamation and construction activities.¹⁴⁴

The Role of Fishermen

Chinese fishermen also play an increasingly important role in the South China Sea disputes. Fishermen on Hainan Island have been encouraged by the Hainan provincial government to fish in disputed waters.¹⁴⁵ Fishing boat captains also receive government subsidies for fuel and at reduced price can purchase satellite navigation systems that connect to Chinese authorities with the push of a button.¹⁴⁶

*In September 2015, 16 Filipino fishermen submitted a petition to the United Nations requesting the organization ask China to allow them to fish in Scarborough Reef. Gabriel Cardinoza, "16 PH Fishermen Sue China at UN over Sea Dispute," *Inquirer* (Philippines), September 23, 2015.

Furthermore, according to U.S. Naval War College associate professor Andrew Erickson and research fellow Conor Kennedy, China under President Xi is “strengthening its maritime militia, a dual-hatted force of specially registered fishing vessels with fisherman-soldier crews. Portions of these coastal militias are organized by local military and government officials along the nation’s many ports, providing China with small tactical units designed to execute specific missions in support of the country’s more professional military and maritime interests.”¹⁴⁷ China’s maritime militias receive military training, including in the use of light weapons.¹⁴⁸ China is training these maritime militias to support the activities of the PLA Navy and China’s maritime law enforcement forces in the South China Sea.¹⁴⁹ Among its duties, the Tanmen Village Maritime Militia Company on Hainan Island encourages fishermen to upgrade their fishing boats, activities that Dr. Erickson and Mr. Kennedy assert “have expanded Chinese patriot fishermen fleets multifold in recent years.”¹⁵⁰ The company also transports building materials, water, and food to Chinese outposts in the Spratly Islands, and conducts maritime search and rescue and reconnaissance, gathering information for the PLA.¹⁵¹ These militias are well-resourced, with subsidies provided by the central and local governments to build new fishing boats; 29 new boats were ordered for the Tanmen Maritime Militia, and 17 of these boats have been delivered.¹⁵²

Large-Scale PLA Navy Exercise in the South China Sea

The PLA Navy in July 2015 conducted a live-fire exercise in the South China Sea involving more than 100 ships, dozens of aircraft, and several Second Artillery Corps battalions.¹⁵³ The Vietnamese government protested the exercise, which took place near Hainan Island and the disputed Paracel Islands, asserting that it violated Vietnam’s sovereignty.¹⁵⁴ A PLA Navy spokesperson described the exercise as a “regular, annual drill” and called for observers to refrain from “excessive interpretations.”¹⁵⁵ Xu Liping, a researcher at the Chinese Academy of Social Sciences, said the drill is “a normal exercise of sovereignty. China wants to modernize its navy to make sure it has the capability to protect its islands and waterway.”¹⁵⁶ However, Rory Medcalf, the head of the Australian National University’s National Security College, said “an exercise on this scale in the South China Sea seems a needlessly excessive show of force,” and that the drill “reinforces the view that China’s wish to control the South China Sea is in large measure about seeking strategic advantage.”¹⁵⁷

China’s Economic Engagement with Southeast Asia

China’s Economic Assistance to Southeast Asia

China’s economic assistance to Southeast Asia is an increasingly important component of its engagement strategy with the region. With the announcement by President Xi and Premier Li that China will construct a 21st Century Maritime Silk Road, China has accelerated its economic engagement with Southeast Asia in what many have called a “charm offensive” focused on development assistance.¹⁵⁸ At the 2014 East Asia Summit, Premier Li said China would be extending more loans and investments to ASEAN mem-

bers, with assistance targeting infrastructure development and poverty alleviation.¹⁵⁹ China hopes its enhanced economic aid and investment will not only garner goodwill among its Southeast Asian neighbors, but also achieve “favorable outcomes” on politically contentious issues such as the South China Sea disputes.¹⁶⁰

Although some Southeast Asian countries are reportedly welcoming greater aid from China, many are concerned about the political and security implications of accepting China’s money. According to a report from the Center for a New American Security, Chinese foreign assistance in Southeast Asia “diverge[s] from internationally accepted norms emphasizing good governance, transparency, and conditionality.”¹⁶¹ Although China purports its foreign aid adheres to a policy of nonintervention toward recipient countries, the Center for a New American Security reported that in practice, “China often uses its development and investment policies to gain access to resources or achieve favorable diplomatic outcomes.”¹⁶² China is putting stock in the potential for economic aid to gain diplomatic sway in Southeast Asia, and is doing so through bilateral infrastructure investment, including via broad policy initiatives like the 21st Century Maritime Silk Road and the establishment of China-led development banks such as the Asian Infrastructure Investment Bank (AIIB).

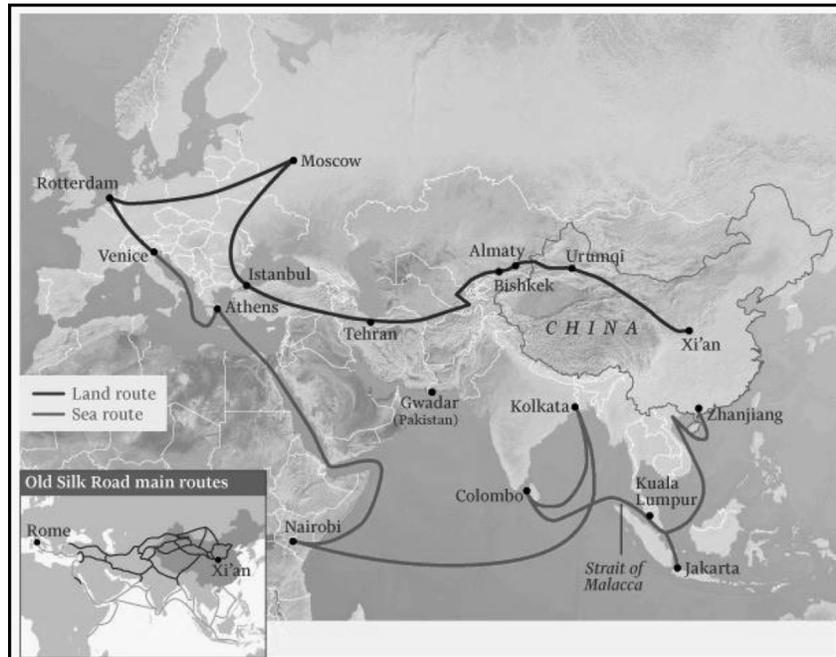
China’s 21st Century Maritime Silk Road Initiative

Frequently described as a counterbalance to the Obama Administration’s “rebalancing” policy in the Asia Pacific, China’s 21st Century Maritime Silk Road initiative touts a vision of constructing an economic corridor stretching from its eastern seaboard through the Taiwan Strait, South China Sea, Strait of Malacca, Indian Ocean, Suez Canal, and Mediterranean Sea to southern Europe. Although many of the details of the Maritime Silk Road remain undefined, the initiative intends to develop a network of port and coastal infrastructure projects that are expected to link directly with goals set out in China’s 13th Five-Year Plan, and will predominantly target Southeast Asia.¹⁶³

At present, the Maritime Silk Road remains largely a symbolic vision linked to preexisting or tangentially related economic programs. For example, during an ASEAN Regional Forum meeting in March 2014, a representative of China’s Ministry of Foreign Affairs linked the Maritime Silk Road to the \$500 million China-ASEAN Maritime Cooperation Fund, established two years before the announcement of the Maritime Silk Road.¹⁶⁴ In addition, in a December 2014 *People’s Daily* article, the author describes the Greater Mekong Subregion—a cooperative initiative established under the Asian Development Bank in 1992—as a component of the Maritime Silk Road that exemplifies concepts of a “new Asian security” and “peripheral diplomacy” advocated by China.¹⁶⁵ In May 2015, China’s Consul General in Mandalay, Burma, said that all development projects between China and Burma could be classified as part of the “One Belt, One Road” initiatives, which encompass the Maritime Silk Road as well as the Silk Road Economic Belt that connects China to South and Central Asia (see Figure 3).¹⁶⁶ (For more analysis of the One Belt, One Road initiatives and the Silk Road Economic Belt, see Chapter 3, Section 1, “China and Central Asia.”)

Although these statements imply some arbitrariness as to what constitutes a Maritime Silk Road project, China has taken a few concrete steps to realize its vision, primarily by pledging infrastructure investment funding for projects in Southeast Asia. For example, after declaring 2015 “the ASEAN-China Year of Maritime Cooperation,” China pledged \$20 billion in loans at the 2014 ASEAN-China Summit for infrastructure projects in Southeast Asia.¹⁶⁷ Similarly, China announced the \$40 billion China Silk Road Fund in November 2014, which will fund infrastructure projects along the Silk Road Economic Belt and the Maritime Silk Road.¹⁶⁸ The fund’s first project, the construction of a \$1.65 billion hydropower station in Pakistan, is expected to be “emblematic of the kinds of medium to long-term projects that will be supported by the Fund in Southeast Asia.”¹⁶⁹ In addition, Chinese state-owned banks are already involved in realizing the Maritime Silk Road: The state-owned Industrial and Commercial Bank of China announced it is currently funding more than 130 projects with an estimated value of \$158.8 billion under the banner of the One Belt, One Road initiatives.¹⁷⁰ Moreover, Chinese-funded port projects in Burma and Malaysia are underway and predicted to be models for more port development elsewhere in Southeast Asia and along the entire Maritime Silk Road.¹⁷¹ In addition, China and Thailand agreed in May 2015 to construct a canal through the Kra Isthmus, the narrowest part of the Malay Peninsula in southern Thailand.¹⁷² Besides development aid, China also considers enhanced trade integration with Southeast Asia (see “ASEAN-China Trade Relations” later in this section) and the establishment of development banks such as the AIIB (see “China-Led Development Banks” later in this section) as components of the Maritime Silk Road.

Figure 3: China's Silk Road Economic Belt and 21st Century Maritime Silk Road



Source: Charles Clover and Lucy Hornby, "China's Great Game: Road to a New Empire," *Financial Times*, October 12, 2015.

Development Aid with Chinese Characteristics

Despite China's rapid growth, its official development assistance (ODA), as defined by the Organization for Economic Cooperation and Development, remains relatively low both globally and in Southeast Asia, specifically.¹⁷³ Because China does not follow the international standards defining ODA and does not disaggregate the data it reports by country, accurate data on its traditional aid to Southeast Asia is unavailable.* However, estimates suggest Chinese ODA in Southeast Asia still lags significantly behind that of the United States.† Yet, because of nontraditional forms of economic assistance, China is considered among the major donor countries to Southeast Asia. According to development experts, China's foreign assistance predominantly takes the form of export credits, non-concessional loans, and state-sponsored investment support.¹⁷⁴ Infrastructure financing is the main form of Chinese assistance in Southeast Asia, and, when counted as foreign assistance, makes China "one of the largest sources of economic assistance in Southeast Asia."¹⁷⁵

* In 2014, China published a white paper on its foreign aid, which stated that 31 percent, or \$4.4 billion, of China's aid was provided to Asia; there was no breakdown by country. David B. Gootnick, "Southeast Asia: Trends in U.S. and Chinese Economic Engagement," *United States Government Accountability Office*, August 2015, 85.

† Between 2005 and 2013 the United States provided approximately \$7.2 billion in ODA to ASEAN countries. David B. Gootnick, "Southeast Asia: Trends in U.S. and Chinese Economic Engagement," *United States Government Accountability Office*, August 2015, 82.

Because Chinese state-sponsored infrastructure financing is counted as foreign direct investment (FDI), it is difficult to measure exactly how much Chinese government funding is going to Southeast Asian economies. However, it is widely known that China's government is actively funding development projects in many Southeast Asian countries. Burma, Cambodia, and Laos have historically been major recipients of Chinese infrastructure financing. According to a report from the Congressional Research Service, "PRC government entities have financed many infrastructure, energy-related (especially hydropower), agricultural, and other high profile development projects in these countries."¹⁷⁶ For example, the China Export-Import Bank issued two preferential buyer's credits of \$100 million each to Cambodia (for highway construction) and Burma (for a hydropower station).¹⁷⁷ China is also expanding its nontraditional foreign aid to other countries in Southeast Asia. It has financed railways, hydropower, and shipbuilding facilities in Vietnam as well as infrastructure, energy, agriculture, and mining projects in the Philippines.¹⁷⁸

China's foreign assistance in Southeast Asia appears designed primarily to serve China's economic and diplomatic interests. By financing infrastructure projects, China can use "Chinese construction materials, equipment, technical expertise, and labor" to execute development projects.¹⁷⁹ This benefits Chinese firms—often state-owned—that win contracts, but limits opportunities for companies and labor in recipient countries. Moreover, China hopes by financing infrastructure and other development projects in Southeast Asia, it can win goodwill and cooperation in Southeast Asia and advance its interests in the South China Sea.¹⁸⁰ Some analysts argue, though, that the self-serving nature of China's nontraditional forms of foreign aid have "lessened the intended positive impact" and made recipient countries suspicious of China's underlying strategic goals.¹⁸¹ Robert Sutter, professor of practice of international affairs at George Washington University's Elliot School of International Affairs, noted in testimony before the Commission that the effectiveness of China-funded infrastructure projects in Southeast Asia is largely unknown, and a "comprehensive assessment" of the achievements and failures of these projects is needed.¹⁸²

China-Led Development Banks

The formation of new development banks—namely, the New Development Bank* and the AIIB—is another strategy China uses to achieve its economic and diplomatic goals in Southeast Asia. In 2014, Brazil, Russia, India, China, and South Africa (the BRICS countries) signed an agreement to establish the New Development Bank with an initial capital of \$50 billion and an emergency reserve fund of \$100 billion.¹⁸³ With its headquarters in Shanghai and a guarantee that the combined share of the five founding BRICS countries' capital will never fall below 55 percent, China will play a key role in the bank's formation and operations.¹⁸⁴ Analysts argue that the bank, which is considered a BRICS-led alternative to the World Bank, is a welcome addition to the options for

*The New Development Bank was formerly known as the BRICS Development Bank because it is operated by the BRICS countries: Brazil, Russia, India, China, and South Africa.

investment finance, including in Southeast Asia where funding is in high demand for expensive infrastructure projects.¹⁸⁵ However, many argue that the New Development Bank will—in the words of Vikram Nehru, formerly of the World Bank and now the Bakrie Chair in Southeast Asian Studies at the Carnegie Endowment for International Peace—provide “another avenue to advance the regional and global strategic interests of the bank’s five founders.”¹⁸⁶

While the New Development Bank could elevate China’s influence in Southeast Asia, the AIIB, which is more directly under China’s control, will likely be China’s primary vehicle for channeling its development aid to the region in hopes of gaining diplomatic leverage.¹⁸⁷ According to the Harvard Kennedy School’s Vietnam Program economist David Dapice, ASEAN countries need about \$100 billion per year in infrastructure investment. The World Bank and Asian Development Bank currently lend about \$20 billion per year for infrastructure investment in emerging economies, leaving significant unmet demand in Southeast Asia, which the AIIB hopes to meet. Dr. Dapice told the Commission that China’s formation of the AIIB is a “coincidence of interests”—that is, ASEAN’s interest in investing in infrastructure and China’s interest in using its capital and domestic companies and resources to build projects overseas.¹⁸⁸ Moreover, Dr. Dapice noted that obtaining financing through the AIIB may be simpler and more efficient than doing so through traditional international financial institutions like the World Bank, which makes it attractive to ASEAN countries in need of immediate access to funds.¹⁸⁹

All ten members of ASEAN have signed on to join the AIIB, reflecting Southeast Asia’s interest in the prospective China-led bank.¹⁹⁰ Yet, some observers underscore that the AIIB is still merely an idea, and the sources of funding are not fully understood.¹⁹¹ Dr. Sutter argues that with the AIIB, the Silk Road Fund, and several other large foreign assistance pledges (the funding sources of which are all unknown), China appears to be seeking momentum toward a political movement with diplomatic objectives, rather than an economic initiative with purely development goals.¹⁹²

China and the Lower Mekong Region

The Mekong River is a lifeline and vital shared resource for southwestern China and mainland Southeast Asia. With its source in China’s Tibetan Autonomous Region, the 3,000-mile-long river cuts through China’s Yunnan Province before winding its way through Burma, Laos, Thailand, Cambodia, and Vietnam, where its mouth pours into the South China Sea.¹⁹³ While the Mekong has been a source of regional integration for most of mainland Southeast Asia, serving as the basis of international initiatives such as the Mekong River Commission and the Asian Development Bank’s Greater Mekong Subregion, the river is increasingly a source of contention between China and the lower Mekong countries. China’s activities on the Mekong show a pattern of unilateral action that is isolating China from its lower Mekong neighbors.

China and the Lower Mekong Region—*Continued*

The main point of contention between China and the lower Mekong countries has been the construction of Chinese dams along the upper Mekong River and the ecological damage they cause downstream. According to the environmental watchdog International Rivers, “Chinese dams are drastically changing the Lower Mekong River’s natural flood-drought cycle, and reducing the amount of water, sediments, and nutrients that flow into the river basin and surrounding coastal areas.”¹⁹⁴ Moreover, the UN Environment Program warned in 2009 that China’s plans for eight dams along the Mekong could pose a “considerable threat” to the river and its resources.¹⁹⁵ According to Dr. Dapice, China’s upstream dams dictate the fate of ecological systems along the lower Mekong. In testimony before the Commission, Dr. Dapice said, “How [Chinese] dams are managed . . . will in large part determine China’s contribution to either stabilizing or aggravating dry season shortages” in lower Mekong countries.¹⁹⁶ Dr. Dapice also pointed out that while “Chinese dam construction is rightly scrutinized, it is likely to be less important than what is being done or planned by Thailand, Laos and Cambodia.”¹⁹⁷

China’s aspirations for water diversion projects on the upper Mekong are of potentially even greater risk to the lower Mekong region than are its dams (see Figure 4). The Mekong River is the target of the third phase of China’s massive infrastructure plans to divert water from its water-rich south to the relatively dry north. If fully implemented, these water diversion projects would have the most damaging impact on lower Mekong ecological systems to date.¹⁹⁸

China’s unilateral actions along the upper Mekong are undermining multilateral efforts among lower Mekong countries to make decisions that are mutually advantageous for all countries that benefit from the river’s resources. For example, the Mekong River Commission, a multigovernment body whose members include Thailand, Laos, Cambodia, and Vietnam, has a mission to develop “an economically prosperous, socially just, and environmentally sound Mekong River basin.”¹⁹⁹ However, as a “dialogue partner,” China plays only a tangential role in the Mekong River Commission, limiting the effectiveness of the organization. For example, as a dialogue partner, China is not obligated to share data on water management with other Mekong nations, which undermines information sharing among all Mekong River Commission members.²⁰⁰ Without a cohesive partnership of Mekong nations, even lower Mekong countries, which are most vulnerable to dam construction, are pursuing environmentally compromising infrastructure projects. As Dr. Dapice told the Commission, “It’s like the left and right hands don’t know what they are doing.”²⁰¹

Moreover, international rivers like the Mekong lack any international law or treaty akin to United Nations Convention on the

China and the Lower Mekong Region—Continued

Law of the Sea to regulate behavior along the river. The Mekong River Commission is the closest alternative to an international treaty, but China's lack of participation limits the organization's authority. According to the State Department Special Coordinator for Water Resources Aaron Salzberg, China should join the Mekong River Commission to more effectively address environmental and other problems faced by downstream Southeast Asian nations.²⁰² As in the case of the South China Sea disputes, China prefers to handle such problems bilaterally rather than via multilateral organizations like the Mekong River Commission.²⁰³

In the absence of China's engagement with lower Mekong countries and to enhance U.S. cooperation in the region on Mekong River issues, the State Department in 2009 established the Lower Mekong Initiative (LMI) to support environmental and social development along the lower portion of the river. Currently, the LMI includes the United States, the four member countries of the Mekong River Commission, and, since 2012, Burma.²⁰⁴ U.S. funding supports the six pillars of the LMI: agriculture and food security, connectivity, education, energy security, environment and water, and health.²⁰⁵ In 2012, the United States committed to provide \$50 million over three years to support an expansion of the initiative, known as LMI 2020.²⁰⁶

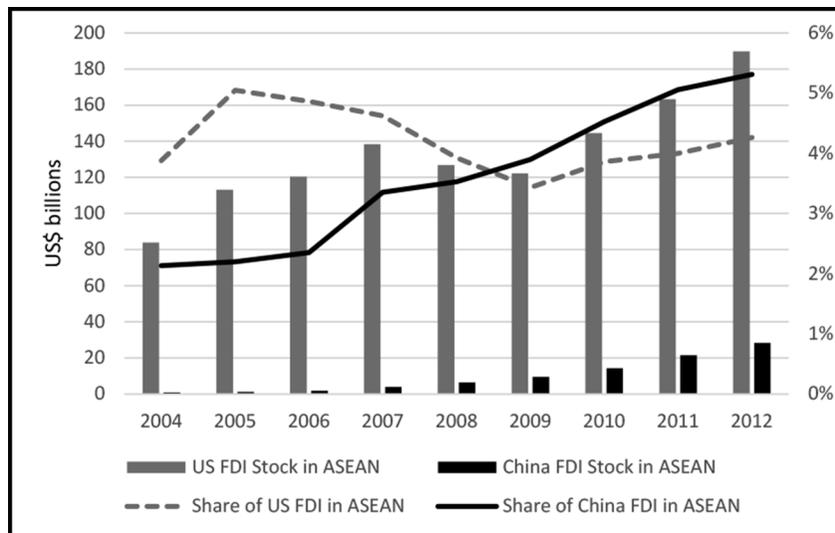
Law enforcement along the Mekong is one exceptional area where China is cooperating with lower Mekong countries. Over the past three years, China has organized and participated in joint law enforcement patrols along the river with Burma, Laos, and Thailand.²⁰⁷ Together, these countries established the Safe Mekong Coordination Center in Chiang Mai, Thailand, and engage in intelligence sharing. China's incentive to cooperate multilaterally on Mekong law enforcement came only after two Chinese cargo ships on the Thai portion of the river were hijacked in 2011. During the attack, 13 Chinese sailors aboard the cargo ships were killed, allegedly by Thai counternarcotics soldiers bribed by a drug smuggling ring.²⁰⁸ Although the hunt for the Burmese leader of the drug ring was conducted jointly by Burma, China, Laos, and Thailand, China's Ministry of Public Security reportedly considered—but ultimately refrained from—using an unmanned aerial vehicle to kill the drug kingpin while he was still in Burma.²⁰⁹

Philippines, have expressed concern about the environmental costs of Chinese infrastructure investment, the prevalence of corrupt practices in Chinese financial dealings, and the “loss of local competitiveness due to the importation of cheap goods from [China].”²¹² This diversity among individual ASEAN countries’ economic relationships with China makes it more difficult for ASEAN as a group to manage the threat of excessive economic dependence or coercion. However, China’s active steps toward deeper integration in trade, investment, and finance implies positioning itself as the economic core of Southeast Asia is a key part of its strategy.

Chinese Investment in ASEAN

China’s outbound FDI to ASEAN countries is an area where economic dependence may be of concern in the future. Although still small in absolute terms, the stock of Chinese FDI in ASEAN has grown rapidly in recently years (see Figure 5). According to ASEAN, FDI flows from China surpassed those of the United States in 2013 (latest data available).²¹³ While the stock of U.S. FDI in ASEAN far exceeds China’s, the ASEAN share of China’s overall outbound FDI is steadily increasing and has been higher than the ASEAN share of U.S. outbound FDI since 2009 (see Figure 5).

Figure 5: Foreign Direct Investment in ASEAN



Note: Latest data available.

Source: UN Conference on Trade and Development.

China's Special Economic Zones in Southeast Asia

In addition to traditional FDI, China is also expanding its economic influence by investing in special economic zones, usually industrial estates, in some Southeast Asian countries. Organized by the Chinese government, which has clearly signaled that “the zones have political importance over and above their economic role,” the zones were constructed and are being operated by Chinese companies that won contracts awarded by China’s Ministry of Commerce.²¹⁴ Although officially the contracts were awarded based purely on the financial merits of the companies, China’s Ministry of Foreign Affairs had to sign off on all zone projects “as they were to benefit other countries through official Chinese government subsidies.”²¹⁵ China’s government pledged to reimburse Chinese companies at least 30 percent of the cost of constructing the zones.²¹⁶ Chinese special economic zones exist in Cambodia, Laos, Indonesia, Thailand, and Vietnam.²¹⁷ In many of these zones, China has leased the land for 99 years, and the zones are often governed by committees of Chinese businessmen and former officials, sometimes with local citizens having to show passports to enter the area.²¹⁸ Some zones reportedly operate in China’s time zone, use the renminbi (RMB) as the exclusive currency, and use Chinese phone and Internet networks. Even police forces are sometimes supplied by China, serving in cooperation with local police, but often with local police having limited jurisdiction over Chinese-owned businesses.²¹⁹

ASEAN countries welcome Chinese investment as an essential link to the global economy.²²⁰ Developed by China in 2007, Longjiang Industrial Park in Vietnam attracted 11 enterprises and \$68.6 million in investment before development of the zone was complete.²²¹ Other zones in the region attracted similar levels of investment halfway through development, including the Sihanoukville Special Economic Zone in Cambodia (\$32.7 million) and the Thai-Chinese Rayong Industrial Zone (\$315 million).²²²

More than 95 Chinese companies have invested in Laos’ special economic zones, with total investment from China at \$4.2 billion.²²³ In the Golden Triangle Special Economic Zone, private companies from China and Hong Kong developed entertainment centers with casinos, resorts, clubs, and golf courses aimed at attracting regional tourism. The zone, which lies in Laos’ northern borderlands, previously had little economic significance, but now attracts foreign visitors from Southern and Eastern Asia.²²⁴ Similarly, the Thai-Chinese Rayong Industrial Zone, a joint effort between Thailand’s Amata Corporation and China’s Holley Group, has integrated Thai companies with the world economy; around 60 percent of the estate’s products, including car parts, electronics, and other machinery, are exported to markets around the world, including the United States and Europe.²²⁵ To make Thai goods easier to transport and to bolster the Rayong zone’s exports, China is also planning to build a rail network running north from Thailand through Laos and into China.²²⁶

**China's Special Economic Zones in Southeast Asia—
Continued**

Southeast Asian countries also see the zones as engines of local growth, creating jobs for the local population and eradicating poverty. The Rayong zone, for example, employs over 10,000 Thai workers,²²⁷ and Laos' zones employ more than 4,000 local workers.²²⁸

The benefits of these special economic zones do not always trickle down to the local populations. Although the zones increase employment, local workers are often discriminated against. Higher-level positions are given to Chinese workers, while local workers are relegated to low-skill jobs.²²⁹ In addition, harmful narcotics and gambling practices are sometimes introduced into villages from the nearby casinos and clubs.²³⁰ Construction of zones also commonly displaces local villagers, who lose their livelihoods when development begins. In resettlement agreements, governments offer extremely low compensation for locals who have to relocate their homes, and no compensation for those who lose their paddy fields and farmlands.²³¹

While the increase in Chinese investment into ASEAN may be politically motivated and raise certain reservations among ASEAN countries, a wider shift in manufacturing FDI diverted from China to Southeast Asia may help diversify the portfolio of FDI hosted in ASEAN. According to global consulting firm McKinsey & Company, "As China shifts from an export-driven economic model to a consumption-driven one, its wages are rising," which is diverting some labor-intensive manufacturing FDI out of China.²³² Cambodia, Indonesia, Laos, Burma, and Vietnam are among the most attractive alternate destinations for manufacturing FDI, given their abundance of low-cost labor.²³³ However, relatively low productivity and poor infrastructure may limit the ability of these countries to attract manufacturing FDI out of China.

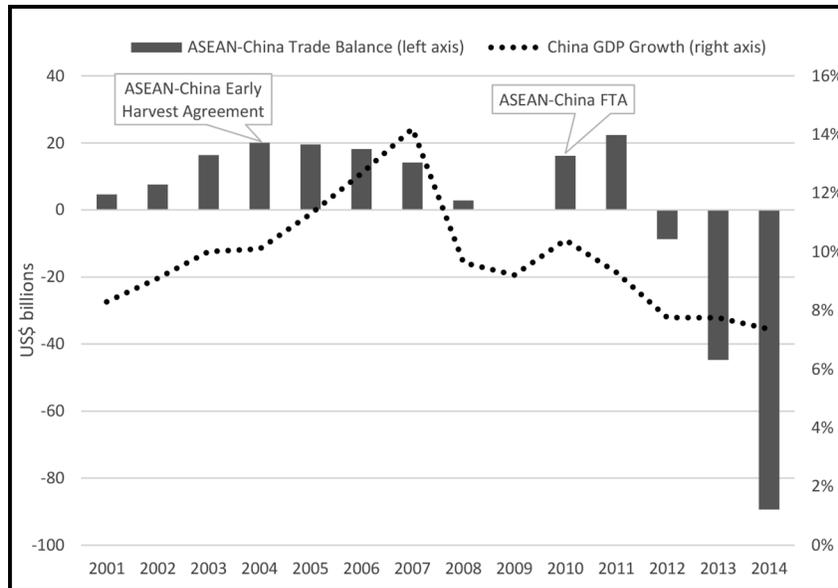
ASEAN-China Trade Relations

Trade liberalization has been an important element of China's economic engagement with Southeast Asia. Following the 1997–1998 Asian financial crisis, China sought to forge a closer economic relationship with Southeast Asia by forming the ASEAN-China Free Trade Area (FTA).²³⁴ Although the ASEAN-China FTA touts mutually beneficial economic relations, the reality has been a dramatic shift in ASEAN-China trade relations in China's favor. Prior to 2004, when an Early Harvest* version of the ASEAN-China FTA went into effect, ASEAN countries collectively enjoyed a growing trade surplus with China (see Figure 6). With implementation of the Early Harvest agreement, ASEAN's surplus began a steady decline until the 2008–2009 global financial crisis, when it disappeared altogether.²³⁵

*An "early harvest" program allows negotiators in trade talks to immediately lower trade barriers to certain goods and services even before negotiations on the final agreement have concluded.

In 2010, the full ASEAN-China FTA went into effect and saw a temporary rebound in ASEAN's trade surplus with China over the next two years. However, analysts did not attribute this temporary shift to the ASEAN-China FTA, but rather to growing Chinese demand for imports bolstered by its 2008 \$586 billion stimulus package and for imports of components from elsewhere in Asia to assemble final products for export to the world as it recovered from the financial crisis.²³⁶ Since 2012, in the absence of large economic stimulus and with a gradual slowdown in China's economy, ASEAN has seen a large and rapidly increasing trade deficit with China, reaching nearly \$90 billion in 2014.²³⁷

Figure 6: ASEAN-China Trade Balance



Source: China General Administration of Customs, via CEIC database; Tradingeconomics.com.

ASEAN's rapidly increasing trade deficit with China has coincided with the slowdown of China's economy, as shown in Figure 6.²³⁸ Some ASEAN countries have raised concerns that trade liberalization with China has led to ASEAN's growing vulnerability to fluctuations in China's economy. For example, Indonesia, which exports coal, tin, rubber, cocoa, and palm oil to China, saw these exports decline and prices fall as Chinese demand weakened.²³⁹ Even more advanced economies that are less dependent on China economically, such as Singapore, are worried that some high-value exports (like electronics and pharmaceuticals) as well as its investments in China may be affected.²⁴⁰

Despite these concerns, ASEAN has been leading negotiations toward a Regional Comprehensive Economic Partnership (RCEP), which would combine five of its individual FTAs with Australia and New Zealand, China, India, Japan, and South Korea, and would further advance trade liberalization between China and ASEAN.

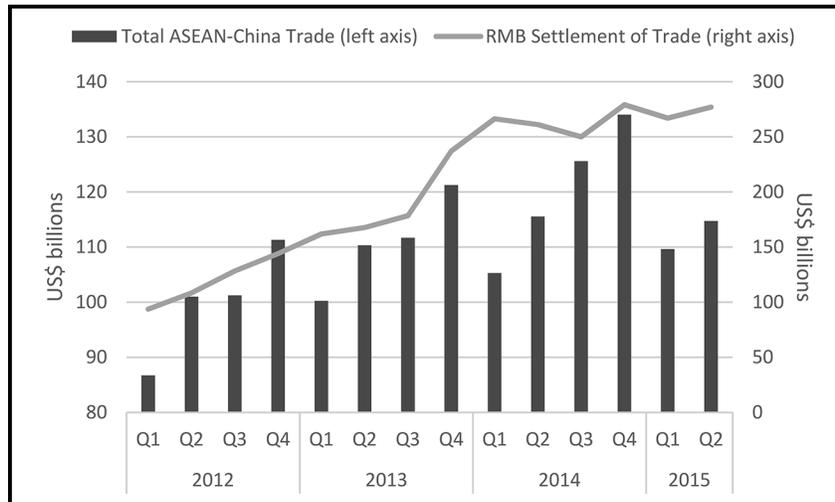
RCEP negotiations were launched in November 2012, and are officially slated for completion by the end of 2015, though it seems unlikely the parties will meet this deadline given the current state of the negotiations. Proponents of RCEP argue it could deepen economic integration in Asia, the region that has been the focal point of global trade growth over the past decade. Skeptics claim that despite China's official policy to defer to ASEAN as the leader of the arrangement, China may come to dominate the development of RCEP. Critics also counter that RCEP is likely to be a shallow agreement amenable to ASEAN's heterogeneous member states, and as such will not make a major impact on regional economic ties. RCEP excludes many of the advanced trade provisions promoted by the United States, such as those governing regulatory convergence, digital goods and services, and intellectual property.²⁴¹ Yet, according to Senior Vice President of Trade, Economic, and Energy Affairs at the National Bureau of Asian Research Meredith Miller, "For ASEAN, RCEP is important not only in terms of the potential economic gains and engagement with China, but also because ... it helps to solidify their position as the organizer of broader regional cooperation."²⁴²

The Trans-Pacific Partnership (TPP) is another prospective FTA that may afford ASEAN countries the opportunity to diversify the organization's trade liberalization strategy beyond an exclusive focus on China. Four ASEAN countries—Brunei, Malaysia, Singapore, and Vietnam—are party to the TPP negotiations. As Ms. Miller told the Commission, TPP is envisioned to have greater scope, depth, and coverage than RCEP, and notably does not include China.²⁴³ While some observers argue that RCEP and TPP are mutually exclusive (or potentially complementary), others claim the agreements are a competition between China and the United States to win diplomatic leverage in Southeast Asia. According to Ms. Miller, "It's very important at this juncture for the [United States] to continue to support ASEAN's [trade] diversification strategy."²⁴⁴

Regional Financial Relations

China is also gaining greater monetary influence in Southeast Asia. ASEAN's increased trade and investment with China has expanded the use of the RMB in regional economic transactions. In a study by the Peterson Institute for International Economics, researchers found that seven out of ten Asian currencies* move more closely with the RMB than with the dollar, which is attributed to regional trade integration.²⁴⁵ Figure 7 illustrates the correlation between growing ASEAN-China trade and the frequency of RMB-denominated cross-border transactions worldwide. According to the Asian Development Bank, in addition to the increase in RMB-denominated trade and investment, RMB internationalization has been a result of targeted Chinese government policies such as increased offshore RMB-denominated bonds (also known as dim sum bonds) and bilateral currency swap agreements, including those with Thailand, Malaysia, Singapore, and Indonesia.²⁴⁶

* Five of the seven currencies were Southeast Asian currencies: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The other two were South Korea and Taiwan.

Figure 7: Cross-Border RMB Settlement and ASEAN-China Trade

Source: People's Bank of China and the China General Administration of Customs, via CEIC database.

Although monetary integration is not considered a near-term goal in Southeast Asia,²⁴⁷ the region has taken steps toward an Asian financial architecture in which China would be only one of several key players. The region's first major step toward monetary cooperation came in the aftermath of the 1997–1998 Asian financial crisis, when five ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) established bilateral currency swaps with one another.* In 2000, the remaining ASEAN members as well as China, Japan, and South Korea joined the arrangement in what became known as the Chiang Mai Initiative.²⁴⁸

In March 2010, the bilateral currency swap mechanism was converted into a multilateral reserves pooling mechanism known as the Chiang Mai Initiative Multilateralization.† The Chiang Mai Initiative Multilateralization's initial value was \$120 billion, which was doubled in 2012 to \$240 billion.²⁴⁹ Under the Chiang Mai Initiative Multilateralization, China is an equal with Japan and is one of several contributors to the fund. China and Japan are the largest contributors, with 32 percent shares each; ASEAN as a whole contributes 20 percent, while South Korea contributes 16 percent.²⁵⁰ However, in their combined 15-year history, the Chiang Mai Initiative Multilateralization and its predecessor, the Chiang Mai Initiative, have never been used by any member country. Moreover, the Chiang Mai Initiative Multilateralization is not a common, centralized fund; it is merely a set of promises among the members to lend funds as needed in a crisis, with the majority of reserve funds disburseable only after the requesting member has al-

* Under a reciprocal currency swap arrangement, a country's central bank agrees to provide liquidity to another country's central bank.

† A crisis prevention mechanism known as the Chiang Mai Initiative Multilateralization Stability Fund was also established to provide short-term liquidity support to address sudden but temporary liquidity shortages.

ready appealed to the International Monetary Fund.²⁵¹ The procedures for borrowing funds are cumbersome, and the amounts that members may borrow are still very low in comparison to other sources of finance.²⁵²

Although it is a major contributor to the Chiang Mai Initiative Multilateralization, China appears to have few incentives to improve upon the effectiveness of the fund or use it as a basis for future monetary cooperation with Southeast Asia.²⁵³ With the increase in RMB-denominated transactions in Southeast Asia, China does not need to rely on existing arrangements such as the Chiang Mai Initiative Multilateralization, which has ties to the International Monetary Fund, to elevate its own currency. Moreover, given China's equal status to Japan in the currency swap, some claim China worries a strong Chiang Mai Initiative Multilateralization would curb the growing influence of the RMB (relative to the Japanese yen) and "preclude future Chinese currency hegemony in East Asia."²⁵⁴ In addition, through the BRICS-led New Development Bank, China has pledged to finance more than 40 percent of a \$100 billion emergency swap fund, a mechanism that could shift emergency borrowing away from the International Monetary Fund and Chiang Mai Initiative Multilateralization and toward a more China-centric arrangement.²⁵⁵ (For more analysis of China's financial statecraft, including the New Development Bank, see Chapter 1, Section 1, "Year in Review: Economics and Trade.")

China's Security Engagement with Southeast Asia

Defense and security cooperation between China and countries in Southeast Asia has grown over the last 15 years, despite mistrust of China in Southeast Asian capitals arising from China's support for communist insurgencies in Southeast Asia during the Cold War and its actions in the South China Sea.²⁵⁶ China and Southeast Asian countries have many shared security interests. These shared interests include maritime security, humanitarian assistance and disaster relief (HA/DR), search and rescue, countering piracy, open and secure sea lines of communication, counterterrorism, border security, and combating transnational crime and drug trafficking. China's security cooperation with Southeast Asian countries is designed largely to advance these interests; it is also designed to strengthen bilateral relations with those countries and reassure its neighbors that it seeks to be a peaceful and cooperative regional partner. Cooperation between China and Southeast Asian countries now includes joint and multilateral exercises,* military aid, training, arms sales, meetings between defense officials, educational exchanges, and cooperation in areas of nontraditional security and HA/DR.²⁵⁷

* According to the U.S. Department of Defense, China participated in bilateral or multilateral exercises with Southeast Asian countries on 19 occasions between 2003 and 2014. These included exercises with Thailand (six), Singapore (six), Indonesia (six), Vietnam (two), Brunei (two), Malaysia (two), and the Philippines (one). During this timeframe, the only countries with which China participated in more exercises were the United States (7), Pakistan (7), and Russia (12). U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 76–77.

China-Southeast Asia Defense Ties

China's defense cooperation with Southeast Asia is most prominent with Burma, Cambodia, Laos, and Thailand, countries that are among China's nearest neighbors and that, with the exception of Thailand, have less developed militaries, have weak defense relations with the United States, and are more economically dependent on China than are other Southeast Asian countries.²⁵⁸ For example, in Cambodia, China funded the majority of the construction of the country's Army Institute building, Chinese advisors oversee the institute's teaching staff, and students at the institute are required to spend six months at a Chinese military academy. China also donated military trucks and uniforms to Cambodia and provided a loan for Cambodia to purchase Chinese helicopters.²⁵⁹ According to Dr. Thayer, China's aid to Cambodia's Army Institute is "the beginning of a long-term strategy of winning influence in the Cambodian military by cultivating these people. And China keeps very, very deep intelligence files on [the Cambodian military officers with whom China interacts]." ²⁶⁰

China-Thailand defense ties are particularly robust. The Chinese and Thai militaries have conducted joint exercises almost every year since 2008, more than most other Southeast Asian militaries.²⁶¹ In 2015, the two sides agreed to establish more mechanisms for defense cooperation, including educational exchanges and training. They also agreed to hold more exercises between the Chinese and Thai air forces.²⁶² This announcement came amid a downturn in relations between Bangkok and Washington that began after the 2014 coup that brought a military junta to power in Thailand. The Thai Navy in July 2015 announced it was considering purchasing three submarines from China in a \$1 billion deal, which would amount to one of the most lucrative Chinese arms sales to date. Thai officials subsequently said the decision to procure the submarines would be postponed; however, it is unclear what prompted the announcement or Thailand's apparent reconsideration.* ²⁶³ Enhanced ties between Thailand and China may yield dividends for Beijing over time in the form of influence within the Thai military as young Thai officers receive Chinese military education and training and rise through the ranks.²⁶⁴

In Thailand and other countries in Southeast Asia, China has been quick to offer military aid when the United States withdraws its own military support. After the Thai military overthrew the government of Thaksin Shinawatra in 2006, for example, the U.S. government stopped \$24 million in military aid to Thailand. Several months later, China offered Thailand \$49 million in military aid.²⁶⁵ In 2010, the United States stopped a shipment of 200 surplus U.S. military vehicles to Cambodia in protest over Cambodia's decision to repatriate to China 20 Uyghurs who were seeking asylum. A few weeks later, China promised Cambodia a package of 257 new military vehicles, 50,000 military uniforms, and \$15 mil-

* On July 15, 2015, Thailand's Defense Minister Prawit Wongsuwan said, "We will wait for now and not introduce the deal to the cabinet for approval." He added, "For now, the navy must inform itself and educate itself on whether the submarines are worth it and how much they will add to the Thai navy." Reuters, "Thailand Puts \$1 Billion Chinese Submarines on Hold," July 15, 2015; Wassana Nanuam, "Prawit Delays Sending Sub Purchase to Cabinet," *Bangkok Post*, July 15, 2015.

lion in military aid.²⁶⁶ Neither of these examples likely resulted in a major loss of U.S. influence in either country, but they illustrate how China is able to nimbly exploit tensions in the United States' relations in the region to its own advantage.

China has weaker defense ties with countries in maritime Southeast Asia.²⁶⁷ Most of these countries have stronger defense relations with the United States and are also involved in maritime territorial disputes with China. Nonetheless, China continues to develop its defense ties with maritime Southeast Asia. For example, China and Malaysia held their first combined military exercise in December 2014, a tabletop HA/DR exercise.²⁶⁸ The PLA and Malaysian Armed Forces held an exercise in the Strait of Malacca in September 2015, focusing on operations including maritime escort, search and rescue, HA/DR, and counterhijacking.²⁶⁹ According to Chinese state-run media outlet Xinhua, the exercise was "the largest bilateral military exercise between China and a country from ASEAN."²⁷⁰

China views arms transfers as a means of strengthening bilateral relations and enhancing its influence in Southeast Asia while also growing its defense export industry.²⁷¹ Chinese arms transfers to countries in Southeast Asia primarily consist of low-end Chinese equipment, and account for a small percentage of its global arms transfers. Although China has begun to sell more advanced equipment—such as C-802 antiship missiles sold to Indonesia—to Southeast Asian countries, China's sales in the region are still primarily comprised of equipment such as K-8 trainer aircraft and JIANGHU-class frigates.²⁷² According to data gathered by the Stockholm International Peace Research Institute, between 2010 and 2014, Burma was the largest recipient of Chinese arms in Southeast Asia, followed by Indonesia, Thailand, Cambodia, Laos, and Timor Leste.²⁷³ During this time, China transferred \$1.3 billion in arms to these seven countries, comprising 16.6 percent of the value of China's global arms transfers.²⁷⁴

China's arms sales to Burma reflect the robust military-to-military ties the two countries have enjoyed since the late 1980s, when China provided military aid and sold arms to the country after the Burmese junta's 1988 crackdown on prodemocracy demonstrations led to international isolation; these sales also speak to China's interest in encouraging stability and political continuity in its southern neighbor, with which it shares a long and often troubled border.^{275,276} Between 2010 and 2014, China supplied 56 percent of Burma's arms imports (Russia provided 40 percent).²⁷⁷ Although the United States and European countries have strengthened their political and economic relations with Burma in recent years, they continue to maintain restrictions on the export of defense equipment due to continuing concerns about abuses by the Burmese military. For its part, the United States has limited military-to-military engagement to meetings between senior officials and training on military legal affairs.²⁷⁸

Conflict on the China-Burma Border

China is involved in a long-simmering conflict in northern Burma between the Burmese military and several armed rebel groups. Some of these rebel-controlled territories, by virtue of their location near the Chinese border, have many connections to China. In addition to their large ethnic Chinese populations, these areas are heavily economically integrated with China's Yunnan Province, though this economic relationship is often fraught with tension. For example, some stalled Chinese-backed economic projects, like the Myitsone Dam, are symbolic of resistance to China's presence in the region. Additionally, China's massive demand for northern Burma's vast jade reserves has spawned a corrupt and predatory industry associated with rampant intravenous heroin use by miners, often enabled by Chinese precursor chemicals. As a result, HIV is a significant health concern in northern Burma.²⁷⁹

Further complicating the relationship, northern Burmese rebel groups are apparent beneficiaries of Chinese arms (although the Chinese government denies this).²⁸⁰ Under then Chairman of the CCP Mao Zedong, China openly supported communist rebels in Burma, but in recent decades it has cultivated ties with the ruling Burmese government and has sought to help broker a ceasefire agreement among the Burmese government and various rebel groups. Nevertheless, it appears some of the rebel groups are enabled by some degree of Chinese military assistance—if not sanctioned by Beijing, then possibly orchestrated by Chinese officials or other actors in Yunnan Province.²⁸¹ Among Chinese arms reported to be used by rebel forces are man-portable air defense systems, armored vehicles, and infantry support weaponry.²⁸²

In 2015, the intermittent conflict between the Burmese military and rebels became particularly intense, leading to heightened tensions between China and Burma. In March 2015, China criticized the Burmese military for accidentally dropping bombs on the Chinese side of the border and killing four Chinese citizens.²⁸³ China threatened a “decisive response” if Burmese bombing in China's territory continued, and sent fighter aircraft to patrol the affected area.²⁸⁴ Then, in June 2015, China announced it would conduct live-fire military exercises on the China-Burma border.²⁸⁵ Retired PLA colonel Yue Gang said “live-fire military exercises by the PLA are very rare in this region” and asserted that the exercises are intended to “show that there is a bottom line to China's tolerance. When [Burma] crosses the line China must strike back to defend itself, not to start a war.”²⁸⁶ Around this same time, as a result of growing violence, as many as 60,000 Burmese refugees reportedly crossed the border into China.²⁸⁷

It is unclear how Beijing will seek to balance what appear to be competing Chinese interests in Burma going forward. Maintaining positive ties with the Burmese government has become

Conflict on the China-Burma Border—Continued

even more important to China now that the United States and European countries have expanded relations with Burma. According to *Jane's Intelligence Review*, China's apparent recent support for rebel groups near the border may even be intended as a "warning" to Naypyidaw, the Burmese capital, that its thawing relations with the United States and the West "not jeopardize Beijing's long-standing strategic and economic interests" in Burma.²⁸⁸

Nontraditional Security Cooperation

Counterterrorism

Counterterrorism is an important area of cooperation for China and Southeast Asia; it has been the focus of almost half of China's military exercises with Southeast Asian countries between 2008 and 2014.²⁸⁹ Terrorism is a growing security challenge for China. In addition to Beijing's concerns about domestic terrorism, new external threats such as the Islamic State in Iraq and the Levant (ISIL, also known as ISIS) are emerging. ISIL has publicly identified China as a country where "Muslims' rights are forcibly seized."* In July 2014, China's Middle East Envoy Wu Sike acknowledged that approximately 100 Chinese citizens may be fighting or receiving training in the Middle East.²⁹⁰ Mr. Wu did not specify whether those individuals undergoing training are being trained by ISIL or other groups. As violent attacks on government and civilian targets in China allegedly carried out by militant Uyghurs have increased, the Chinese government is concerned that individuals within China could draw inspiration from ISIL, or that Chinese citizens fighting with ISIL or receiving training from the organization could return to China to carry out attacks.[†]²⁹¹ In addition, hailing from countries on China's periphery, there reportedly are more than 500 Indonesians and dozens of Malaysians fighting for ISIL.²⁹² More than being a source of fighters, Southeast Asia could also become a safe haven from which ISIL could initiate terror attacks, a concern raised by Singapore's Prime Minister Lee during his speech at the 2015 Shangri-La Dialogue.²⁹³ Given these concerns, China may increase counterterrorism cooperation with Southeast Asian countries. (For a discussion of China's counterterrorism cooperation with Central Asian countries, see Chapter 3, Section 1, "China and Central Asia.")

* In July 2014, Abu Bakr al-Baghdadi, the leader of ISIL, listed China among the countries where "Muslims' rights are forcibly seized," and called on Muslims to take action, saying, "Your brothers all over the world are waiting for your rescue, and are anticipating your brigades." SITE Monitoring Service, "Islamic State Leader Abu Bakr al-Baghdadi Encourages Emigration, Worldwide Action," July 1, 2014.

† While terrorism is a real and growing threat to peace and security in China, the Chinese government tends to employ an excessively broad definition of and approach to terrorism, often conflating terrorism with extremism, criminality, or peaceful political protest. This, along with the opacity of China's counterterrorism policies, makes it difficult to assess the legitimacy of some of China's terror threat assessments. U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 367; Andrew Small, *The China-Pakistan Axis: Asia's New Geopolitics*, Oxford University Press, 2015, 73.

In addition, the August 2015 bombing of Thailand's Erawan Shrine may mean that terrorism will become a larger issue in China-Thailand relations. In September 2015, Thai police announced that two suspects—a man of unknown nationality and a Uyghur man from China—had confessed to carrying out the attack, which killed 20 people, including tourists from mainland China and Hong Kong.²⁹⁴ The police alleged that their primary motive was retaliation for the Thai government's crackdown on a network that helped to smuggle Uyghurs out of China through Thailand.²⁹⁵ However, this allegation has yet to be independently confirmed.

Humanitarian Assistance and Disaster Relief

China also seeks to enhance cooperation with Southeast Asian countries in the area of HA/DR, cooperation through which Beijing can try to reassure its Southeast Asian neighbors of its intentions and support its efforts to present China as a contributor to international security. HA/DR exchanges between the PLA and regional militaries also are a relatively nonsensitive area of cooperation. In 2014, China sent military personnel to participate in an ASEAN HA/DR exercise in Thailand, and later in the year signed a memorandum of understanding with ASEAN on disaster management.²⁹⁶ The agreement includes a grant from the Chinese government to support ASEAN disaster management programs.²⁹⁷ Moreover, following the March 2014 disappearance of Malaysia Airlines Flight 370, on which most of the passengers were Chinese citizens, China deployed a large number of military assets, including transport aircraft, guided-missile frigates, and helicopters, to conduct search and rescue operations.²⁹⁸ In 2013, China deployed the PLA Navy hospital ship the *Peace Ark* to the Philippines in response to Typhoon Haiyan. This deployment was the first time China sent a naval vessel overseas for a medical HA/DR relief operation.²⁹⁹

Trafficking and Infectious Diseases

China cooperates with Southeast Asian countries to combat other nontraditional security threats, including human and drug trafficking and the spread of infectious diseases. Among the examples of this collaboration is China-Vietnam cooperation to crack down on human trafficking rings in China and rescue Vietnamese women who had been promised work in China but were later sold to brothels.*³⁰⁰ The Chinese government partners with the Burmese military and police to try to counter drug trafficking activities between Burma and China.†³⁰¹ Joint health initiatives have included China's partnership with Malaysia in fighting the spread of severe acute respiratory syndrome (SARS) in 2003 and later avian influenza; China also collaborated with Indonesia, Thailand, and Viet-

*In addition, Vietnamese are being smuggled into China to work in factories. It is unclear, however, whether the Chinese and Vietnamese governments are working together to stop these smuggling operations. James Pomfret, "Special Report: How Smuggled Workers Power 'Made in China,'" Reuters, August 6, 2015.

†The U.S. and Chinese governments also have cooperated to combat drug trafficking originating in the Golden Triangle, the area where the borders of Burma, Laos and Thailand meet. One of the most prominent examples of such cooperation was the dismantling of the "125" drug-smuggling ring, which was trafficking heroin produced in Burma to the United States via China, in 2003. Zhang Yongan, "Asia, International Drug Trafficking, and U.S.-China Counternarcotics Cooperation," *Brookings Institution*, February 2012, 2, 12, 16; Susan Saulny, "China's Help Is Credited in Tripping up Drug Ring," *New York Times*, May 17, 2003.

nam on a study regarding enhancing surveillance and early detection of avian influenza.³⁰²

Piracy

Piracy has increased in maritime Southeast Asia and could have major implications for China as the majority of its oil imports transit through Southeast Asia by way of the Strait of Malacca. During the first three months of 2015, 55 percent of all armed robbery and piracy incidents occurred in Southeast Asia, including the hijacking of five oil tankers.³⁰³ In addition, in 2014, of the seafarers who were the victims of piracy in Southeast Asia and whose nationalities were known to the International Maritime Bureau, 10.8 percent were Chinese, the third-largest percentage among all nationalities identified.³⁰⁴

Despite the threat of piracy in maritime Southeast Asia, however, the PLA's antipiracy operations are focused on the Gulf of Aden in the western Indian Ocean. Since piracy is declining in the Gulf of Aden and is on the rise in the Gulf of Guinea and maritime Southeast Asia, PLA Navy antipiracy operations may shift to these areas.³⁰⁵ China's cooperation with Southeast Asia in combating piracy includes its membership in the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia, and its assignment of a Chinese liaison officer to the Information Fusion Center; both organizations are based in Singapore.³⁰⁶ Furthermore, as discussed earlier, the PLA and Malaysian Armed Forces' combined exercises held in the Strait of Malacca in September 2015 included maritime escort and counterhijacking drills.³⁰⁷

China-Vietnam Relations: A Case Study

China-Vietnam relations are among the most complex of China's bilateral relationships in Southeast Asia. China and Vietnam share communist ideology and history, a border, cultural ties, and more than 1,000 years of imperial Chinese control over Vietnam. Although China supported the North Vietnamese during their war with the United States, Vietnam's toppling of the China-backed Khmer Rouge in Cambodia in 1978 and Vietnam's security links to the Soviet Union prompted China to invade Vietnam in 1979, sparking a month-long war. Estimates of the casualties among the two sides' militaries range as high as 26,000 Chinese soldiers and 30,000 Vietnamese soldiers killed.³⁰⁸ According to an article in the *New York Times*, 10,000 Vietnamese civilians were killed.³⁰⁹ In the South China Sea, China seized control of the Paracel Islands in 1974 and Johnson South Reef in 1988 using military force against Vietnamese military personnel.³¹⁰ Although the bilateral relationship improved after the two countries normalized relations in 1991, they did not reach an agreement on the demarcation of their border until 2009, 30 years after the 1979 border war.³¹¹

Today, bilateral cooperation between China and Vietnam spans a broad range of areas.³¹² China-Vietnam memoranda of understanding cover topics such as human trafficking, educational exchanges, and nuclear energy exchanges. For example, the Vietnam National University of Agriculture has more than 15 agreements

with Chinese universities on student exchange and educational programming.³¹³

The two countries also have strong economic ties—China is the third-largest destination for Vietnam’s exports, Vietnam’s largest source of imports, and a growing source of investment in Vietnam. In late 2013, Beijing and Hanoi signed a memorandum of understanding to increase trade and economic cooperation by creating four new economic zones along the Vietnam-China border by 2020.³¹⁴ However, economic cooperation between China and Vietnam is not free from tension.³¹⁵ For example, during the Commission’s trip to Vietnam in 2015, multiple observers noted problems with the construction of an urban rail system in Hanoi by a Chinese company. China Railway Sixth Group Co., Ltd. is the main contractor for the ongoing construction of the urban rail system, a project which has experienced delays, cost overruns, and safety problems.³¹⁶ The rail system was originally scheduled to become operational in 2013, but that date has been extended to 2016; the cost of construction has been \$339 million more than expected; scaffolding has collapsed, and steel bars and reels have fallen on cars and motorcycles, with a steel reel killing one person and injuring two others.³¹⁷ In January 2015, Vietnam’s Minister of Transportation described the project as the “worst” in Vietnam.³¹⁸

Disputes over sovereignty in the South China Sea remain a major source of friction in China-Vietnam relations, as discussed earlier, and Vietnam is one of the most vocal Southeast Asian countries in criticizing China’s assertive behavior in the South China Sea.³¹⁹ Amid the PLA’s rapid modernization and China’s efforts to consolidate its claims, Vietnam has also taken measures to enhance its military capabilities to deter potential Chinese coercion.³²⁰ During many of the Commission’s meetings with the Vietnamese government, the Communist Party of Vietnam, and academic organizations in Hanoi, interlocutors expressed their concerns about China’s activities in the South China Sea, including the view that China seeks to control part or all of the South China Sea.³²¹ Reflecting these concerns, an interlocutor from the Institute for Defense Strategy at Vietnam’s Ministry of Defense told the Commission that Vietnam seeks a peaceful and stable relationship with China rather than an “unreal, verbal peace.”³²² Interlocutors from the Diplomatic Academy of Vietnam told the Commission that China’s approach to the South China Sea dispute suggests China has a long-term strategy to dominate Vietnam.³²³ In addition, interlocutors from the Communist Party of Vietnam Central Committee said that, should China announce an ADIZ over the South China Sea, it would be capable of enforcing the ADIZ, and “freedom of navigation will be no more.”³²⁴ During several of the Commission’s meetings in Hanoi, interlocutors expressed their view that the United States should be more assertive in response to China’s actions in the South China Sea.³²⁵

One of the worst crises in China-Vietnam relations since 1979 ensued when Chinese state-owned oil company China National Petroleum Corporation deployed its ultradeepwater oil rig *Haiyang Shiyou 981* to waters disputed by China and Vietnam between May

and July 2014.*³²⁶ Although the two sides appear to have stabilized bilateral relations since then, the oil rig crisis may have a far-reaching impact on Vietnam's view of China and its approach to the relationship. A U.S. embassy official who met with the Commission in Hanoi described the crisis as "paradigm-shattering," causing Vietnam to feel "very betrayed" by China.³²⁷ Murray Hiebert, senior fellow and deputy director of the Sumitro Chair for Southeast Asian Studies at the Center for Strategic and International Studies, stated in his written testimony to the Commission that "as a result of the oil rig crisis, even party stalwarts in Hanoi have become disillusioned with China's treatment of Vietnam. Strategic trust has been weakened."³²⁸ As further evidence of this shift, in July 2014, 61 members of the Communist Party of Vietnam, including a former Vietnamese ambassador to China and former vice minister of Vietnam's Ministry of Science and Technology, sent a letter to Vietnam's leaders in which they called for Vietnam to "escape" from what they described as the country's dependence on China.³²⁹

Concerns about China in Vietnam are not limited to the South China Sea. According to U.S. officials in Hanoi, Vietnam views China's construction of dams on the Mekong River as part of China's effort to "pinch" Vietnam from the West. These officials also said that Vietnam is concerned neighboring Laos no longer "needs" Vietnam due to its relationship with China.³³⁰

Vietnam-U.S. Relations

The oil rig crisis appears to have motivated Vietnam to pursue more vigorous outreach to third-party countries, particularly the United States.³³¹ Since Vietnam and the United States restored diplomatic relations in 1995, the two countries have gradually strengthened bilateral relations, a process that has gained momentum from the U.S. rebalance to Asia policy and China's actions in the South China Sea.³³² During his visit to Vietnam in June 2015, U.S. Secretary of Defense Ashton Carter announced the United States will provide Vietnam \$18 million to procure U.S.-made patrol vessels and will station a U.S. peacekeeping expert at the U.S. embassy in Vietnam, with the aim of assisting Vietnam in pursuing its goal of participating in UN peacekeeping operations. In addition, the two sides pledged to expand defense trade, potentially to include coproduction of defense equipment.³³³ In another sign of growing ties, Secretary Carter visited a Vietnamese military base and toured a Vietnamese Coast Guard ship, marking the first time the Vietnamese military had invited a U.S. secretary of defense to visit a military base and set foot on a coast guard vessel.³³⁴ Following Secretary Carter's visit to Vietnam, in July 2015, General Secretary Nguyen Phu Trong, Vietnam's most powerful political leader, visited the United States, the first time a Communist Party of Vietnam general secretary has done so. General Secretary Trong belongs to the conservative faction of the Communist Party of Vietnam, a group within the party that traditionally has viewed the United States with suspicion.³³⁵ However, according to Jonathon

* For more information about the oil rig crisis, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 244–246.

London, assistant professor at the City University of Hong Kong, the visit indicates that “even the most conservative, doctrinaire elements of the Communist Party have now come to recognize the practical indispensability of strong Vietnamese-U.S. ties.”³³⁶

As Vietnam continues to develop its relations with the United States to balance its relations with China, limits on the U.S.-Vietnam partnership may arise from the misgivings of senior Vietnamese officials who fought against the United States in the Vietnam War.³³⁷ Vietnamese officials and strategists are concerned that if Vietnam becomes too close to the United States, China will respond negatively.³³⁸ A further complication exists regarding the U.S. restriction on selling weapons to Vietnam. Although the United States eased such restrictions in 2014 to allow for the transfer of maritime security equipment, Washington still bans the sale of lethal weapons to Vietnam due to concerns about Vietnam’s human rights record. Vietnam is seeking a removal of the remaining restrictions.³³⁹

Implications for the United States

China’s relations with Southeast Asian countries and its activities in Southeast Asia have important implications for the United States related to regional stability, U.S. commitments to allies, freedom of navigation, economics and trade, and nontraditional security threats.

China’s land reclamation and construction activities in the South China Sea, once completed, likely will have significant implications for U.S. interests in Southeast Asia.

First, military infrastructure on the land features China controls in the Spratly Islands could enhance China’s antiaccess/area denial* capabilities, potentially challenging the U.S. military’s ability to freely operate in the region. Ms. Glaser writes that “in peacetime and in a crisis, [these land features] will provide China with the capability to hold U.S. forces at risk at a farther distance than it can at present. This could have implications for a U.S. effort to come to Taiwan’s defense. A U.S. carrier battle group sailing from the Arabian Gulf or Indian Ocean that was coming to Taiwan’s aid would have to pass through the South China Sea.”³⁴⁰

Second, tensions between China and the other claimant states, namely the Philippines and Vietnam, have the potential to spark an armed clash, which would threaten regional stability and the global economy and could involve the United States. The United States maintains the 1951 Mutual Defense Treaty with the Philippines, and though it has affirmed its commitment to the treaty, the United States has not officially articulated the specific geographic areas that would trigger a mutual defense response.³⁴¹ Thus, a potential military clash between China and the Philippines that begins in the South China Sea could lead to involvement by

* According to the U.S. Department of Defense, “antiaccess” actions are intended to slow the deployment of an adversary’s forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. “Area denial” actions affect maneuvers within a theater, and are intended to impede an adversary’s operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term “counterintervention,” reflecting its perception that such operations are reactive. U.S. Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

the U.S. military. In the current climate of China-Philippines relations, as China becomes bolder in its efforts to secure control over Philippines-claimed waters, the potential for miscalculation, crisis, and conflict is high.

Third, the South China Sea is also a major irritant in U.S.-China relations and is the most likely location of a dangerous encounter, whether intended or unintended, between the U.S. and Chinese militaries. Once the airstrip on Fiery Cross Reef is operational, China could send fighter aircraft to challenge U.S. surveillance flights near its reclaimed land features, increasing the chance of a collision and a political crisis. Likewise, the growing presence of the PLA Navy and Chinese maritime law enforcement ships in the South China Sea raises the risk of a maritime incident between the U.S. and Chinese ships.

U.S. Patrols near China's Land Reclamation Projects in the South China Sea

On May 20, 2015, a U.S. Navy P-8A Poseidon surveillance aircraft flew from Clark Air Base in the Philippines to airspace near Subi Reef, Mischief Reef, and Fiery Cross Reef. CNN reporter Jim Sciutto accompanied the crew and reported on the mission. Over the course of the flight, the PLA Navy ordered the crew of the Poseidon to leave the airspace eight times. The radio transmission also included the following directive: "You are approaching our military alert zone. Leave immediately."*³⁴² At one point, the Chinese radio operator's warnings grew more urgent, and he yelled, "You go!"†³⁴³ It is unclear how the PLA Navy defines a military alert zone, which is not an internationally recognized military term.

Publicizing U.S. surveillance flights near China's reclaimed land features in the South China Sea appears to be part of an effort by the United States to impose reputational costs on China as its land reclamation and construction activities continue. In his keynote speech at the 2015 Shangri-La Dialogue, Secretary

*The first reported instance of the PLA challenging foreign aircraft flying near the land features on which it is conducting land reclamation in the South China Sea occurred on April 19, 2015, when a PLA Navy ship ordered a Philippine Air Force aircraft conducting a patrol near Subi Reef to leave the airspace to "avoid misjudgment." A spokesperson for China's Ministry of Foreign Affairs confirmed the PLA's challenge to the Philippine Air Force patrols, saying, "Planes from the Philippines have conducted multiple intrusions into the area above waters near China's islands and reefs over recent days. The Chinese garrison there took actions in accordance with the law by asking them to leave through radio." The head of the Philippine military's Western Command reported that at least six similar incidents of China challenging Philippine military aircraft in the South China Sea have occurred since then. Carmela Fonbuena, "China Continues to Harass PH Air Patrols in West PH Sea," *Rappler* (Philippines), May 7, 2015; China's Ministry of Foreign Affairs, *Foreign Ministry Spokesperson Hong Lei's Regular Press Conference on April 24, 2015*, April 24, 2015.

†CNN reported the P-8 crew had been flying such missions for months and were accustomed to similar warnings, but they noted the warnings had become more aggressive as China's land reclamation projects progressed. In May 2015, a U.S. defense official said U.S. Navy surveillance missions over China's land reclamation projects occur on an almost-daily basis. Helene Cooper and Jane Perlez, "U.S. Flies over a Chinese Project at Sea, and Beijing Objects," *New York Times*, May 22, 2015; CNN, "High Stakes Surveillance over the South China Sea," May 20, 2015.

**U.S. Surveillance Flights over the South China Sea—
Continued**

Carter asked for “a lasting halt” to land reclamation in the South China Sea and harshly criticized China’s land reclamation, saying, “Turning an underwater rock into an airfield simply does not afford the rights of sovereignty or permit restrictions on international air or maritime transit.”³⁴⁴ He also reaffirmed the United States’ right and intention to “fly, sail, and operate wherever international law allows.”³⁴⁵ U.S. surveillance flights have continued since then, including one on which Admiral Scott Swift, commander of the U.S. Pacific Fleet, was aboard.³⁴⁶

The United States’ response to China’s activities in the South China Sea continues to evolve. On May 12, the *Wall Street Journal* reported that Secretary Carter was contemplating sending U.S. Navy surveillance aircraft and ships within 12 nm of China’s land reclamation projects,³⁴⁷ citing “growing momentum within the Pentagon and the White House for taking concrete steps in order to send Beijing a signal that the recent buildup in the Spratlys went too far and needed to stop.”³⁴⁸ After much deliberation by the Obama Administration,³⁴⁹ on October 27 a U.S. Navy guided missile destroyer conducted a freedom of navigation patrol within 12 nm of Subi Reef, an artificial island created from a low-tide elevation, appearing to signal that the United States does not consider Subi Reef to have a territorial sea.*³⁵⁰ According to a U.S. official quoted by the *Washington Post*, the patrol “was completed without incident,” though the PLA Navy sent at least one ship to monitor the U.S. destroyer, and a Chinese Ministry of Foreign Affairs spokesperson warned that, “If the relevant party keeps stirring things up, it will be necessary for China to speed up its construction activities.”†³⁵¹ As of the writing of this Report, Chinese officials had not otherwise publicly reacted to the patrol.

China’s security cooperation with mainland Southeast Asia may have implications for U.S. influence in the region as well. This is particularly the case in Burma, where China appears to believe it is in a contest for influence with the United States (and to a lesser extent, other major powers).³⁵² While the U.S.-Thai alliance remains in place and Washington and Bangkok are mending ties after a period of tension, China’s security ties with Thailand are also growing.³⁵³ It remains to be seen how Thailand will manage this dynamic, but U.S.-China competition for influence in the country almost certainly will grow in the future.

* According to UNCLOS, low-tide elevations, which are submerged at high tide, may not generate a territorial sea unless they are located within the territorial sea of an island or mainland coastline. UN Convention on the Law of the Sea, “Part 2: Territorial Sea and Contiguous Zone.” See also Gregory Poling, “Carter on the South China Sea: Committed and (Mostly) Clear,” *Center for Strategic and International Studies, Asia Maritime Transparency Initiative*, June 3, 2015.
† Another U.S. official told the *Financial Times* that the U.S. ship had also sailed within 12 nm of features claimed by the Philippines and Vietnam. Demetri Savastopulo and Charles Clover, “China Accuses US Navy of Illegal Incursion in South China Sea,” *Financial Times*, October 27, 2015.

In its economic relations with Southeast Asia, China is actively expanding its foreign assistance in the region through mechanisms such as its 21st Century Maritime Silk Road initiative and the AIIB in order to serve its own diplomatic and economic interests. Although this assistance is primarily in the form of infrastructure investment versus traditional official development assistance, the value of its pledges exceeds estimates of infrastructure aid to Southeast Asia from U.S.-backed development organizations such as the World Bank and the Asian Development Bank. If China follows through on its pledges and outpaces the United States and U.S.-backed aid organizations in foreign assistance to Southeast Asia, this could undermine U.S. development goals in the region, including promoting democracy, human rights, governance, gender equality, and sustainable development. At the same time, China's continued unilateral activities along the Mekong River—activities that are having detrimental environmental and socioeconomic effects on downstream countries—provide an opportunity for the United States to expand its cooperation with lower Mekong countries through programs such as the Lower Mekong Initiative.

Furthermore, as Southeast Asia becomes increasingly reliant on trade with China and vulnerable to fluctuations in China's economy, the region has an incentive to diversify its trade and investment partners, including closer cooperation with the United States. Current U.S.-led trade negotiations, such as the Trans-Pacific Partnership, focus on developing "21st century standards" in intellectual property, labor protection, and environmental conservation—goals that may be difficult for some lesser developed Southeast Asian countries to achieve. U.S.-funded training programs, such as intellectual property enforcement training by the U.S. Patent and Trademark Office and the U.S. State Department's international visitor program, may be mechanisms for helping Southeast Asia prepare for enhanced trade cooperation with the United States.

A bright spot in China-Southeast Asia relations is the growing cooperation on shared security threats like terrorism, piracy, natural disasters, trafficking, and infectious diseases. The United States should welcome and encourage these activities, as it too has a stake in countering these threats and an interest in the convergence of interests between China and its Southeast Asian neighbors on regional security issues.

Conclusions

- China's approach to Southeast Asia involves both consolidating its territorial claims in the South China Sea and seeking to improve economic ties with countries in Southeast Asia. China's leaders seem to believe that striking a balance between these two endeavors enables China to protect its perceived sovereignty in the South China Sea and benefit from economic engagement with the region, while ensuring tensions along its periphery do not become intolerably high for Beijing.
- Since late 2013, China has conducted dramatic land reclamation and construction activities on the land features it controls in the Spratly Islands. These rapid activities appear to be driven by several factors: China's desire to unilaterally impose its claims

and avoid arbitration or negotiation with other parties over the disputes; China's ambition to enhance its ability to project power into the South China Sea; and, potentially, China's intention to establish an air defense identification zone over part of the South China Sea.

- Southeast Asian countries have reacted with increasing alarm to China's activities in the South China Sea. They continue to enhance their military and civilian maritime patrol capabilities and to strengthen security relations with the United States and other countries in the Asia Pacific. However, despite growing worry among Southeast Asian countries about China, and rising assertiveness in expressing these concerns, they still seek to preserve positive relations with China and appear to still be balancing their relationships with China and the United States.
- Although historical animosities and China's actions in the South China Sea continue to hamper trust of China in Southeast Asian capitals, defense and security cooperation between China and countries in Southeast Asia has grown over the last 15 years. China's most prominent defense ties in Southeast Asia are with countries in mainland Southeast Asia: Burma, Cambodia, Laos, and Thailand, all of which are among its nearest neighbors. China has also increasingly engaged with Southeast Asian countries in the areas of nontraditional security and humanitarian assistance and disaster relief.
- China is vastly expanding its foreign assistance and investment programs in Southeast Asia as a means of achieving its foreign policy goals in the region, including efforts to defuse tensions surrounding contentious disputes such as those in the South China Sea. Chinese foreign assistance to Southeast Asia comes primarily in the form of infrastructure investment, and projects are frequently implemented by Chinese firms using Chinese labor, limiting the benefits for local communities.
- The Association of Southeast Asian Nations' (ASEAN) trade liberalization with China from 2004 to 2010 has led to a large and growing bilateral trade deficit. Economic integration has also increased the association's vulnerability to fluctuations in China's economy, with China's recent economic slowdown exacerbating ASEAN's trade deficit with China.
- Use of the renminbi (RMB) in international transactions is expanding rapidly in Southeast Asia and paving the way toward more extensive use of the currency regionally. Limited progress in advancing multilateral monetary cooperation in Southeast Asia, such as through the Chiang Mai Initiative Multilateralization, may allow for the RMB's increased circulation in the region.
- China continues to unilaterally construct dams along the Mekong River without any obligation to share information about water management with downstream Mekong countries. China's actions on the Mekong are causing major fluctuations in water levels in the Mekong Basin, but China has expressed little interest in cooperating with its southern neighbors by joining the Mekong

River Commission. Dam construction and resource mismanagement by downstream nations also pose a significant problem.

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SECTION 3: TAIWAN

Introduction

Cross-Strait relations in 2015 were essentially stable. At the same time, concern in Taiwan about increasing cross-Strait economic integration with China* intensified—as manifested in the 2014 Sunflower Movement, during which Taiwan citizens occupied the legislature in part to protest expanding cross-Strait economic ties. Taiwan citizens' wariness of China, spurred by the Mainland's increasing economic interconnectedness with Taiwan, appears to be partially responsible for flagging public confidence in Taiwan's Kuomintang (KMT)-led government. With Taiwan's national elections approaching in January 2016, and the Democratic Progressive Party (DPP), Taiwan's opposition and traditionally pro-independence party, leading in presidential polls, China-Taiwan relations may be facing a major shift. Meanwhile, China's continued military modernization poses a growing threat to Taiwan, and the balance of power in the Taiwan Strait continues to shift strongly in China's favor.

Outside the cross-Strait relationship, Taiwan is making progress addressing several economic and security challenges. Despite China's restrictions on Taiwan's participation in multilateral institutions, Taiwan continues to attempt to expand its status and legitimacy in international affairs by actively pursuing both regional economic integration and fisheries agreements with its maritime neighbors. U.S.-Taiwan relations also remain strong, with annual bilateral trade reaching a record high of \$67.4 billion in 2014 and continued growth expected in 2015.¹ In the security realm, increased U.S.-Taiwan security cooperation demonstrates the U.S. commitment to Taiwan's defense.

This section examines the state of cross-Strait ties, Taiwan's international engagement, Taiwan military and security issues, and U.S.-Taiwan relations, and ends with a discussion of the implications of these developments for the United States. It is based on the Commission's meetings with Taiwan officials in Washington, consultations with U.S. and foreign nongovernmental experts, and open-source research and analysis.

Cross-Strait Relations

A series of events that occurred in Taiwan in 2014 continue to shape its political environment and the cross-Strait relationship. The first of these events, and perhaps the most influential for cross-Strait ties, was the Sunflower Movement. The Sunflower Movement started as a grassroots student-led occupation of Tai-

*For the purposes of this section, China refers to mainland China (the Mainland), or the People's Republic of China.

wan's national legislature, the Legislative Yuan, for 23 days between March and April 2014 in opposition to the Ma Ying-jeou Administration's handling of a major cross-Strait economic deal, the Cross-Strait Services Trade Agreement (CSSTA) (discussed later in the section). The protests sparked a public debate in Taiwan about whether the services agreement would create unfair competition and enable China to exercise excessive economic leverage over Taiwan. The Sunflower Movement delayed ratification of the services agreement and effectively postponed negotiations on other cross-Strait agreements.* The protests also played a role in pushing the Legislative Yuan to craft an oversight mechanism for cross-Strait agreements.² As of the writing of this Report, the Legislative Yuan has yet to pass legislation to establish such a mechanism.†

Eight months after the student-led occupation of the Legislative Yuan, the KMT suffered a landslide defeat to the DPP in Taiwan's November 2014 local elections.‡ Polls conducted in the aftermath of the elections found the public's rejection of the Ma Administration's performance was the main reason for the KMT defeat.³ Most voters in the elections were primarily concerned with local issues, such as wages, housing prices, and food safety. Cross-Strait relations did not appear to play a sizable role in voting patterns. Nevertheless, some—particularly younger voters—may have voted for the DPP due to suspicion of China's intentions and unease with China's growing influence over Taiwan.⁴ Following the poor results of the local elections for the KMT, President Ma (who was also KMT chairman) resigned as party chairman in December 2014 in response to pressure from the party elite.⁵

Taiwan citizens' affinity for and identification with mainland China appears to be decreasing. According to a 2014 survey of Taiwan citizens conducted by National Chengchi University in Taipei, when asked how they view their national identity, over 60 percent of respondents—an all-time high since the survey was first conducted in 1992—said they self-identified as Taiwanese instead of Chinese or a combination of the two. Those who identified as both Taiwanese and Chinese comprised 32.5 percent.⁶ By comparison, the survey conducted in 2013 found about 57 percent identified themselves as Taiwanese (35.8 percent as Taiwanese and Chinese), and in 2008, when President Ma was first elected, it found that less than 50 percent identified themselves as Taiwanese (43.1 percent as Taiwanese and Chinese).⁷ The survey results suggest that Taiwan citizens in general view identity more in terms of citizen-

* For more information on the Sunflower Movement, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 482–484.

† The idea for an oversight mechanism on cross-Strait agreements is not new. The DPP and KMT debated the idea of an oversight mechanism in 2010 before Taiwan and China signed their Economic Cooperation Framework Agreement (ECFA). Kuomintang, "KMT's Response to the DPP's 'Five Questions' for Chairman Ma," February 12, 2010.

‡ On November 29, 2014, Taiwan held a series of local elections for 11,130 positions, including mayors, county magistrates, city and county councilors, township chiefs, and village and borough chiefs. The KMT won six races for mayor and county magistrates, while the DPP won 13; three others went to independent candidates. In the popular vote for these 22 races, the DPP earned 47.6 percent of the vote and the KMT earned 40.7 percent. In other local elections, the KMT won a larger number of city and county councilor seats than the DPP, but the DPP increased its share of seats by 12.8 percent. The DPP also raised its number of township seats by 58.8 percent. In the elections for village and borough chiefs, the DPP increased representation from 52 to 390, but the KMT retained its majority with 1,794 seats. Matthew Southerland and Kevin Rosier, "Taiwan's 2014 Local Elections: Implications for Cross-Strait Relations," *U.S.-China Economic and Security Review Commission*, December 30, 2014, 2.

ship than ethnic or cultural identity.⁸ This trend shows that China's efforts to move Taiwan politically and culturally closer to the Mainland are not necessarily successfully promoting cross-Strait cultural integration or affinity for the Mainland by Taiwan citizens. It also seems to reflect Taiwan citizens' increasing skepticism about China.

Informing Taiwan's growing pessimism about the Mainland's political encroachment is the ongoing political turmoil in Hong Kong. In a July 2015 speech at the Brookings Institution, Mainland Affairs Council (MAC)* Minister Andrew Hsia said, "... [O]bviously we are also concerned with the level and the latitude of freedom and democracy given to the people of Hong Kong. We are disappointed, of course, and we certainly hope that the Beijing regime will respect the people of Hong Kong and its freedom to choose."⁹ Hong Kong's fight for democracy serves as a warning that, if Taiwan were reunified with China, Beijing would not likely adhere to any promise it might make to protect Taiwan's civil liberties. (For more information on recent developments in Hong Kong, see Chapter 3, Section 4, "Hong Kong.")

China also has taken unilateral actions that appear to be designed to move Taiwan closer to the "one country, two systems" framework that Beijing uses for interacting with Hong Kong and Macau. Through these measures, Beijing seeks to move Taiwan closer politically to the Mainland and further constrain its sovereignty. For example, China in July 2015 passed a National Security Law that states, "The sovereignty and territorial integrity of China cannot be encroached upon or divided. Maintenance of national security and territorial integrity is a shared obligation of all the Chinese people, including compatriots from Hong Kong, Macau, and Taiwan."¹⁰ The Ma Administration responded by issuing a formal protest with the Chinese government, and the DPP called the law a "disrespectful decision" toward the Taiwan people.¹¹ China also announced a new requirement for Taiwan citizens traveling to the Mainland to use entry permit cards similar to those used by Hong Kong residents in place of passports.¹² Opponents of the decision in Taiwan criticized it as a "downgrade" of Taiwan's status.¹³

Cross-Strait Political Relations

As the KMT and DPP vie for power, the Chinese government appears to be increasingly uneasy about the prospect of the DPP winning Taiwan's presidency in the January 2016 elections.¹⁴ With the DPP's chairperson and presidential candidate Tsai Ing-wen leading all other candidates in the polls,¹⁵ observers assess that Beijing is worried that if DPP Chairperson Tsai is elected, she may not accept the notion that the Mainland and Taiwan are part of one country and may seek to steer Taiwan toward de jure independence.¹⁶ Bonnie Glaser, senior advisor for Asia at the Center for Strategic and International Studies (CSIS) and Jacqueline Vitello, program associate at CSIS, assert that this fear is based on Chair-

*The Mainland Affairs Council is a cabinet-level agency in Taiwan's executive branch that is responsible for overseeing Taiwan's cross-Strait policies.

person Tsai's unwillingness to agree to the "one China" principle* and her role in creating the "two states theory"† when she served as a senior advisor in the Taiwan government in 1999.¹⁷ Despite Beijing's perception that Chairperson Tsai would damage cross-strait ties, her stated position of "maintaining the status quo" in cross-strait relations indicates a pragmatic approach.¹⁸

Beijing is also concerned, in part, because the last time the DPP held power (from 2000 to 2008), the administration of then president Chen Shui-bian pursued a pro-independence policy.¹⁹ Throughout 2015, Chinese President and General Secretary of the Chinese Communist Party (CCP) Xi Jinping, Premier Li Keqiang, and other senior officials have made statements insisting that Taiwan follow the "1992 Consensus,"²⁰ a tacit understanding reached between the two sides that interprets the "one China" principle such that each side maintains its own definition of "one China."²¹ While President Ma has cited the 1992 Consensus as the basis for seven years of positive cross-strait relations, the DPP has rejected the term.²²

KMT and DPP Views on Cross-Strait Relations

Although it is unclear how cross-strait issues will influence the outcome of Taiwan's elections, the two leading political parties' cross-strait policies will have important implications for future relations between Taiwan and the Mainland.

President Ma has defended the KMT's adherence to the 1992 Consensus and "Three No's"—no unification, no independence, and no use of force—as the keys to successfully reaching cross-strait agreements on trade and investment.²³ The KMT appears to be trying to sell Taiwan citizens on its accomplishments in deepening and stabilizing cross-strait ties, warning that any changes to cross-strait policy would invite instability. In an April 2015 speech at Taiwan's MAC, President Ma said, "By adhering to the [1992 Consensus], cross-strait relations are bound to flourish. Divergence is sure to result in deterioration. And opposing the 1992 Consensus is sure to create turmoil."²⁴

Facing low poll numbers and the prospect of losing both the presidential election and the majority of seats in the Legislative Yuan, the KMT in October 2015 decided to replace its presidential candidate, eight term legislator Deputy Legislative Speaker Hung Hsiu-chu, with KMT chairman and mayor of New Taipei

*The "one China" principle states that both Taiwan and China are a part of a single "China." China's Taiwan Affairs Office and State Council, *The One-China Principle and the Taiwan Issue*, February 21, 2000.

† In 1999, then Taiwan president Lee Teng-hui proposed the "two states theory," which considered Taiwan a separate state from the Mainland, leading to the suspension of cross-strait talks and political discord. Tsai Ing-wen served as senior advisor on Taiwan's National Security Council at the time and is said to be one of the key architects of the theory. Goh Sui Noi, "Tsai Ing-wen: The 'Doc' who Nursed DPP Back to Health," *Straits Times* (Singapore), July 27, 2015; Taiwan Panorama, "A Woman of Many Parts: Tsai Ing-wen," July 1, 2012.

**KMT and DPP Views on Cross-Strait Relations—
Continued**

City Eric Chu.* Ms. Hung upon her July 2015 nomination as the KMT's presidential candidate was seen by some KMT party members as a controversial choice due to statements she made that were viewed as more pro-China and pro-unification than the KMT mainstream.† Mr. Chu, by contrast, is a popular KMT centrist who has pledged to uphold the 1992 Consensus and follow President Ma's cross-Strait policy.²⁵ A KMT government in 2016 probably would continue to pursue a strategy of rapprochement with Beijing and seek improved economic, cultural, and people-to-people ties, though it would likely face the same obstacles that the Ma Administration has encountered in recent years.

Meanwhile, DPP Chairperson Tsai has left her party's cross-Strait policy purposefully vague, stating the DPP supports "maintaining the status quo" without agreeing to the 1992 Consensus or any form of the "one China" principle.²⁶ In a speech during her visit to the United States in June 2015, Chairperson Tsai said, "[If] elected President, I will push for the peaceful and stable development of cross-Strait relations in accordance with the will of the Taiwanese people and the existing [Taiwan] constitutional order. [The accumulated outcomes of more than 20 years of negotiations and exchanges] will serve as the firm basis of my efforts . . ." ²⁷ Her comments suggest that she will not seek to reverse the accomplishments of the 1992 Consensus.²⁸ By leaving ambiguity in the DPP's cross-Strait policy, Chairperson Tsai appears to be seeking to avoid alienating both the DPP's staunch pro-independence base and mainstream Taiwan voters who seek stability in the cross-Strait relationship. A DPP government in 2016 likely would seek to create greater transparency in cross-Strait negotiations. If elected, Chairperson Tsai could also slow the pace of rapprochement with Beijing due to Taiwan citizens' fear of the Mainland's increasing influence in Taiwan.²⁹

* On October 17 at a special party congress, 812 out of 891 KMT delegates voted to remove Ms. Hung as the party's presidential candidate. A majority of delegates then voted to replace Ms. Hung with Mr. Chu, and he accepted, though he had previously said he would not run for president. Stacy Hsu, "Presidential Campaign: KMT's Eric Chu Takes Over Campaign," *Taipei Times*, October 18, 2015; Yuan-Ming Chiao, "Hung Ouster Settled, Chu Begins Bid," *China Post* (Taiwan), October 18, 2015; and Austin Ramzy, "Fearing Election Losses, Taiwan's Governing Party Drops Its Presidential Candidate," *New York Times*, October 17, 2015.

† In May 2015 when Ms. Hung was a prospective candidate, she proposed a framework for cross-Strait relations, "one China, same interpretation," which interpreted the "one China" principle such that each side agrees to the same definition of "one China," which was widely viewed as inconsistent with the party's 1992 Consensus. As a prospective candidate she also made provocative comments, such as denying the existence of Taiwan, calling for ending arms procurement from the United States, and proposing a peace agreement with China. In July 2015 prior to the KMT party congress where party delegates nominated their candidate, Ms. Hung agreed to drop her "one China, same interpretation" stance and instead follow the KMT's party platform. Goh Sui Noi, "Hung Hsiu-chu: KMT's 'Little Chilli' Spices Up Race," *Straits Times* (Singapore), July 27, 2015; Ricky Yeh, "The Challenging Road for Taiwan's Newest Presidential Candidate," *Diplomat*, July 19, 2015; Lo Lok-sin, "Hung Vows to Drop 'Same Interpretation': Lawmakers," *Taipei Times*, July 10, 2015; Yuan-Ming Chiao, "Hung Draws Criticism for Her 'Can't Say ROC Exists' Stance," *China Post* (Taiwan), July 4, 2015; and Central News Agency (Taiwan), "One China, Same Interpretation' Is Cross-Strait Status Quo: KMT's Hung," May 7, 2015.

Cross-Strait Agreements and Diplomatic Relations

Since April 2014, progress on major cross-Strait negotiations has slowed and Taiwan's ratification of signed cross-Strait agreements has stalled, in large part due to President Ma's waning public support and political gridlock in the Legislative Yuan. In March 2014, protestors occupying the Legislative Yuan during the Sunflower Movement demanded the government adopt an oversight mechanism to enhance transparency in the approval process of future cross-Strait agreements. The protestors proposed a mechanism to grant the Legislative Yuan the right to manage and engage in negotiations on all cross-Strait agreements with China.³⁰ This effort remains stalled in the Legislative Yuan, which has yet to debate the nine proposed draft versions of the bill. Much of the political logjam is the result of disagreement over the respective roles of the Legislative Yuan and the Executive Yuan (Taiwan's executive branch of government) in the oversight process.³¹ Although implementing the oversight mechanism is one of President Ma's top priorities before leaving office, it appears increasingly unlikely that he will achieve this goal.³² Nevertheless, when this oversight mechanism is eventually adopted, it will have significant implications for all future cross-Strait agreements.

Major cross-Strait agreements pending completion include the following:

- *Cross-Strait Services Trade Agreement (CSSTA)*: Awaiting ratification in the Legislative Yuan, the CSSTA, signed in 2013, was designed to open up the services sectors of China and Taiwan to cross-Strait trade. The agreement is one of the most important cross-Strait economic deals promoted by the Ma Administration under the 2010 Economic Cooperation Framework Agreement (ECFA), the main framework for cross-Strait economic integration.* If ratified, the services agreement would have a significant impact on Taiwan's services industries, a key driver of Taiwan's economy, accounting for over 62 percent of its gross domestic product (GDP) and 59 percent of its workforce.³³ By eliminating investment restrictions and other barriers across 64 service industries in Taiwan and 80 services industries in China, the CSSTA would primarily benefit Taiwan's financial and retail industries, according to observers.³⁴ However, public and legislative opposition to the agreement has effectively stalled the ratification process. The DPP and other opponents argue the CSSTA will create unfair competition, marginalize Taiwan's low-end service sector businesses, and expose Taiwan to increased economic and political influence from the Mainland.³⁵
- *Cross-Strait Trade in Goods Agreement*: Progress on the proposed cross-Strait trade in goods agreement under the ECFA

*The ECFA lays out a roadmap for four subsequent agreements concerning investment protection, dispute settlement, trade in goods, and trade in services. Kerry Brown, Justin Hempton-Jones, and Jessica Pennisi, "The Economic Cooperation Framework Agreement (ECFA)," in *Investment Across the Taiwan Strait*, Chatham House, November 2010, 20–33; Alan D. Romberg, "Ma at Mid-term: Challenges for Cross-Strait Relations," *China Leadership Monitor* 33 (Summer 2010), 1–4.

also has slowed considerably since negotiations started in 2010. The deal would cut tariffs on 10,000 categories of goods shipped between China and Taiwan—impacting industries that comprise about 30 percent of Taiwan’s exports—including automotive parts, display panels, machine tools, and petrochemicals.³⁶ After a nearly 11-month pause due in part to competing cross-Strait priorities and the Sunflower Movement, talks restarted in September 2014.³⁷ The most contentious issue in the negotiations is whether Taiwan will enjoy preferential tariff status for its key export industries.³⁸ Taiwan negotiators are seeking to obtain concessions greater than South Korea did in its recent free trade agreement with China, since Taiwan and South Korea compete for the Chinese market in several industries.* (Some reports indicate that during talks concluded in April 2015 mainland authorities rejected Taiwan’s efforts to obtain preferential status over South Korea.)³⁹ Though Taiwan officials hope to conclude the agreement by the end of 2015, lack of progress on this crucial issue casts doubt on an agreement being reached in the near term.⁴⁰

Despite this slow progress on cross-Strait deals, low- and high-level meetings continued over the past year, covering a broad range of cross-Strait issues, including party-to-party, economic, and security concerns. These meetings included the following:

- In May 2015, KMT Chairman Eric Chu, prior to being nominated as his party’s presidential candidate, in a party-to-party capacity met CCP General Secretary Xi in Beijing. Chairman Chu was the highest ranking KMT official to meet with a top CCP official since 2008.⁴¹ The meeting strengthened high-level cooperation between political parties and promoted the 1992 Consensus as the guiding framework for cross-Strait ties. For Beijing, the meeting appeared to serve as an opportunity to endorse the KMT’s cross-Strait policies and emphasize the need to continue along this path for continued stability in the relationship.⁴² At the meeting, CCP General Secretary Xi underscored the “political foundation” of cross-Strait relations as acceptance of the 1992 Consensus and opposition to Taiwan independence.⁴³
- In May and October 2015, MAC Minister Andrew Hsia and Taiwan Affairs Office † Director Zhang Zhijun met in Kinmen, Taiwan and Guangzhou, China respectively. The talks built on the historic February 2014 meeting between the heads of those offices held in Nanjing, China—the first between government officials from each side of the Taiwan Strait since Taiwan and

*The China-South Korea free trade agreement has a significant impact on the Taiwan-China trade in goods negotiations and other free trade negotiations under the ECFA. Taiwan competes with South Korea in key industries, particularly liquid crystal display (LCD) panels, petrochemicals, and steel. Taiwan’s Ministry of Economic Affairs estimates Taiwan exporters could lose up to \$6 billion over the next 20 years as a result of the China-South Korea free trade agreement. Other sources estimate much higher losses. Tang Pei-chun and Scully Hsiao, “Cabinet Urges Faster Trade Talks as China, S. Korea Sign FTA,” *Focus Taiwan*, June 1, 2015; Amy Chyan, “China-S. Korea FTA to Hurt Taiwan,” *China Post* (Taiwan), November 11, 2014.

†The Taiwan Affairs Office is an agency under China’s State Council that is responsible for overseeing China’s cross-Strait policies.

China split in 1949 following the Chinese civil war. The meetings in 2015 did not result in considerable progress on key diplomatic agreements, but helped reinforce this channel as a high-level cross-Strait policy dialogue.⁴⁴

- After an 18-month pause between meetings, in August 2015 Taiwan's Straits Exchange Foundation and China's Association for Relations Across the Taiwan Strait* met for the 11th round of cross-Strait talks in Fuzhou, China. The two sides signed agreements on double taxation and aviation safety. Under the taxation agreement, any business based in Taiwan that invests in the Mainland, including via a third country, will not have to pay extra taxes to China. In addition, foreign companies with subsidiaries in Taiwan can now access the Chinese market without incurring additional taxes. Meanwhile, the flight safety agreement allows Taiwan and Chinese carriers with cross-Strait flights to use each other's technicians and maintenance facilities for routine aircraft inspections.⁴⁵ Notably, the two sides decided shortly before the meeting to set aside a proposed agreement that would allow Chinese flights to make transit stops in Taiwan.⁴⁶
- After five rounds of talks, Taipei and Beijing in March 2015 settled a dispute over one of China's four new civilian aircraft routes in the Taiwan Strait.⁴⁷ One of the routes, M503, announced in January, would pass as close as 8 kilometers (km), or approximately 5 miles (mi), away from Taiwan's air space (the median line of the Taiwan Strait). Taiwan found M503 problematic due to its proximity to Taiwan air traffic and the potential security risks to Taiwan's airspace. China agreed to a compromise, relocating the route 18–19 km (about 11 mi) west and suspending the three other flight routes along the Chinese coast that would have intersected with M503.⁴⁸

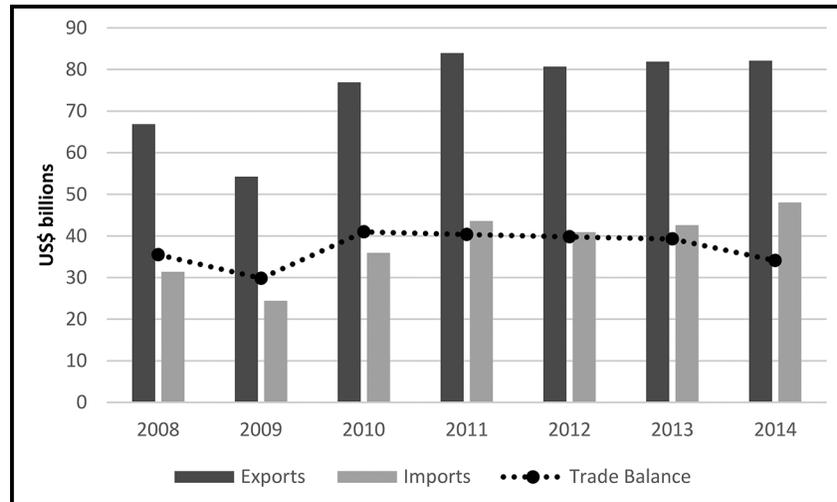
Cross-Strait Trade and Investment

As of August 2015, China remains Taiwan's largest trading partner, top source of imports, and biggest export market.† In 2014, annual cross-Strait trade reached \$130.2 billion, comprising 22.1 percent of Taiwan's total trade. Since President Ma took office in 2008, bilateral trade has increased by over 32 percent (see Figure 1).⁴⁹

*The Straits Exchange Foundation and the Association for Relations Across the Taiwan Strait facilitate cross-Strait negotiations in the absence of formal ties between the governments of Taiwan and China. Although the two bodies are semiofficial organizations, they receive direction from their respective governments.

†Based on purchasing power parity, China's GDP in 2014 was \$17.6 trillion, while Taiwan's GDP was \$1.07 trillion. China's GDP per capita was \$12,880 that year; Taiwan's was \$45,853. Although GDP and GDP per capita figures can be estimated in different ways, purchasing power parity helps minimize the effect of exchange rates on the calculations. International Monetary Fund, "World Economic Outlook Database;" Bureau of Foreign Trade (Taiwan), "Trade Statistics."

Figure 1: Taiwan's Trade with China (2008–2014)



Source: Bureau of Foreign Trade (Taiwan).

Taiwan's exports to China in 2014 were \$82.1 billion, comprising 26.2 percent of Taiwan's exports to the world. Year-on-year, Taiwan's exports to China grew less than one percent in 2014, and Taiwan's trade surplus with China for that year was \$34.1 billion, the lowest since 2009.⁵⁰ The declining growth of Taiwan's exports is explained in part by the rise of Chinese competitors, pricing Taiwan's exports out of the market.⁵¹ Semiconductor-related products dominate exports to China, supporting Taiwan's largest industry.* In 2014, three of the top five exports—microchips, semiconductors, and printed circuit boards—made up over a quarter of total exports to China.⁵² While exports of all of these products increased in 2014, microchips, Taiwan's largest export to China, grew by nearly 17 percent from 2013 to 2014.†

In 2014, China's exports to Taiwan reached an all-time high, exceeding \$48 billion and comprising a record 17.5 percent share of Taiwan's imports. That year, China replaced Japan as Taiwan's largest source of imports and remains in the same position as of August 2015.⁵³ Just as microchips dominate Taiwan exports to China, they are also China's top export to Taiwan. (Taiwan firms generally design and manufacture unfinished microchips and other semiconductor-related products in Taiwan for assembly and testing in China. China then typically exports the finished products back to Taiwan.)⁵⁴ However, Taiwan's other top imports from China are more diverse than Taiwan's exports to China; they are cell phones,

*Of note, Taiwan Semiconductor Manufacturing Company is the largest semiconductor foundry in the world, and together with another Taiwan semiconductor foundry, United Microelectronics Corporation, accounted for over 60 percent of the industry's global revenue in 2014. U.S.-China Economic and Security Review Commission, *Monthly Analysis of U.S.-China Trade Data*, August 5, 2015, 11.

†In 2014, microchips alone accounted for nearly 20 percent of all Taiwan exports to China. Bureau of Foreign Trade (Taiwan), "Trade Statistics."

electronic computers, flat-rolled stainless steel, and chemical elements for use in electronics.⁵⁵

According to official Taiwan data, Taiwan foreign direct investment (FDI) to the Mainland in 2014 was approximately \$10.3 billion, nearly double U.S. FDI to China that year.* However, analysts believe this amount grossly understates the actual scale of investment. According to a 2011 study by Daniel H. Rosen and Zhi Wang, many Taiwan firms use third-party companies, primarily in Hong Kong, to invest in the Mainland, which accounts for the discrepancy.⁵⁶ Official Taiwan FDI flows have nevertheless been declining since 2010, with the exception of a 13 percent increase in 2014. Much of the increase in 2014 was due to new Taiwan FDI in China's electronic parts manufacturing and computer manufacturing sectors, which together comprised over a quarter of all outbound Taiwan FDI that year. Aside from semiconductor-related manufacturing, in 2014 Taiwan FDI in the Mainland was concentrated in the financial and insurance industry (16.1 percent) and wholesale and retail trade (10.7 percent).⁵⁷ In 2015, Taiwan FDI into China from January to August was approximately \$6.8 billion, slightly exceeding 2014 numbers through August.⁵⁸ Taiwan's decision in August 2015 to lift restrictions on Taiwan firms from owning more advanced semiconductor manufacturing plants in China (for 12-inch wafer fabrication) could help stimulate greater investment flows into the Mainland.⁵⁹

Meanwhile, official Taiwan statistics on Chinese FDI into Taiwan showed FDI flows in 2014 remaining steady at \$335 million, largely unchanged since 2012.⁶⁰ In 2014, the main sectors of Chinese FDI in Taiwan were wholesale and retail trade (40 percent), banking services (18.3 percent), and chemical products manufacturing (12.9 percent).⁶¹ Despite restrictions on inbound FDI from the Mainland,† Chinese FDI to Taiwan more than tripled between 2010 and 2012, due in large part to the Ma Administration's loosening of investment caps and regulations on mainland investment into Taiwan.‡ However, with negotiations on cross-Strait economic agreements at a standstill, Taiwan's easing of its restrictions on Chinese inbound investment has slowed down, limiting increases in FDI flows. From January through August 2015, mainland investment in Taiwan was \$79.2 million, dropping nearly 67 percent compared to the same period in 2014 when it was \$239 million.⁶² But according to some reports, mainland investment in Taiwan could still recover to reach record-high levels if several large potential deals are finalized.§

* According to official Mainland data, Taiwan FDI to China in 2014 was \$14.7 billion, the fifth largest source of FDI to China. U.S. government data show U.S. FDI to China reached \$6.3 billion that year. U.S. Department of Commerce, Bureau of Economic Analysis, *China Factsheet*, July 31, 2015; Ministry of Economic Affairs, Overseas Chinese and Foreign Investment Commission (Taiwan), *Monthly Report*, December 2014.

† All investments require Taiwan government approval, and the Taiwan government prohibits individuals from having stakes in or appointing managers to mainland investments.

‡ For example, in March 2012, Taiwan lifted mainland investment caps of 10 percent stakes in local firms and 50 percent in joint ventures in Taiwan's semiconductor, electronic, and metal tool manufacturing sectors. PWC, "Chapter 4: The Bigger Picture—China's Impact on the Semiconductor Industry 2012 Update," September 2012.

§ One of the deals involves a joint venture between Taiwan-based CTBC Financial Holding Co. and China's CITIC Group Corp. The other deal is a proposed NTD (New Taiwan dollars) 48 billion (approximately \$1.5 billion) sale of Mandarin Oriental Taipei to a Shanghai-based company. John Liu, "Mainland Chinese Investment in Taiwan Slows Down," *China Post* (Taiwan), June 22, 2015.

Taiwan's International Engagement

Beijing's insistence on the "one China" principle precludes any country or international organization from simultaneously recognizing China and Taiwan, thereby restricting Taiwan's full participation in the international community. Taiwan as a result of Chinese pressure in the UN and other international organizations is unable to participate in the UN Framework Convention on Climate Change, the International Atomic Energy Agency, the International Civil Aviation Organization, the International Maritime Organization, and the International Criminal Police Organization (Interpol), among others.⁶³ Such restrictions limit the existing few diplomatic levers at Taiwan's disposal to engage on important issues.

For example, Nepal in April 2015 rejected Taiwan's offer to provide search and rescue teams to help look for survivors following its massive 7.8 magnitude earthquake, though the Nepalese government eventually worked with Taiwan officials to arrange delivery of monetary and medical aid through Taiwan nongovernmental organizations.⁶⁴ The Nepal government reportedly cited the lack of diplomatic relations and the "great distance" between Nepal and Taiwan as reasons for its initial decision.⁶⁵ As a result, Taiwan delivered a \$300,000 donation check through Nepal's embassy in India due to Nepal's refusal to accept the funds in country.⁶⁶ Although Chinese pressure on Nepal was not explicit, Nepal probably did not want to anger China by accepting official assistance from Taiwan.⁶⁷

Nevertheless, Taiwan actively pursues greater international space through its official diplomatic relations with 22 countries,* expanding participation in international organizations that do not require members to be recognized as sovereign states, and strengthening economic and unofficial diplomatic partnerships with countries other than China. Examples of Taiwan's progress over the past year include the following:

- In March 2015, President Ma visited Singapore, a country that has official diplomatic relations with China, to pay his respects to deceased Singapore founding father and former prime minister Lee Kwan Yew. The visit was the first to Singapore by a Taiwan president since 1989 and President Ma's first overseas travel to any country with diplomatic relations with China aside from transit stops in the United States.⁶⁸
- Taiwan and Japan in March 2015 signed an updated fisheries agreement, following their landmark 2013 deal to jointly manage fishing in the East China Sea near the disputed Senkaku Islands. The updated agreement established new regulations on sharing fisheries and could serve as an example of successful dispute resolution to other claimants involved in disputes in the East and South China seas.⁶⁹ (For more information about the agreement and Taiwan's other helpful efforts to promote cooperation in the region, see "Taiwan's Response to Chi-

* Taiwan has diplomatic relations with Belize, Burkina Faso, the Dominican Republic, El Salvador, Guatemala, Haiti, the Holy See, Honduras, Kiribati, the Marshall Islands, Nauru, Nicaragua, Palau, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, the Solomon Islands, Swaziland, and Tuvalu. Taiwan's Ministry of Foreign Affairs, "Diplomatic Allies."

na's Assertiveness in the East and South China Seas," later in this section.)

- In June 2015, Taiwan signed two memoranda of understanding with South Korea to accelerate the governments' existing cross-border patent review and approval process by fast-tracking applications for companies with an existing patent under one of the governments and shortening the review process, among other efficiencies. Together the agreements appear to mostly benefit the electronics and semiconductor industries, sectors that comprise 65 percent of Taiwan's exports to South Korea.⁷⁰

The U.S. government has supported the expansion of Taiwan's participation in international organizations. In April 2015, U.S. Assistant Secretary of State for East Asia and Pacific Affairs Daniel Russel, in testimony to Congress, expressed support for Taiwan's participation in international institutions, including Interpol. Assistant Secretary Russel said, "[The Administration wants] Taiwan to be a member of organizations for which statehood is not a prerequisite, and we want Taiwan appropriately to interact, whether as an observer or as the beneficiary of technical programs and other kinds of institutions. . . . We very much agree that Taiwan is a net contributor to international law enforcement, and we are looking for ways to build on that."⁷¹

Taiwan Explores Regional Economic Integration

The Taiwan government has expressed interest in joining regional trade and investment regimes to encourage economic growth and new market opportunities and expand its international footprint. President Ma has supported Taiwan becoming a member of the Regional Comprehensive Economic Partnership (RCEP), led by the Association of Southeast Asian Nations (ASEAN), the U.S.-led Trans-Pacific Partnership (TPP),* and China's Asian Infrastructure Investment Bank (AIIB), emphasizing the benefits of regional economic integration for Taiwan's economy.⁷² Meanwhile, KMT Chairman Eric Chu during his visit to Beijing in May 2015 voiced support for Taiwan's participation in China's 21st Century Maritime Silk Road, part of President Xi's "One Belt, One Road" initiative.⁷³

Announced in 2013 with negotiations planned to conclude this year, ASEAN's Regional Comprehensive Economic Partnership (RCEP) is a proposed free trade agreement among the countries of ASEAN and six additional Asian countries † that currently account for over half of Taiwan's annual trade.⁷⁴ China is among the most influential participants in the RCEP negotiations, and insists Taiwan conclude all ECFA-related agreements before join-

* For more information on Taiwan's aspirations to participate in TPP, see "The Role of Taiwan in the U.S. Rebalance to Asia" later in this section.

† ASEAN's members are Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. The other six RCEP negotiators are Australia, China, India, Japan, New Zealand, and South Korea.

**Taiwan Explores Regional Economic Integration—
Continued**

ing RCEP.⁷⁵ Taiwan thus is unlikely to accede to the RCEP in the near term, given the delays in finalizing cross-Straits economic agreements with China.

In contrast to RCEP's initial closed membership, the AIIB had an open application process with the opportunity to become a founding member if applications were submitted before March 31, 2015. Under the terms of the AIIB, only founding members have the ability to propose new rules.* On the day of the AIIB's deadline for founding members, Taiwan submitted its application, which faced pushback from the DPP and other opposition groups.† On April 16, China announced 57 founding members of the AIIB, but rejected Taiwan's application over its implicit status. In Beijing's view, by using an "improper name" ("Taiwan"),‡ Taiwan's application implied independence from China.⁷⁶

If Taiwan joins the AIIB when China admits a new round of members, as Chinese officials have said is likely, membership could lead to increased Taiwan regional investment opportunities and could widen Taiwan's international economic presence.⁷⁷ For example, the Taiwan Ministry of Finance stated that successfully joining the financial institution would increase Taiwan's chances of joining RCEP and other free trade agreements. Through the AIIB, Taiwan could strengthen dialogue with other regional and global partners, which would help expand its visibility.⁷⁸ Many questions remain, however. It is still unclear what Taiwan's status in the AIIB would be and whether it would have the same access and influence within the institution compared to other members. The DPP and other opposition parties warn that Taiwan should proceed cautiously and carefully examine the political and economic implications of acceding to the bank.⁷⁹ With the AIIB set to begin operating by the end of 2015, Taiwan will have an opportunity to observe the institution in action and study how it could impact Taiwan prior to submitting a revised application.

*For more information about the AIIB, see Chapter 1, Section 1, "Year in Review: Economics and Trade."

†The DPP and other opposition groups were upset that the Ma Administration failed to consult with the legislature prior to submitting the application. They also protested the Ma Administration's handling of the application submission; the Taiwan government used the same channel it uses for cross-Straits agreements instead of the channel it normally uses when applying for membership in an international organization. *Apple Daily* (Taiwan), "Entering the Asian Infrastructure and Investment Bank, Ma: If Restricted, We Will Drop Out," April 1, 2015. Staff translation; Chu Pu-ching, "Asian Infrastructure and Investment Bank Controversy, Tsai Ing-wen: The Government is Making International Affairs a Cross-Straits Issue," *Taiwan People News*, April 1, 2015. Staff translation.

‡Taiwan often participates in international organizations under creative names to avoid opposition from China. For example, Taiwan joined the World Bank as "Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu." After China joined the Asian Development Bank, Taiwan was required to participate under a different name, "Taipei, China." Jenny W. Hsu, "China Thwarts Taiwan's Bid to be a Founding Member of AIIB," *Wall Street Journal*, April 13, 2015; Tseung Ying-yu, Lawrence Chiu, and Lilian Wu, "Taiwan Submits Letter of Intent to Join AIIB," *Focus Taiwan*, March 31, 2015; and Heh-Song Wang, "Taiwan and the Asian Development Bank," *ABA Journal* (2007).

**Taiwan Explores Regional Economic Integration—
Continued**

Proposed by President Xi in 2013, the 21st Century Maritime Silk Road aims to enhance regional connectivity through trade and investment in maritime Asia. (See Chapter 3, Section 2, “China and Southeast Asia” for further discussion of China’s 21st Century Maritime Silk Road.) Beijing has encouraged Taiwan to participate in this initiative, in contrast to its rejections of Taiwan’s other efforts to participate in RCEP and the AIIB. This is probably because the “One Belt, One Road” project is Beijing’s diplomatic initiative and not a formal international institution that would allow Taiwan a greater voice in the international community.⁸⁰ So far, Taiwan officials have been cautious in approaching the initiative, as it is unclear if Beijing will tie political conditions to Taiwan’s participation.⁸¹

Taiwan’s Response to China’s Assertiveness in the East and South China Seas

While China has been increasingly assertive in the East and South China seas, Taiwan has proposed diplomatic frameworks and signed agreements with other claimants to encourage the shelving of territorial disputes and promotion of joint resource development. (See Chapter 3, Section 2, “China and Southeast Asia,” for further discussion of the territorial disputes in the South China Sea.) In addition, Taiwan has taken steps to clarify its own claims according to international law and thereby differentiate its claims from those of China. Despite overtures from the Chinese government, Taiwan has refused to support China’s expansive sovereignty claims on disputed territory in the region, though, to Beijing, Taipei’s claims are the same as its own.⁸²

Since 2012, Taiwan has played a role in promoting cooperation in the East China Sea. Taiwan is one of three claimants to the Senkaku Islands (known as the Diaoyutai in Taiwan and Diaoyu in China)* and has long considered the waters around the islands important fishing grounds to support its fishing industry, one of the world’s largest.⁸³ In August 2012, President Ma announced an East China Sea Peace Initiative calling for all parties with conflicting claims “to replace confrontation with dialogue, shelve territorial disputes through negotiations, formulate a Code of Conduct in the East China Sea, and engage in joint development of resources.”⁸⁴ The initiative led Taiwan and Japan to sign a landmark fisheries agreement in 2013 to set aside sovereignty claims; share fishing grounds between their respective overlapping exclusive economic zones; † and extend the fishing area for both sides by 1,400 square nautical miles (nm).⁸⁵ The international community praised the agreement as a constructive model for jointly managing resources in disputed waters.⁸⁶ U.S. Secretary of State John Kerry

* Other claimants of the Senkaku Islands are Japan and China.

† An exclusive economic zone is a 200 nm zone extending from the coastline of a state’s mainland and from the coastline of any territorial land features. UN Convention on the Law of the Sea, “Part 5: Exclusive Economic Zone.”

in a 2014 speech said, “Japan and Taiwan . . . showed last year it’s possible to promote regional stability despite conflicting claims.”⁸⁷ In an updated fisheries agreement reached in March 2015, each side agreed to several amendments designed to avoid frictions by taking turns operating in certain contested areas of the East China Sea and increasing the distance between boats.⁸⁸ Taiwan’s fisheries agreements with Japan provide an example for other claimants in the region of setting aside disputes and realizing mutual benefits through sharing resources.

Over the past two years as tensions in the South China Sea increased, Taiwan has made helpful contributions to encourage cooperation among claimants. As one of six claimants of islands and features in the South China Sea,* Taiwan administers and occupies Itu Aba Island (also known as Taiping)—the largest natural land feature in the Spratly Island archipelago and the wider South China Sea—and Pratas Island (also known as Dongsha).⁸⁹ In May 2015, President Ma announced the South China Sea Peace Initiative, a proposed framework similar to his 2012 initiative in the East China Sea.⁹⁰ This new framework calls for all claimants in the South China Sea to exercise restraint; respect the spirit of international law and seek peaceful settlement through dialogue; ensure all concerned parties are involved; shelve sovereignty disputes and establish a regional mechanism for joint resource development; and establish coordination and cooperation mechanisms.⁹¹ The South China Sea Peace Initiative demonstrates Taiwan’s goodwill and cooperative intentions with its maritime neighbors while making China’s position look increasingly recalcitrant. As the East China Sea Peace Initiative contributed to finalizing a Taiwan-Japan fisheries agreement, this new Initiative could help lead to a breakthrough in negotiations that have been ongoing since 2013 between Taiwan and the Philippines on a similar fisheries agreement.⁹²

Taiwan also has taken steps to clarify its claims in the East and South China seas in accordance with the UN Convention on the Law of the Sea and international law.† For example, Taiwan recently asserted its claims are derived from land features with the surrounding waters granted through the Law of the Sea, as opposed to China’s expansive sovereignty claims to nearly all of the land and sea within its nine-dash line‡ claim.§ Such statements

*Other claimants in the South China Sea are Brunei, China, Malaysia, the Philippines, and Vietnam.

†DPP Chairperson Tsai has not addressed all of Taiwan’s claims within its 11-dash line, but she has said that she would pursue dialogue with all claimants in the South China Sea and defend Taiwan’s claims of the Senkaku Islands and Itu Aba Island. Ralph Jennings, “Taiwan Candidate Proposes Dialogue on S. China Sea,” *Voice of America*, September 22, 2015; Lao Iok-sin, “Tsai Reiterates DPP Stance on Diaoyutai Islands,” *Taipei Times*, July 30, 2015; and Ko Shu-ling, “FOCUS: Taiwan Ponders Dash-line Claim Over South China Sea,” *Kyodo News* (Japan), June 29, 2015.

‡Although China’s claim in the South China Sea is often depicted by a “nine-dash line,” Beijing in recent years has issued new maps with ten dashes. Ishaan Tharoor, “Could this Map of China Start a War?” *Washington Post*, June 27, 2014; Euan Graham, “China’s New Map: Just another Dash?” *Australian Strategic Policy Institute* (Strategist blog), September 17, 2013.

§In a September 2014 speech, President Ma said, “[T]he principle that sovereignty over land determines ownership of the surrounding waters, which is set out in [UNCLOS], applies to disputes concerning sovereignty over both land and sea.” Other official statements reflect Taiwan’s increasing clarity on its own claims within its 11-dash line—serving as the basis for Taiwan’s claims in the South China Sea since 1947. Lynn Kuok, “Times of Change: Taiwan’s Evolving Position in the South China Sea and Why Other Actors Should Take Notice,” *Brookings Institution*

can help encourage other claimants to follow international law and define their own claims, thereby clarifying intentions and avoiding misunderstanding. Some observers have noted that Taiwan could contribute more to managing territorial disputes in the South China Sea by clarifying its 11-dash line in a way that puts political pressure on China to clarify its own claims, benefiting other claimants and the United States.⁹³ Bonnie Glaser, senior advisor for Asia at CSIS, argued in her testimony to the Commission, "... [If] Taiwan were to say, 'We claim the following land features,' which would probably be all of them within the dashed line, ... it would not include all of the waters. It would not provide jurisdiction over all of the energy exploitation or all of the fishing, for example." According to Ms. Glaser, taking such a position would make China's expansive claim appear all the more extreme by comparison.⁹⁴

Taiwan Military and Security Issues

Cross-Strait Military Balance

Although relations between Taipei and Beijing have improved since 2008, China's military modernization continues to focus on improving its ability to conduct military operations against Taiwan and deter the United States from assisting with Taiwan's defense.⁹⁵ Over the past decade, the balance of power across the Taiwan Strait has shifted significantly in China's favor; China now enjoys both a quantitative and a qualitative advantage over Taiwan and is capable of conducting a range of military campaigns against Taiwan.*

- China's offensive missile forces, known as the Second Artillery, have a large and sophisticated arsenal of ballistic and cruise missiles, including more than 1,200 short-range ballistic missiles (SRBM) and 200–500 ground-launched land-attack cruise missiles (LACM)† that are designed primarily to strike Taiwan.⁹⁶ Although China's inventory of SRBMs has only increased slightly since the late 2000s after a rapid expansion earlier in the decade, the force has become more lethal as China has gradually replaced older missiles lacking a true precision-strike capability with new SRBMs and more recent generations of existing SRBMs that feature longer ranges and improved accuracies and payloads. In a potential military conflict,

tion, May 2015, 6–8; Office of the President, Republic of China (Taiwan), "Spotlight Issues: Safeguarding Sovereignty, Shelving Disputes, Pursuing Peace and Reciprocity, and Promoting Joint Exploration and Development," September 9, 2014.

*Some analysts argue, however, that the Taiwan military is superior to the PLA in certain areas. Ian Easton, research fellow at the Project 2049 Institute, asserts that the Taiwan military has a qualitative advantage over the PLA due to the Taiwan military's training alongside the United States, the PLA's lack of professionalism, and widespread corruption in the PLA. Ian Easton (Research Fellow, Project 2049 Institute), August 11, 2015, interview with Commission staff.

†Official U.S. and Taiwan estimates of China's number of SRBMs and LACMs vary. For example, Defense Intelligence Agency Director Lieutenant General Vincent R. Stewart in his February 2015 testimony to Congress said, "[China has] more than 1,200 conventional short-range ballistic missiles deployed opposite Taiwan . . ." According to the Taiwan Ministry of National Defense's (MND) August 2015 report on China's military power for the Legislative Yuan, China increased its ballistic and cruise missile force from 1,600 to 1,700 over the past year and increased the number of missiles deployed against Taiwan from 1,400 to 1,500. H.H. Lu and Lillian Lin, "MND Reports China Deploying More Missiles Against Taiwan," Focus Taiwan, August 31, 2015; Senate Armed Services Committee, *Hearing on Worldwide Threats*, oral testimony of Vincent R. Stewart, February 26, 2015.

China could quickly conduct SRBM and LACM attacks against Taiwan's key defense nodes, including its air defense systems, air bases, naval ports, and command and control infrastructure.⁹⁷ (For more information on China's missile forces, see Chapter 2, Section 3, "China's Offensive Missile Forces.")

- The People's Liberation Army (PLA) Air Force and Navy have about 2,100 combat aircraft, 330 of which operate from permanent bases in the eastern half of China, allowing them to conduct operations around Taiwan without aerial refueling.* About 600 of China's combat aircraft are modern,† while fewer than 330 of Taiwan's combat aircraft are modern.⁹⁸ In addition, Russia in April 2015 confirmed the sale of four to six Russian S-400 surface-to-air missile systems to China and plans to deliver them in 2017.⁹⁹ The S-400 will increase the range of China's surface-to-air missile force from 300 km (approximately 186 mi) to 400 km (approximately 249 mi)—enough to cover all of Taiwan ‡—and likely will feature an improved ballistic missile defense capability over China's existing surface-to-air missile systems, though the platform has yet to demonstrate such a capability.¹⁰⁰ As China pursues the S-400, it also is developing its next-generation indigenous surface-to-air missile, the HQ-19, which likely will have features and range similar to the S-400.¹⁰¹
- The PLA Navy has more than 300 surface combatants, submarines, and missile-armed patrol craft.¹⁰² As China's naval modernization continues, an increasing percentage of these ships will be modern § and feature advanced weaponry. Taiwan, on the other hand, has 92 naval combatants, comprised of 4 submarines and 88 surface ships.¹⁰³ Taiwan's submarine

*Moreover, China—using its robust military, civilian, and reserve airfield network—could forward deploy hundreds of additional combat aircraft on short notice in a conflict scenario. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, May 2015, 80; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2014*, June 2014, 78; and U.S.-China Economic and Security Review Commission, *Hearing on China's Military Modernization and Its Implications for the United States*, written testimony of Lee Fuell, January 30, 2014.

†“Modern” combat aircraft are defined as possessing advanced avionics and weapons systems. These aircraft include the J-10, J-11, JH-7, Su-27, and Su-30. For more information on the Commission's definition of “modern” combat aircraft, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 309.

‡China would have to deploy the battalions opposite Taiwan to have the range necessary to cover Taiwan. It is unclear whether the sale included the missiles themselves, and if so, what their capabilities are. J. Michael Cole, “Alarm over China's S-400 Acquisition is Premature,” *Diplomat*, April 22, 2015; Zackary Keck, “Putin Approves Sale of S-400 to China,” *Diplomat*, April 11, 2014; Wendell Minnick, “China's New Jet, Radar Complicate U.S. Posture,” *Defense News*, July 6, 2013; and Wendell Minnick, “Time Running Out for Taiwan if Russia Releases S-400 SAM,” *Defense News*, May 25, 2013.

§ In reference to China's submarine force, the term “modern” is used in this Report to describe a second-generation submarine that is capable of employing antiship cruise missiles or submarine-launched intercontinental ballistic missiles. These include the SHANG nuclear attack submarine (SSN), YUAN SSN, SONG diesel attack submarine (SS), KILO 636 SS, and JIN nuclear ballistic missile submarine (SSBN). In reference to China's surface force, the term “modern” is used to describe a surface ship that possesses a multi-mission capability, is armed with more than a short-range air defense capability, and has the ability to embark a helicopter. These include the following: LUHU destroyer (DD), LUHAI DD, LUZHOU guided missile destroyer (DDG), LUYANG I/II/III DDG, Sovremenny I/II DDG, JIANGWEI I/II frigate (FF), JIANGKAI I FF, and JIANGKAI II guided missile frigate. For more information on the Commission's definition of “modern” submarines and surface ships, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 300.

fleet is particularly weak compared to that of China;* it includes two former U.S. boats that were built in the 1940s and transferred to Taiwan in the 1970s. In a military contingency with Taiwan, China could use its more numerous and advanced platforms to conduct a range of military courses of action, including a maritime blockade or quarantine, air and missile attacks, and amphibious invasions of Taiwan-held islands in the Taiwan Strait and South China Sea. China is actively pursuing amphibious capabilities, but does not have the necessary platforms needed to conduct a large-scale amphibious invasion of Taiwan.¹⁰⁴

China continues to prepare for a Taiwan contingency through a variety of exercises involving amphibious platforms, missiles fired into Taiwan's nearby waters, and combat aircraft flying close to Taiwan's airspace.¹⁰⁵ In July 2015, one exercise involved PLA soldiers raiding a building similar in appearance to Taiwan's presidential palace.¹⁰⁶ In addition to a formal protest by the Taiwan government, a Taiwan Ministry of National Defense (MND) spokesperson said, "[The exercise was] unacceptable for the Taiwanese public and the international community."¹⁰⁷ J. Michael Cole, editor-in-chief of *Thinking Taiwan*, said that the exercise

*strikes at the heart of what is recognizable to ordinary Taiwanese—downtown Taipei. . . . By making the threat more recognizable and immediate than missiles fired off Taiwan's northern and southern tips, or drills simulating an amphibious assault, Beijing may hope to engage ordinary Taiwanese not at the intellectual and abstract level, but on an emotional one.*¹⁰⁸

Despite its growing military disadvantage relative to China, Taiwan's defense budget has stagnated. Over the last decade, China has boosted its defense budget in nominal terms by double digits almost every year,[†] increasing the official defense spending gap between Taiwan and China in 2015 to more than \$132 billion (see Figure 2).[‡] Taiwan's announced 2015 defense budget increased, albeit slightly, for the first time since 2012. From 2009 to 2014, Taiwan's defense budget declined by an average of 1.6 percent annually.[§]¹⁰⁹ Despite a further increase in Taiwan's announced 2016 defense budget, spending on the military is projected to fall to 1.8 percent of GDP, the lowest such level in over a decade.¹¹⁰ This stagnation is due to a number of factors, including warming cross-

*For more information on Taiwan's submarine fleet and indigenous production plans, see additional discussion later in this section.

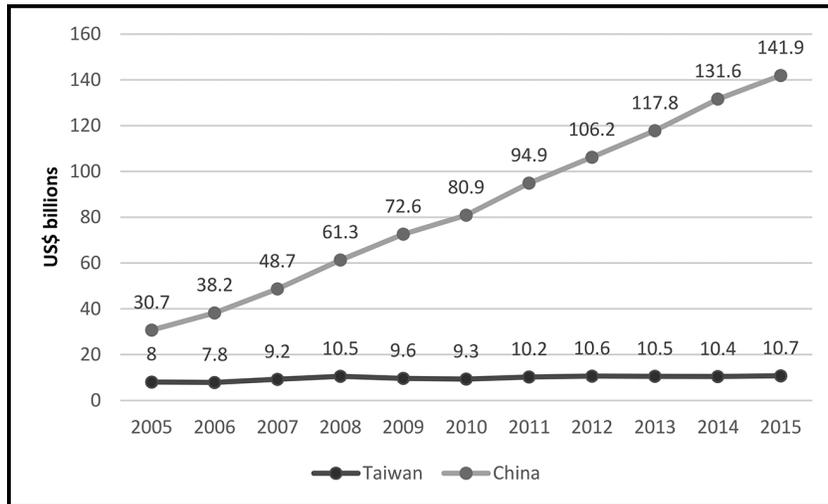
†This measurement is according to China's announced defense budgets, not actual aggregate spending. China's announced budget omits major defense-related expenditures such as purchases of advanced weapons, research and development programs, and local government support to the PLA. For more information, see Chapter 2, Section 1, "Year in Review: Security and Foreign Affairs."

‡China's announced defense budget in 2015 was RMB 886.9 billion (\$141.9 billion) compared to Taiwan's budget of NTD (New Taiwan dollars) 319.3 billion (\$10.7 billion). Xinhua (English edition), "China 2015 Defense Budget to Grow 10.1 Pct., Lowest in 5 Years," March 5, 2015; *China Post* (Taiwan), "Taiwan's Proposed Defense Budget for 2015 Sees \$330 Million Increase," August 30, 2014.

§According to Mr. Easton, Taiwan's defense budget, like China's, is significantly underreported. However, unlike China's defense budget, there are no outside estimates of Taiwan's real defense budget. Ian Easton (Research Fellow, Project 2049 Institute), interview with Commission staff, August 11, 2015.

Strait ties that have reduced public perceptions of China's military threat to Taiwan; growing competition for government resources, particularly from social welfare programs; increasing government debt; partisan political wrangling; and uncertainty about the future of U.S. arms sales to Taiwan, particularly requested sales that Taiwan factors into its budgets but are not completed due to delays resulting from unresolved issues on both sides.¹¹¹

Figure 2: Gap between Announced Defense Budgets of China and Taiwan (2005–2015)



Note: These numbers represent both China's and Taiwan's announced official defense budgets, not actual aggregate defense spending. China's figures are converted from RMB into U.S. dollars based on China's year-end nominal exchange rate.

Source: The following sources were used to calculate China's defense budget: China's Ministry of Finance; Xinhua (English edition), "China 2015 Defense Budget to Grow 10.1 Pct, Lowest in 5 Years," March 5, 2015; Xinhua (English edition), "China Defense Budget to Increase 12.2 Pct in 2014," March 5, 2014; Xinhua (English edition), "China Defense Budget to Increase 10.7 Pct in 2013: Report," March 5, 2013; and Dennis J. Blasko, et al., "Defense-Related Spending in China: A Preliminary Analysis and Comparison with American Equivalents," *United States-China Policy Foundation*, November 2006, 19. The following sources were used to calculate Taiwan's defense budget: *China Post* (Taiwan), "Taiwan's Proposed Defense Budget for 2015 Sees \$330 Million Increase," August 30, 2014; Shirley Kan, "Taiwan: Major U.S. Arms Sales since 1990," *Congressional Research Service*, August 29, 2014, 34.

Furthermore, Taiwan's unique status and China's insistence on the "one China" principle make it difficult for Taiwan to procure arms from most producers. Taiwan also lacks the ability to indigenously design and produce certain weapons systems.¹¹² Under such constraints, Taiwan has mainly relied on the United States for arms and military equipment.

Nevertheless, Taiwan has sought to improve its position vis-à-vis China in recent years by producing or acquiring military platforms and weapon systems. Major indigenous programs under development or recently completed include the following:

- *Surface-to-Air Missiles:* In December 2014, Taiwan's Chung-Shan Institute of Science and Technology confirmed it will upgrade the Tien Kung III, the third-generation of its family of

indigenous surface-to-air missiles, to extend the missile's range from 150 km (approximately 93 mi) to over 200 km (approximately 124 mi), potentially reaching mainland China.¹¹³ Production of the missile, which is capable of defending against short- and medium-range ballistic missiles, is scheduled to occur from 2015 through 2024.¹¹⁴ The Tien Kung III will complement Patriot missile systems, which Taiwan acquired from the United States to defend Taiwan's air space, providing Taiwan greater air coverage in a potential cross-Strait conflict.¹¹⁵

- *Combat Support Ships*: In January 2015, the Taiwan Navy commissioned its second supply vessel, the Panshih. The ship has improved functionality and versatility over Taiwan's other supply ship, including its advanced medical equipment that could be used for humanitarian assistance and disaster relief missions. In a cross-Strait military conflict, this ship would enable Taiwan to better replenish its frigates and destroyers with ammunition, fuel, and other supplies.¹¹⁶
- *Missile Corvette*: In March 2015, the Taiwan Navy commissioned the TUO JIANG, its first ship in a new class of catamaran-style missile corvettes. Taiwan may build up to 11 more of these ships. The new corvette has better range, endurance, and sea-keeping ability than Taiwan's other patrol ships, and is equipped with 16 antiship cruise missiles. The ship enhances the survivability and lethality of Taiwan's antisurface force in a potential cross-Strait conflict and increases the Taiwan Navy's ability to patrol the East and South China seas.¹¹⁷
- *Coast Guard Cutters*: In June 2015, the Taiwan Coast Guard Administration commissioned two helicopter-capable cutters. These ships are the largest of Taiwan's eight-ship Coast Guard fleet, and each is armed with one 40 millimeter gun, two 20 millimeter guns, and a water cannon.¹¹⁸ The cutters will enhance the Coast Guard's maritime patrol capabilities with the range necessary to conduct missions in the East and South China seas.¹¹⁹
- *Unmanned Aerial Vehicles (UAVs)*: In August 2015 at the biennial Taipei Aerospace and Defense Technology Exhibition, Taiwan's Chung-Shan Institute of Science and Technology unveiled a prototype of its largest UAV to date—more than double the size of any model in service.¹²⁰ Although its specific technical details were not disclosed, the UAV has a medium range and long endurance; can carry multiple payloads; and is designed for intelligence, surveillance, and reconnaissance (ISR) missions. When it enters service, the UAV will complement Taiwan's operational fleet of 32 UAVs and will enhance Taiwan's ISR capabilities.¹²¹

Select military equipment Taiwan is acquiring or seeking to acquire from the United States includes the following (see also the discussion on arms sales, military-to-military contact, and U.S.-Taiwan defense relations in "U.S.-Taiwan Relations," later in this section):

- *Black Hawk Helicopters*: Between December 2014 and May 2015, Taiwan received eight UH-60 Black Hawk helicopters, the first shipments of a U.S. arms package worth \$3.1 billion announced in 2010. A total of 60 helicopters are set to be transferred in eight subsequent batches with the final delivery set for 2019.¹²² The helicopters reportedly will be equipped with radar warning receivers, infrared countermeasure sets, missile warning systems, Gatling-type guns, and data link systems.¹²³ According to a Taiwan Army official, the UH-60s will replace the aging UH-1H helicopter fleet and will be used primarily to transport supplies and personnel. Taiwan's National Airborne Service Corps reportedly will use 15 of the Black Hawks for humanitarian assistance and disaster relief missions.¹²⁴ In a potential PLA invasion of Taiwan territory, the helicopters could be used to counter a PLA landing force and coordinate command and control and special operations missions.¹²⁵
- *OLIVER HAZARD PERRY-Class Guided-Missile Frigates*: In December 2014, U.S. President Barack Obama signed legislation authorizing the sale of four decommissioned and unarmed PERRY-class frigates to Taiwan, but the Administration has not formally notified Congress of the sale as of the writing of this Report.¹²⁶ Taiwan in April 2014 announced that it would only buy two ships due to budget constraints.¹²⁷ The ships, scheduled to arrive in Taiwan starting in 2016, will modernize and supplement Taiwan's fleet of six KNOX-class frigates. They will also help offset the retirement of two KNOX-class frigates and the eventual decommissioning of all KNOX-class frigates.¹²⁸ The PERRY-class frigates, depending on the equipment and arms with which they are outfitted,* could be used for antisubmarine, antisurface, and limited antiaircraft warfare in a conflict.¹²⁹
- *F-16 Fighter Upgrade*: Over the past year, the United States and Taiwan have moved forward with the planned mid-life upgrade of Taiwan's existing fleet of 145 F-16 A/B fighter aircraft. In December 2014, the United States awarded Lockheed Martin a \$308 million contract to supply active electronically scanned array radars for Taiwan's F-16s.¹³⁰ According to the development plan, the Taiwan Air Force will send two F-16s to Lockheed Martin to install and test the radar before upgrading the rest of Taiwan's fleet in Taiwan over the second half of 2016.¹³¹ With these upgrades, Taiwan's F-16 fleet will be better able to track China's advanced combat aircraft and ground-based targets.¹³²
- *Submarines*: In March 2015, President Ma reiterated his support for Taiwan to pursue an indigenous submarine program, following more than a decade of attempts to acquire diesel-elec-

*The Taiwan Navy will probably outfit the ships with a combination of indigenous and foreign weapons systems, including surface to air missile systems, antiship missiles, and artillery. Notably, five of Taiwan's eight domestically built CHENG KUNG-class frigates, based on PERRY-class frigates, already carry advanced Hsiung Feng III antiship cruise missiles that reportedly have a range of 81 nm. *IHS Jane's*, "Jane's World Navies—Taiwan," June 18, 2015, 20; Charles Au, "Taiwan Releases First Firing Footage of HF-3 'Carrier Killer,'" *IHS Jane's*, December 8, 2014.

tric submarines from abroad.* The indigenous submarine program enters its three-year project design phase in 2016, but Taiwan has already identified over 20 U.S. and European companies interested in assisting Taiwan shipbuilding companies.¹³³ As mentioned previously, Taiwan has four submarines; two are decommissioned U.S. Navy GUPPY-class submarines (they have undergone upgrades since the 1940s) used only for training.¹³⁴ The Taiwan Navy's already limited ability to conduct undersea warfare against China's expanding fleet of modern surface ships and submarines will continue to erode as Taiwan's submarine force ages.

- *P-3C Orion Maritime Patrol Aircraft*: Taiwan is scheduled to accept its final delivery of four P-3C antisubmarine aircraft by the end of 2015, which follows its first shipment of eight that arrived in 2013. Originally purchased from the United States in 2007, the P-3Cs will replace the Taiwan Air Force's fleet of 11 S-2T antisubmarine aircraft that have been in service for over 40 years.¹³⁵ The P-3C will increase the capabilities and endurance of the military's fixed-wing maritime patrol aircraft force, improving Taiwan's ability to perform antisubmarine warfare and ISR missions.¹³⁶

Status of Taiwan's Defense Reforms

As part of its military modernization effort, Taiwan is transitioning its conscripted military force to an all-volunteer army by 2017.† The goal of this effort is to create a "small but smart and strong force" in response to "the requirement for high quality manpower under advanced technological conditions and economic and social changes."¹³⁷ Taiwan's transition has been far more costly than expected, increasing budgetary pressure on research and development (R&D) as well as operations and maintenance.¹³⁸ To find additional savings, Taiwan in 2013 decided to reduce its active duty force from 275,000 to 215,000 by 2015,¹³⁹ and now plans to reduce the force to 170,000 by the end of 2019.¹⁴⁰

Reversing the trend of missing recruitment goals for its active duty force by wide margins from 2011 to 2013,¹⁴¹ Taiwan in 2014 recruited over 15,000 men and women, exceeding its target of about 10,500. Yet, Taiwan will still need to exceed goals through 2017 to meet the already reduced active duty target of 170,000.¹⁴² To encourage enrollment and retention, Taiwan has announced a variety of new incentives, such as increased wages, service-extending stipends, and expanded base privileges.¹⁴³ Although these new benefits show promise in reaching recruitment goals, they could also further increase the financial burden of the all-volunteer force by

* In 2001, then U.S. President George W. Bush proposed to help Taiwan acquire eight diesel-electric submarines, but the proposal has been delayed due to political and cost disagreements on both sides. The United States also has not built a conventional submarine in over 40 years. *Taiwan Today*, "Ma Pledges Support for Homegrown Naval Vessels," April 1, 2015; Agence France-Presse, "Taiwan Kicks Off Plan to Build Its Own Submarines," December 29, 2014.

† Taiwan had originally planned to complete the transition at the end of 2014, but shifted the timeline to 2017 due to lower than anticipated recruitment numbers. As part of the transition, men born after 1994 are now required to undergo four months of active duty military service and then enter Taiwan's reserve system. Previously, Taiwan conscripts served one year as active duty. Ministry of National Defense (Taiwan), *National Defense Report 2013*, October 2013, 95–96; Chris Wang, "Date for All Volunteer Military Delayed," *Taipei Times*, September 13, 2013.

comprising a larger percentage of the overall defense budget. In a setback to Taiwan's planned transition, the MND in August 2015 announced it would be unable to end conscription in 2016 for men born before 1994, as previously announced. The ministry said that recruitment goals fell short for voluntary enlistees in 2015 and therefore decided to conscript in 2016 approximately 23,100 men for one year of compulsory active duty service to meet defense needs.¹⁴⁴

The DPP Unveils Its Defense Reform Strategy in Defense Policy Blue Papers

In May 2015, the New Frontier Foundation, a think tank established by the DPP, released four new defense policy blue papers* articulating the DPP's views on Taiwan defense reform. The blue papers, along with eight others released since June 2013, outline a defense strategy that focuses on revitalizing Taiwan's indigenous defense industry, supporting the all-volunteer force transition with increased funding, and building and acquiring asymmetric platforms.¹⁴⁵ The DPP particularly emphasizes the need to invest in R&D to upgrade Taiwan's military equipment. Complementing its pledge of restoring defense spending to 3 percent of GDP annually,[†] the DPP advocates for 70 percent of all new defense spending to go toward "military investments," including procurement of weapons and equipment, defense construction, and R&D.¹⁴⁶

The DPP by 2020 aims to have no less than 60 percent of these "military investments" spent on indigenous R&D.¹⁴⁷ Like the KMT, development of the indigenous submarine program is the DPP's top priority for the defense industry; the DPP has outlined a 23-year development plan.¹⁴⁸ In addition, the DPP prioritizes other indigenous solutions, such as unmanned aerial vehicles, unmanned underwater vehicles, and short take-off and vertical landing fighter aircraft.¹⁴⁹

To strengthen Taiwan's asymmetric capabilities, the DPP supports creating a new cybersecurity service for the military; bolstering missile defense capacity; building improved combat survivability against missile strikes; restructuring the ground force into specialized rapid response units; and maintaining capabilities in air and sea control.¹⁵⁰ Should the DPP win the January 2016 presidential election, it plans to initiate an open defense policy discussion and issue its own quadrennial defense review within a year.¹⁵¹

*The four defense blue papers cover Taiwan's military capabilities, defense information security, veteran's affairs, and the indigenous defense industry. New Frontier Foundation, "Press Conference Announcing the Publication of Defense Policy Blue Papers No. 9-12," May 25, 2015. Staff translation.

†This pledge restates the DPP's commitment outlined in its first blue paper in June 2013. The KMT similarly pledged to raise defense spending to three percent of GDP prior to the 2008 election, but did not fulfill its promise. New Frontier Foundation, *Defense Blue Paper #1: DPP's Defense Agenda*, June 2013, 19; Ralph Jennings, "Taiwan's Ma Wins Election," Reuters, March 22, 2008.

Taiwan Military Training and Activities

The Taiwan military routinely conducts a range of exercises to maintain combat readiness; integrate new weapons systems and tactics; test and improve its capabilities; and demonstrate to the Taiwan people, China, and others that it has a credible deterrence capability. In 2015, select major exercises and activities included the following:

- *Naval Combat Readiness Exercise*: On January 1–2, Taiwan conducted an exercise with 13 vessels and 2 attack helicopters off its southwest coast primarily to test its new TUO JIANG-class stealth missile corvette that had been commissioned into service just one week before the exercise.¹⁵² The exercise simulated countering invading enemy naval forces, such as submarines and attack boats.¹⁵³
- *Planned Air Surveillance Patrols*: According to Taiwan’s MND, P–3C antisubmarine aircraft currently conduct ISR missions close to Taiwan’s coast and in airspace within its air defense identification zone.* In April, the MND for the first time confirmed P–3C antisubmarine aircraft patrols would eventually extend to areas in the South China Sea without providing a specific timeline. The expanded mission would enhance Taiwan’s ability to monitor Chinese naval activity in the South China Sea.¹⁵⁴
- *Han Kuang Exercises*: Han Kuang is Taiwan’s most important set of joint exercises; they have been held annually at the national level since 1984.¹⁵⁵ For the first phase of the exercise in May, the Taiwan military simulated rapid battle preparation, electronic warfare, and cyber attacks.¹⁵⁶ In the second phase of the exercise in September, Taiwan conducted live-fire drills simulating countering a Chinese invasion. The drills included an anti-amphibious landing exercise and tested Taiwan’s most advanced platforms.¹⁵⁷ According to a senior MND official, the ministry signed a five-year contract with the United States worth \$3.1 million, paying for the services of the U.S. military to advise the Han Kuang exercises from 2015 through 2019.¹⁵⁸ Previously, U.S. military representatives only observed the exercises. The senior MND official said, “The U.S. will advise in strategic planning and operational development of combat units for Taiwan’s defense against hostile actions in the Taiwan Strait.”¹⁵⁹

Cross-Strait Espionage

Expanding cross-Strait ties promote not only increasing economic cooperation with China but also increase Taiwan’s vulnerability to Chinese espionage. Increased travel between Taiwan and China

*An air defense identification zone is a publicly-declared area established in international airspace adjacent to a state’s national airspace, in which civil aircraft must be prepared to submit to local air traffic control and provide aircraft identifiers and location. Its purpose is to allow a state the time and space to identify the nature of approaching aircraft prior to entering national airspace in order to prepare for defensive measures if necessary. U.S. Code of Federal Regulations, 14 C.F.R. §99.3 (2013); U.S. Department of Defense, “2.7.2.3 Air Defense Identification Zones in International Airspace,” in *The Commander’s Handbook on the Law of Naval Operations* (July 2007), p. 2-13; and Ruwantissa Abeyratne, “In Search of Theoretical Justification for Air Defence Identification Zones,” *Journal of Transportation Security* (September 2011).

heightens the risk of Taiwan defense secrets being compromised, as China has improved access to Taiwan with better opportunities to conduct intelligence operations against Taiwan citizens both in Taiwan and China.*

After 15 cases of alleged spying in 2014, nearly all involving active or retired Taiwan military officers, espionage continues to proliferate.¹⁶⁰ The September 2014 arrest of retired PLA captain and intelligence officer Zhen Xiaojiang—the first mainland Chinese spy to be apprehended in Taiwan in decades—uncovered the largest cross-Strait spy ring in years.¹⁶¹ In September 2015, Mr. Zhen received a four-year prison sentence, while five retired Taiwan military officers recruited by Mr. Zhen to spy for the Mainland were handed more lenient sentences.¹⁶² Since 2005, Mr. Zhen allegedly acquired classified information on Taiwan's Mirage 2000 aircraft, ultra-high frequency radar systems, and other weapons platforms.¹⁶³ In another case, a retired vice admiral and deputy commander of the Taiwan Navy Ko Cheng-sheng was found guilty of espionage and sentenced in October 2014 to 14 months in prison. Vice Admiral Ko was one of the highest-ranking retired Taiwan military officers to be caught spying for China.¹⁶⁴

China's increased efforts to acquire Taiwan defense secrets have significant implications for Taiwan's security. In January 2015, Taiwan Defense Minister Kao Kuang-chi said, "[T]he military [should] heighten its guard against spies, as China has not relented in its efforts to infiltrate Taiwan's military as exchanges across the Taiwan Strait increase."¹⁶⁵ As noted by retired Vice Minister of National Defense Lin Chong-pin, exposure of Beijing's successful infiltration of Taiwan defense systems supplied or marketed by the United States could give pause to U.S. defense officials regarding future arms sales to the island.¹⁶⁶ Aside from traditional reasons for espionage, China also seeks to weaken the morale of the Taiwan military. Each spy case revealed by Taiwan has the potential to achieve psychological benefits for Beijing, creating an environment where China's capture of Taiwan's defense secrets could be perceived as an inevitability.¹⁶⁷

Computer Network Security

Taiwan faces a growing problem of cyber attacks—increasingly from China—that threaten the security of sensitive information. According to U.S. cybersecurity firm FireEye, Taiwan in 2014 was the third most targeted country in the Asia Pacific region in terms of hacking attempts to steal data.† In March 2015, senior Taiwan intelligence officials publicly identified what appears to be a PLA cyberespionage unit based at China's Wuhan University responsible for cyber activities against Taiwan. The unit is reportedly part of the Sixth Bureau of the PLA General Staff Department's Third Department, one of the 12 bureaus under the Third Depart-

* In 2014, nearly four million people from mainland China traveled to Taiwan, up from approximately three million visitors in 2013. Tourism Bureau (Taiwan), "Visitors by Residence, 2014." August 17, 2015; Wendell Minnick, "Chinese Spies Expand Operations in Taiwan," *Defense News*, January 24, 2015; and J. Michael Cole, "Why Spy on Taiwan when Taiwan Gives Information Away for Free?" *Diplomat*, March 12, 2014.

† Only South Korea and Hong Kong faced a higher volume of attempted cyber intrusions in 2014. *Want China Times* (Taiwan), "Taiwan Third Most Targeted Country by Cyber Attacks in Asia," April 3, 2015.

ment whose mission is technical reconnaissance and digital information warfare.¹⁶⁸ According to the National Security Bureau, one of Taiwan's major intelligence agencies, cyber attacks linked to China in 2013 alone targeted the agency over seven million times and the MND over one million times. This marked a significant increase in volume from previous years.¹⁶⁹

In response, Taiwan is working to improve its defenses by creating a new cybersecurity department responsible for securing the government's information security and key network infrastructure that would also have authority over military cyber defense.¹⁷⁰ Moreover, Taiwan has asked to join U.S.-led Cyber Storm, a multilateral cybersecurity exercise held every two years. Taiwan Vice Premier Simon Chang in a March 2015 interview noted that Taiwan's participation could help improve its ability to protect against Chinese cyber intrusions.¹⁷¹ The first Cyber Storm exercise in 2006 involved only U.S. government and private sector participants, but it has since expanded in size and scope to become the most extensive government-sponsored cybersecurity exercise of its kind. In Cyber Storm IV, the most recent exercise held in several stages between 2011 and 2014, participants aimed to "assess and strengthen cyber preparedness, examine incident response processes in response to ever-evolving threats, and enhance information sharing among federal, state, international, and private sector partners."¹⁷² The exercise involved 11 countries that are all members of the International Watch and Warning Network (a framework for cooperation on cyber situational awareness and incident response), of which Taiwan is not a member.*

U.S.-Taiwan Relations

Diplomatic Affairs

The U.S. and Taiwan governments continue to make progress on bilateral initiatives and areas of mutual interest. In February 2015, the United States issued new license plates to Taiwan's representatives in the United States similar to those granted to foreign diplomats, as a follow-on to an agreement reached in 2013. The license plates provide previously unavailable immunity privileges to Taiwan representatives.¹⁷³ U.S. and Taiwan officials in June 2015 signed a memorandum of understanding to increase cooperation in international public health, humanitarian assistance, and other global issues.¹⁷⁴ The United States also hosted DPP Chairperson Tsai on her June 2015 U.S. visit, and the U.S. government has said it would welcome other candidates if they visit the United States.¹⁷⁵ In addition to meeting with senior members of Congress, Chairperson Tsai visited the White House and U.S. Department of State for a series of "very successful, very positive" closed-door meetings.[†]¹⁷⁶ In response to the visit, a spokesperson

*Participants included Australia, Canada, France, Germany, Hungary, Japan, the Netherlands, Norway, Sweden, Switzerland, and the United States. U.S. Department of Homeland Security, "Cyber Storm: Securing Cyber Space," June 17, 2015; UN Terminology Database, "International Watch and Warning Network."

†Due to the unofficial nature of the U.S.-Taiwan relationship, the U.S. government limits contacts between U.S. and Taiwan officials at certain levels (for example, the United States rarely sends cabinet-level officials to Taiwan, and the Commission has been told that some senior level U.S. government officials are unable to visit Twin Oaks, Taiwan's de facto embassy in Washington, DC).

for China's Taiwan Affairs Office said, "The [meetings] went against the peace and stability of the Taiwan Strait and harmed peaceful development of cross-Strait ties. [They] sent a wrong signal to the island's separatist forces."¹⁷⁷ Beijing's response demonstrated its uneasiness regarding the DPP.

Economic and Trade Relations

In 2014, U.S.-Taiwan trade reached a record high, increasing by 6 percent to \$67.4 billion.¹⁷⁸ Also in 2014, Taiwan became the tenth largest trading partner of the United States, passing both India and Saudi Arabia. In addition, the United States moved ahead of Japan to become Taiwan's second largest trading partner.¹⁷⁹ Taiwan exports to the United States mostly consist of manufactured parts and accessories, including cell phones, motor vehicle parts and accessories, and office machine parts and accessories. By contrast, U.S. exports to Taiwan are diversified across a number of sectors; they mainly include machinery to manufacture semiconductors and liquid crystal display (LCD) panels; agriculture; and arms sales.¹⁸⁰ (For more information on arms sales, see "Military and Security Relations" below.)

Although U.S.-Taiwan economic ties remain strong, substantive progress on ongoing trade and investment negotiations has slowed.¹⁸¹ In the absence of official relations, both sides discuss bilateral economic issues through the Trade and Investment Framework Agreement (TIFA), a framework established in 1994. Taiwan Economic Affairs Minister John Deng said the U.S. focus on completing TPP and trade promotion authority negotiations postponed the TIFA meeting scheduled for April 2015.¹⁸² Nevertheless, Assistant Secretary of State for Economic and Business Affairs Charles Rivkin, the most senior State Department official to visit Taiwan since his predecessor visited in 2012, said in a June 2015 visit to Taipei that unofficial talks about how to enhance bilateral economic cooperation occur daily.¹⁸³ TIFA talks had been on hold from 2007 to 2012 due to Taiwan's refusal to import U.S. beef containing ractopamine, a common feed additive, but resumed in 2013 when the Taiwan legislature partially lifted restrictions.¹⁸⁴

In October 2015, U.S. and Taiwan officials held a TIFA meeting in Taipei, which included discussions on a range of bilateral economic issues, including agriculture, pharmaceuticals and medical devices, intellectual property rights, trade barriers, and investment.¹⁸⁵ In addition to these issues, the talks also covered a potential bilateral investment agreement and Taiwan's aspirations to join TPP. The meeting reportedly did not include a discussion about Taiwan's restrictions on U.S. pork imports, which remains a contentious area in ongoing negotiations.¹⁸⁶ Although Taiwan loosened some restrictions on residual levels of ractopamine in U.S. beef imports, it maintains these restrictions on pork imports. Since 2012, members of Congress have raised concerns about Taiwan restrictions on U.S. pork. Several key roadblocks to overturning restrictions include pressure from Taiwan's pork industry and Taiwan citizens' aversion to the use of ractopamine in pork production.¹⁸⁷ Progress on TIFA negotiations could be further constrained by Congressional demands for the removal of Taiwan's pork restrictions.

Military and Security Relations

Taiwan continues to be one of the world's largest buyers of U.S. defense exports. Over the last decade, Taiwan has agreed to buy U.S. arms worth approximately \$22.7 billion (see Table 1). However, the Obama Administration has not notified Congress of any arms sales to Taiwan since 2011. In December 2014, President Obama signed legislation authorizing the transfer of four PERRY-class frigates to Taiwan, but as of the writing of this Report, the Administration has yet to notify Congress and, per Taiwan's request, complete the sale of two of the frigates worth approximately \$179 million.¹⁸⁸

Table 1: U.S. Arms Sales to Taiwan (2005–2015)

Year of Notification to Congress	Weapon, Item, or Service*	Projected Value (US\$ millions)†	Status‡	Delivery
2005	10 AIM–9M Sidewinder and 5 AIM–7M Sparrow air-to-air missiles; continued pilot training and logistical support for F–16 fighters at Luke Air Force Base	280	Delivered	2006–2007
2007	218 AMRAAMs and 235 Maverick air-to-ground missiles for F–16 fighters	421	Delivered	2012
2007	60 AGM–84L Harpoon Block II antiship missiles	125	Delivered	2010–2012
2007	144 SM–2 Block IIIA Standard air-defense missiles for KIDD-class destroyers	272	Delivered	2010–2012
2007	12 P–3C maritime patrol/antisubmarine warfare aircraft	1,960	In progress	2012–2015 ¹⁸⁹
2007	Patriot configuration 2 ground systems upgrade	939	Unknown	Unknown
2008	330 PAC–3 missiles and firing units	3,100	In progress	Began in 2014 ¹⁹⁰
2008	32 UGM–84L sub-launched Harpoon Block II antiship missiles	200	Delivered	2013 ¹⁹¹
2008	Spare parts for F–5E/F C–130H, F–16A/B, and Indigenous Defense Fighter aircraft	334	In progress	N/A

*These are the weapons, items, and services as presented to Congress at the time of notification, which may differ from the actual weapons, items and services that the United States ultimately sells to Taiwan.

†These values represent amounts as presented to Congress at the time of notification, which may differ from the actual amount Taiwan pays for the weapon, item, or service.

‡This indicates the most current status as notified to Congress or indicated in media reports, which may differ from the actual status of the sale.

Table 1: U.S. Arms Sales to Taiwan (2005–2015)—Continued

Year of Notification to Congress	Weapon, Item, or Service*	Projected Value (US\$ millions)†	Status‡	Delivery
2008	182 Javelin missiles and command launch units	47	Delivered	2011
2008	Four E–2T aircraft refurbishment and upgrades	250	Delivered	2011–2013 ¹⁹²
2008	30 AH–64 Apache helicopters and related ordnance	2,532	Six delivered	2013
2010	114 PAC–3 missiles and firing units	2,810	In progress	Began in 2014 ¹⁹³
2010	60 UH–60M Black Hawk utility helicopters	3,100	In progress	2014–2019 ¹⁹⁴
2010	12 ATM–84L and RTM–84L Harpoon Block II antiship telemetry missiles	37	Unknown	Unknown
2010	60 MIDS/LVT–1 terminals to improve F–16A/B C4ISR § systems	340	Unknown	Unknown
2010	2 OSPREY-class mine hunting ships (refurbishment and upgrades)	105	Delivered	2012 ¹⁹⁵
2011	145 F–16AB aircraft refurbishment and upgrades	5,300	Not delivered	2016–2017
2011	F–16 pilot training	500	In progress	N/A
2011	Spare parts for F–16A/B, F–5E/F, C–130H, and IDF aircraft	52	In progress	N/A

*These are the weapons, items, and services as presented to Congress at the time of notification, which may differ from the actual weapons, items and services that the United States ultimately sells to Taiwan.

†These values represent amounts as presented to Congress at the time of notification, which may differ from the actual amount Taiwan pays for the weapon, item, or service.

‡This indicates the most current status as notified to Congress or indicated in media reports, which may differ from the actual status of the sale.

§C4ISR refers to command, control, communications, computers, intelligence, surveillance, and reconnaissance.

Source: Except where indicated, this information is compiled from the following sources: Shirley Kan, “Taiwan’s Major U.S. Arms Sales since 1990,” *Congressional Research Service*, August 29, 2014, 58–59; Piin-Fen Kok and David J. Firestein, “Threading the Needle: Proposals for U.S. And Chinese Actions on Arms Sales to Taiwan,” *East West Institute*, September 2013, 78–79; and U.S.-Taiwan Business Council and Project 2049 Institute, “Chinese Reactions to Taiwan Arms Sales,” March 2012, 26–28.

In 2014, military collaboration between the United States and Taiwan continued to increase. More than 3,000 U.S. Department of Defense personnel visited Taiwan in 2014,¹⁹⁶ a 50 percent increase over 2013. In 2012, only 1,500 officers conducted visits to Taiwan.¹⁹⁷ However, as Russell Hsiao, former non-resident senior fellow at the Project 2049 Institute, points out,

*Unfortunately, few U.S. military officers conduct in-country training in Taiwan, and there are no known [U.S. military officers] attending Taiwan's National Defense University or other intermediate and senior service schools. More educational exchanges between the two defense establishments are warranted, particularly for junior and noncommissioned officers.*¹⁹⁸

Nevertheless, momentum on increased military cooperation continued over the past year. As of September 2015, nearly 2,000 U.S. defense personnel conducted visits to Taiwan, on pace with 2014 numbers.¹⁹⁹ In addition to visits, the U.S. military in June 2015 established two “sister units” to increase exchanges between units in the U.S. military and their counterparts in the Taiwan military.²⁰⁰

Some observers assert the United States could do more to support Taiwan's defense in order to fulfill U.S. obligations under the Taiwan Relations Act, which requires the United States to provide “defense articles and defense services in such quantity as may be necessary to enable Taiwan to maintain sufficient self-defense capabilities.”²⁰¹ For example, Van Jackson, visiting fellow at the Center for a New American Security, proposed shifting U.S. arms sales from F-16 upgrades and similar platforms to weapons that enable antiaccess/area denial capabilities,* such as undersea mines, air and missile defense, and land-based antiship cruise missiles. According to Mr. Jackson, this would be relatively inexpensive for Taiwan; have a lower profile, which would be less likely to anger China; and provide Taipei with more effective options to impose costs on China in a potential conflict.²⁰² Aside from arms sales, Randall Schriver, president and chief executive officer of the Project 2049 Institute, and Ian Easton, research fellow at the Project 2049 Institute, argue that the United States should increase its defense engagement with Taiwan by taking a range of actions, such as supporting Taiwan's indigenous submarine program by signaling its intentions to approve licenses for potential U.S. defense industry participants; inviting Taiwan to the biannual multinational Rim of the Pacific Exercise (RIMPAC) and other bilateral and multilateral exercises; and sending high-level military officials to visit their counterparts in Taiwan.²⁰³

The Role of Taiwan in the U.S. Rebalance to Asia

In response to written questions from the House Foreign Affairs Committee in March 2015 on the 36th anniversary of the Taiwan Relations Act, U.S. Secretary of State John Kerry described Taiwan as “a key component of U.S.-Asia Pacific policies, including the Asia rebalance.”²⁰⁴ Since the Obama Administration announced its rebalance to Asia strategy in 2011, other U.S. officials have mentioned Taiwan's role in the rebalance but have not detailed how

* According to the U.S. Department of Defense, “antiaccess” actions are intended to slow the deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. “Area denial” actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term “counterintervention,” reflecting its perception that such operations are reactive. U.S. Department of Defense, *Air Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2; U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2013*, 2013, 1, 32, 33.

Taiwan fits into the strategy. This lack of clarity could be due to concerns about how China would perceive U.S. officials' calls for increased U.S. engagement with Taiwan, particularly on military issues. The Obama Administration may feel constrained by the unofficial nature of U.S.-Taiwan relations and concerned about the impact on U.S.-China relations of openly emphasizing Taiwan in the rebalance policy.

Some analysts and security experts in the United States and Taiwan argue the United States is not fully leveraging Taiwan's strengths in the rebalance and could benefit from further cooperation. According to Mr. Easton and Mr. Schriver, Taiwan can play an important maritime role in the rebalance:

*Large numbers of maritime domain awareness capabilities fielded by Taiwan have the potential to contribute important [indications and warning] information. However, it is not clear how closely Taiwan's capabilities are linked to, and integrated with, U.S. Navy and other allies' systems in the Western Pacific. . . . Taiwan's ISR could drastically improve U.S. and other allied nations' situational awareness in the Taiwan Strait and South China Sea where their capabilities are constrained by distance and basing limitations . . . [but] there are significant shortcomings when it comes to human "software" components*²⁰⁵

In addition to improving maritime cooperation, the United States can tap Taiwan's strengths by reimagining U.S.-Taiwan defense policy coordination, according to Andrew Yang, Taiwan deputy minister of defense from 2009 to 2013 and minister of national defense briefly in 2013. Mr. Yang outlines three levels of his proposed new military-to-military coordination dialogue: (1) policy-level: developing shared views of the security environment and identifying policy guidelines to deal with the evolving security situation; (2) planning-level: based on Taiwan's 2013 quadrennial defense review, evaluating Taiwan's defense needs and, if needed, planning for U.S. assistance; and (3) service-level: focus on jointness between the U.S. and Taiwan militaries with particular emphasis on Taiwan's role in participating in regional humanitarian assistance and disaster relief operations.²⁰⁶

Together with defense cooperation, increasing U.S. trade and investment in the Asia Pacific is an important piece of the rebalance strategy. President Ma has called for Taiwan to join TPP by 2020, but has not provided a detailed roadmap to achieve that goal.²⁰⁷ Although senior U.S. officials said they welcome Taiwan to join TPP,²⁰⁸ potential roadblocks could impede Taiwan's entry as a member. Taiwan would probably face Chinese opposition, complicating Taiwan's entry.²⁰⁹ While Taiwan has made significant progress reforming its economy in recent years, Taiwan's economy would likely need to further reform and open to accommodate the trade terms of TPP. The U.S. Chamber of Commerce in Taipei's "2015 Taiwan White Paper" cites problems in Taiwan's regulatory process, including rules that deviate from standard global business practices and a lack of transparency, that still require reform.²¹⁰

Implications for the United States

The U.S.-Taiwan relationship remains robust, despite the limitations posed by the lack of formal relations between the two governments. It is built on common democratic values, strong commercial ties, and a U.S. commitment under the Taiwan Relations Act to aid in Taiwan's defense. Taiwan remains vital to U.S. geopolitical interests in Asia and important for regional security. For example, the United States relies on Taiwan as a bastion of democracy in East Asia and as a like-minded force for peace and security. From providing humanitarian assistance and disaster relief resources in a region that often faces natural disasters to peacefully managing its maritime disputes in the East and South China seas, Taiwan contributes to regional security and the maintenance of peace and prosperity in the Asia Pacific.

Since 2008, Taipei and Beijing have taken steps to reduce cross-Strait tension and increase economic, cultural, and educational ties. Seven years of cross-Strait rapprochement have been beneficial to the United States by reducing cross-Strait tensions and allowing U.S. policymakers to address other priorities in the U.S.-China and U.S.-Taiwan relationships.

Two factors could change cross-Strait ties, however, complicating U.S. interests, its important security ties with Taiwan, and its relationship with China.

- The inherent uncertainty surrounding the transition to a new administration in Taiwan makes China uneasy, and it is unclear how Beijing would approach relations with Taipei if the DPP wins the upcoming presidential election. Should the DPP win, it is unclear how it might pursue cross-Strait relations differently from the current KMT government. According to Ms. Glaser and Ms. Vitello, "All of [DPP Chairperson Tsai's] statements indicate that she is unlikely to pursue provocative policies. . . . She has made a concerted effort to articulate a strategy aimed at maintaining the status quo."²¹¹ Chairperson Tsai's comments suggest a pragmatic approach that, in a departure from the last DPP president, would not seek to overtly promote pro-independence policies. On the other hand, Alan Romberg of the Stimson Center argued that "[Chairperson Tsai] will not embrace the '1992 Consensus' (or any other explicit form of 'one China') and will not oppose Taiwan independence, as Beijing insists." He noted that, "In this circumstance, Beijing's anxiety regarding a Tsai government could result in a measured approach continuing to support [certain] people-to-people aspects of cross-Strait ties while [simultaneously] taking a hardline approach reducing government-level cross-Strait interactions."²¹²
- China's modernizing military presents a significant challenge to Taiwan's ability to defend itself and to the U.S. military's ability to effectively intervene in a cross-Strait conflict should it decide to do so. With the cross-Strait military balance of power continuing to shift in Beijing's favor, Taipei's stagnating defense budget and capabilities, and China's improving antiaccess/area denial capabilities threatening to keep U.S.

forces farther from China's shores, Beijing has increasing advantages in a Taiwan contingency, raising the cost for the United States to intervene in a crisis or conflict.

Conclusions

- Taiwan and China have enjoyed seven years of increased economic and trade ties, but fears among Taiwan citizens about economic coercion and China's political encroachment over Taiwan are more widespread than in the past.
- The younger generation of Taiwan citizens appears to view itself increasingly as Taiwanese rather than Chinese, and to be willing to take visible and substantial steps to assert their national identity. This has the potential to disrupt the diplomatic narrative that has allowed China and Taiwan to coexist without armed conflict. At the same time, Taiwan may not have the will or ability to counterbalance the growing Chinese military advantage. In view of China's growing power in the region as a whole, these trends have the potential to create stress on the ability of the United States to meet its obligations to Taiwan under the Taiwan Relations Act.
- Although China restricts Taiwan's ability to join multilateral institutions, Taiwan continues to make some progress on issues affecting its international space. Were Taiwan to succeed in its efforts to participate in emerging regional economic mechanisms like the Asian Infrastructure Investment Bank, Regional Comprehensive Economic Partnership, and Trans-Pacific Partnership, its integration in the region and ability to make a positive contribution to the international community would increase further.
- In response to China's increasingly assertive actions in the East and South China seas, Taiwan has initiated diplomatic frameworks and signed agreements with claimants to encourage the shelving of territorial disputes and promotion of joint resource development. Through an updated fisheries agreement with Japan and steps taken to clarify its claims in the South China Sea over the past year, Taiwan continues to play a role in helping preserve regional stability.
- The United States and Taiwan share a close relationship based on common democratic values, strong commercial ties, and a U.S. commitment to aid in Taiwan's defense. U.S.-Taiwan trade is at a record high, underlying Taiwan's increasing importance as a close economic partner. Furthermore, the United States continues to support Taiwan's defense through increasing military-to-military contact and other discreet defense cooperation.
- China's military modernization continues to focus on its ability to conduct military operations against Taiwan and deter the United States from defending Taiwan in a potential conflict. Although Taiwan has improved its defense capabilities through a combination of domestic production and acquisition of arms from the United States, the cross-Strait military balance of power continues to shift strongly in China's favor.

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SECTION 4: HONG KONG

Introduction

In the wake of political turmoil and widespread protests surrounding implementation of reform in Hong Kong's 2017 chief executive election, Hong Kong society remains politically divided. This section examines developments in Hong Kong's electoral reform process; declining press, expression, and academic freedoms; and the deepening economic relationship between Hong Kong and mainland China. Findings in this section are based on the Commission's July trip to Hong Kong, meetings with government officials and experts, think tank and media reports, and official statistics. The section concludes with a discussion of the implications of Hong Kong's political and economic development for the United States.

Constitutional Relationship between Hong Kong and Mainland China

Constitutionally, Hong Kong is a special administrative region of the People's Republic of China (PRC).¹ While central authorities in Beijing are explicitly charged with managing Hong Kong's foreign affairs and defense, Hong Kong is otherwise entitled to conduct its own administrative affairs in accordance with the Basic Law, the region's mini-constitution, which grants it a "high degree of autonomy."² This autonomy allows Hong Kong to exercise executive, legislative, and independent judicial power. Hong Kong's autonomy was established in accordance with the "one country, two systems" principle—introduced by Deng Xiaoping to realize the peaceful reunification of China—under which the region's capitalist system and "way of life" would remain unchanged for 50 years after the 1997 turnover from British rule.³ Taken together, the laws and policies that govern the relationship between Hong Kong and mainland China dictate that the region's autonomous powers are authorized through the Basic Law in accordance with the PRC constitution—the ultimate legal and political ground for Hong Kong's high degree of autonomy.⁴

Under this constitutional framework, provisions in the Basic Law that govern the democratic development of Hong Kong's electoral process are subject to interpretation by the Standing Committee of the National People's Congress (NPC), China's de facto legislative body.⁵ According to the Basic Law, Hong Kong's leader, the chief executive, is to be selected "by election or through consultations held locally," but is accountable to and appointed by China's central government.⁶ While the precise method for selecting the chief executive was left legally ambiguous at the time the Basic Law was implemented, the law set forth the intention to one day select the region's leader "by universal suffrage upon nomination by a broadly

representative nominating committee in accordance with democratic procedures.”⁷

Developments in Hong Kong’s Electoral Reform

In 2007, the NPC Standing Committee first announced that universal suffrage—defined by the Hong Kong and central governments as election on a “one person, one vote” basis—may be instituted in the 2017 chief executive election.⁸ Current Chief Executive Leung Chun-ying (known as CY Leung) in July 2014 formally initiated the five-step process for amending the Basic Law when he submitted a report to the Standing Committee affirming the need to reform Hong Kong’s electoral method in the 2017 chief executive election.⁹ In August 2014, the Standing Committee completed the second step of the constitutional development process when it put forth an electoral framework with strict conditions on the adoption of universal suffrage, intensifying widespread and politically charged protests that grew out of public anger over a June policy paper.* According to one Hong Kong lawmaker, the policy paper, which was published by China’s State Council, “eliminate[d] the possibility that the state would restrain itself” and “sen[t] a clear message to Hong Kong that Beijing is omnipotent—all power comes from the National People’s Congress.”¹⁰

The conditions on universal suffrage under the Standing Committee’s framework included a restrictive nomination mechanism that effectively precluded the nomination of prodemocracy candidates. Under the Standing Committee’s framework, only two or three candidates could be nominated to stand for election, and each candidate must be supported by more than 50 percent of the nominating committee, compared with 12.5 percent in the 2012 election.¹¹ Because the new “broadly representative” nominating committee was to be formed “in accordance with the number of members, composition, and formation method of the [current] election committee,” it was expected to maintain the same Beijing-friendly bias as the current election committee.¹² The Standing Committee’s framework also stipulated that the chief executive must be a “patriot” who “loves the country and loves Hong Kong.”¹³

These constraints were met with fierce opposition among prodemocracy voices in Hong Kong. After Beijing unveiled its framework, all of Hong Kong’s 27 prodemocracy legislators (known in Hong Kong as pan-democrats) vowed to vote down what they believed to be a “fake” democratic model.¹⁴ Prodemocracy activists participated in extended protests throughout Hong Kong starting in mid-2014, with some arguing the proposed “rigid” voting framework was “unacceptable to the average voter.”¹⁵ As the protests dragged on, however, public frustration with the disruption caused by protests resulted in a partial loss of support and splintering of political views. The movement successfully delayed to January the second round of public consultation, but failed to cause the central government to alter or scrap the plan. Hong Kong Chief Secretary for Administration Carrie Lam stated, “There is no room for any concessions or compromises to be made” with regard to the NPC

* For details on the 2014 prodemocracy protests in Hong Kong, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 516–545.

Standing Committee's decision.¹⁶ In the aftermath, actors across the political spectrum in Hong Kong have become further fragmented in their interpretations of the concept of universal suffrage and its application in the 2017 and future chief executive and Legislative Council (LegCo) elections.¹⁷

Legislative Council Rejects Electoral Reform Proposal

After the protests dispersed in December 2014, the impetus for electoral reform shifted from grassroots activists to members of LegCo. After a second round of public consultation, Chief Secretary Lam on April 22 announced the main elements of the electoral reform legislation that would be introduced to LegCo and would require support from two-thirds of members to pass.¹⁸ Building on the Standing Committee's framework, the legislation included the following elements:

- The composition of the nominating committee shall follow the current composition of the 1,200-member election committee, in which seats are divided among four "sectors" and 38 "subsectors."¹⁹ Allocation of seats among subsectors, the method for selecting the members of each subsector, and the electorate of each subsector shall remain largely unchanged.²⁰
- The nominating committee shall approve nominees in two stages: first, potential candidates shall be recommended for consideration; second, the two or three individuals who garner the most recommendations shall be selected as official candidates and stand for election.²¹ This procedure differs from the current arrangement, under which members of the election committee jointly nominate candidates.
 - In the first stage, each committee member may recommend one person for consideration to become a candidate.²² To be eligible, a potential candidate must be endorsed by 120—or 10 percent of—nominating committee members. Under this system, at least five and at most ten potential candidates can seek nomination.²³
 - In the second stage, each committee member shall vote for at least two candidates from among those who secured the recommendation of 10 percent of the committee. The two or three candidates who win the most votes and secure endorsement of more than half of members shall be the official candidates to stand election.²⁴
- All eligible Hong Kong voters shall select a chief executive from among the two or three candidates chosen by the nomination committee in accordance with the "first-past-the-post" system (i.e., the candidate with the most votes wins).²⁵

Hong Kong government officials and other pro-establishment voices* argued that even with its limitations, the reform package should be approved in LegCo to serve as the foundation from which further democratic reform of the electoral process in future elections could be pursued. Although the April reform package—by re-

* For example, see Isabella Steger, Edward Ngai, and Charles Clover, "Hong Kong Government Rejects Activists' Demands for Electoral Reforms," *Wall Street Journal*, July 15, 2014.

quiring a lower endorsement threshold for potential candidates—presented a slightly greater chance over the Standing Committee framework that a democratic candidate could be nominated, pan-democrats still considered the plan tantamount to giving the central government a backdoor to screen out candidates it does not like.²⁶ During the Commission’s July trip to Hong Kong, former Hong Kong Chief Secretary for Administration Anson Chan said allowing Hong Kong voters to choose only among candidates approved by Beijing is not true universal suffrage, but rather “gives fake legitimacy to the whole election process.”²⁷ According to Martin Lee, founder of Hong Kong’s Democratic Party and a former legislator, even if there were one acceptable candidate to emerge under the Standing Committee’s framework, “it would not be enough” to grant the chief executive any true legitimacy.²⁸

On June 18, 2015, all 27 pan-democrats—a bloc representing just over one-third of the legislators—and one pro-establishment lawmaker voted against the motion, rejecting the package as promised in August 2014. Shockingly, only eight pro-establishment lawmakers voted in favor of the plan, allegedly due to a miscommunication when 31 LegCo members walked out in a botched attempt to delay the vote while they waited for a prominent pro-establishment member who was stuck in traffic.²⁹ The failure of pro-establishment LegCo members to vote was considered an “embarrassing joke,” according to one pro-establishment legislator who met with the Commission in July.³⁰

As a result of LegCo’s defeat of the electoral reform proposal, the current election framework—whereby the chief executive is chosen by a committee representing only 0.02 percent of eligible voters—will be used in the 2017 chief executive election.³¹ China’s NPC blamed pan-democrat lawmakers for “insisting on their stubborn confrontation against the central authorities,” and reiterated that its August decision on Hong Kong’s electoral reform “will remain in force in the future.”³²

The governments of the United States and United Kingdom (UK) both expressed disappointment at the outcome of the electoral reform process. Scott Robinson, spokesman for the U.S. consulate in Hong Kong, reiterated the U.S. government position that “the legitimacy of the chief executive would be greatly enhanced if the chief executive were selected through universal suffrage and if Hong Kong’s residents had a meaningful choice of candidates.”³³ Likewise, a UK government representative called for a “constructive dialogue on future reforms . . . reflecting the aspirations of the people of Hong Kong and in accordance with the Basic Law.”³⁴

Looking Ahead: Shifting Priorities

Hong Kong’s 2017 chief executive election is no longer open to substantial, if any, amendment, and the 2022 electoral method—likely to resemble the plan vetoed in June, according to the central government—is a distant thought for some Hong Kongers. Now, political actors in Hong Kong face the question of how to move forward with constitutional development. Chief Executive Leung and Zhang Xiaoming, director of the Liaison Office of the Central People’s Government in Hong Kong, suggested Hong Kong should not continue to debate its political reforms, but instead refocus on eco-

conomic and livelihood issues.³⁵ Public opinion in Hong Kong appears to reflect a similar sentiment: according to a survey* conducted by the University of Hong Kong Public Opinion Program from June 2014 to July 2015, the number of respondents who named political developments as their top concern fell 4 percentage points, from 21.8 percent to 17.7 percent, while the number of respondents who listed livelihood problems as their top concern rose 5 percentage points, from 55.1 percent to 60.8 percent.³⁶

Because the window has closed for amending Annex I to the Basic Law, which governs the method for choosing the chief executive, constitutional reform of Hong Kong's electoral method will not be possible in time for the 2017 chief executive election or the 2020 LegCo elections.† The Hong Kong government, should it choose to do so, could make the 2017 election more inclusive through local legislation—thereby sidestepping the constitutional development process and not requiring approval from the central government. During the Commission's trip to Hong Kong, Mrs. Chan proposed the election committee could be reconfigured to be somewhat more representative by widening the voting base and opening up seats to underrepresented groups; alternatively, the government could reduce the number of directly elected seats on the election committee, with the aim of “eventual abolition of functional constituencies.”³⁷ Several LegCo members expressed pessimism about the prospect of achieving any progress on electoral reform before the 2017 election. Alice Mak, legislator with the pro-establishment Federation of Trade Unions party, explained that because two-thirds consensus in LegCo is needed to make any changes to the composition of the election committee as Mrs. Chan suggested, “it would not be easy to get support.”³⁸ According to Ms. Mak, there are “no steps forward” on a timetable for achieving universal suffrage in future elections because the central government may not offer it again.³⁹ Lee Cheuk-yan, pan-democrat LegCo member with the Labor Party, expressed concern that pan-democrats may not be able to promote further electoral reform legislation if they lose their one-third minority in LegCo in 2020.⁴⁰

Even Hong Kong's organized university students, the driving force behind the prodemocracy protests, are shifting their priorities. Nathan Law, president of the Hong Kong Federation of Students, explained to the Commission that members of the student organization are no longer focused on 2017, but rather are looking ahead to 2047 when the “one country, two systems” arrangement governing Hong Kong's handover to the PRC will expire. Those students who are concerned with the relationship between the PRC and Hong Kong are more focused on ideological discourse regarding Hong Kong's future than on concrete action plans.⁴¹ Mr. Law said many students are now focusing on threats to academic freedom in Hong Kong.⁴²

* The respondent sample size in June 2014 was 1,018, and in July 2015 was 1,037.

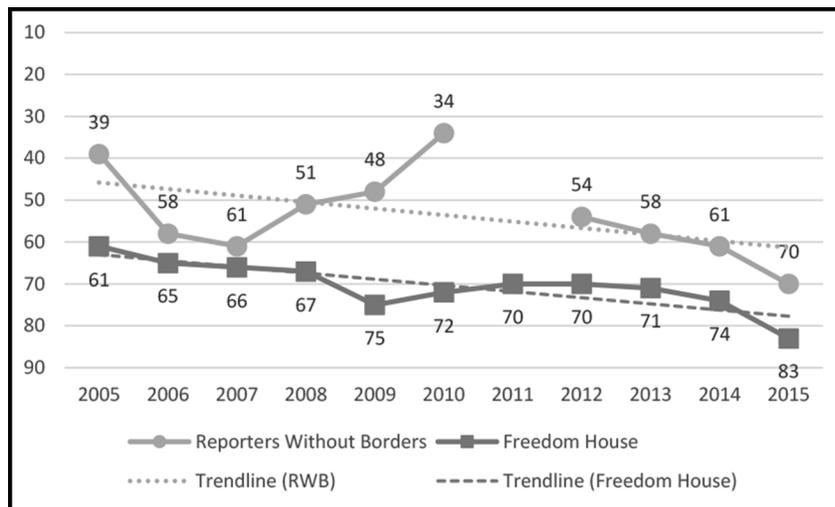
† Under the Basic Law, universal suffrage cannot be implemented in LegCo elections until it is implemented in the chief executive election. Standing Committee of the National People's Congress, *Decision of the Standing Committee of the National People's Congress on Issues Relating to the Methods for Selecting the Chief Executive of the Hong Kong Special Administrative Region and for Forming the Legislative Council of the Hong Kong Special Administrative Region in the Year 2012 and on Issues Relating to Universal Suffrage* (Adopted at the 31st Session of the Standing Committee of the Tenth National People's Congress on December 29, 2007).

Press, Information, and Academic Freedoms under Pressure

Declining Freedom of Press

Although local media remain relatively active in criticism of the region's government and, to a lesser extent, China's central government, press freedom in Hong Kong continued an overall downward trend in 2015, according to a number of press freedom watchdog organizations (see Figure 1).⁴³ Freedom House, a U.S.-based independent advocacy organization, found Hong Kong fell nine spots to 83rd worldwide in its press freedom ranking in 2015, noting the enormous economic and political influence Beijing wields to exert indirect pressure on media, resulting in growing self-censorship.⁴⁴ Reporters Without Borders, an international nonprofit, also reported a nine-position decline from 2014, ranking Hong Kong 70th among 180 countries and regions evaluated, primarily due to erosions of information and press freedoms throughout the prodemocracy protests in late 2014.⁴⁵ Major contributors to the lower ranking include increasing violence against journalists, cyberattacks on politically active media outlets, and businesses withdrawing advertising from openly prodemocracy media outlets.⁴⁶

Figure 1: Hong Kong's Global Press Freedom Ranking, 2005–2015
(global ranking out of approximately 190)



Note: Due to a change in methodology, Reporters Without Borders (RWB) published one set of global scores for 2011–2012 rather than two separate sets of scores. RWB published its first world press freedom index report in 2002, while Freedom House did not consistently report the status of press freedom in Hong Kong until 2005.

Source: Freedom House, “2015 Freedom of the Press Data”; Reporters Without Borders, “Details about Hong Kong,” in *2015 World Press Freedom Index*.

Legally, press freedom in Hong Kong is safeguarded by the Basic Law, the Hong Kong Bill of Rights, and the International Covenant

*For more details on the state of press freedom in Hong Kong in 2014, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 531–534.

on Civil and Political Rights.⁴⁷ Specifically, Article 27 of the Basic Law provides for “freedom of speech, of the press and of publication; freedom of association, of assembly, of procession, and of demonstration; and the right and freedom to form and join trade unions, and to strike.”⁴⁸ Hong Kong’s Bill of Rights incorporates the International Covenant provisions on press freedom into Hong Kong law; under those provisions, freedom of expression protects both “the dissemination of news and the process of newsgathering,” as well as informal journalism such as blogging.⁴⁹

Violence against Journalists

Local journalists and members of the general public in Hong Kong highlighted violence in reports of the deteriorating press freedom environment there. Slightly more than half of respondents surveyed by the Hong Kong Journalists Association (HKJA) expressed concern about increasing reports of violence against journalists.⁵⁰ More than 90 percent of Hong Kong journalists surveyed said they perceived an increase in the number of attacks by law enforcement officers in 2014 compared with the previous year, while 87 percent perceived an increase in the number of attacks by pro-establishment supporters.⁵¹

The uptick in violence and violations of freedom of press and expression in 2014 coincided with local media coverage and support of the prodemocracy movement Occupy Central and criticism of the Hong Kong and central Chinese governments. While attacks against journalists and press members have seemingly escalated in Hong Kong for decades—the HKJA last year pointed to unresolved prior attacks on media actors in 1985, 1994, 1996, 1998, and 2013—the February 2014 maiming of Kevin Lau, then editor of Chinese-language newspaper *Ming Pao*, and the March 2014 beating of two news media executives brought concern over Hong Kong’s press freedoms to new heights.*⁵² Mr. Lau’s two attackers were found guilty of “causing grievous bodily harm” and stealing a motorcycle, and on August 21 were sentenced to 19 years in prison for accepting around \$12,900 to carry out the attack, though it was never disclosed who ordered the attack and why.⁵³ The four individuals arrested for the March attack pleaded not guilty; the case is still pending.⁵⁴ Failure to adequately address physical violence against journalists and other media actors in Hong Kong has contributed to a worsening environment for press members there, especially those associated with the prodemocracy movement.

The HKJA recorded accounts of 24 alleged attacks on journalists from September 22, 2014, to October 29, 2014, in connection with the protests, with physical and verbal assaults inflicted by actors ranging from unidentified assailants to police.† Aside from outright attacks, the HKJA reported continuous, unjustified “violent behav-

*For more details on violence against journalists and other press freedom violations in Hong Kong through October 2014, see U.S.-China Economic and Security Review Commission, *2014 Annual Report to Congress*, November 2014, 531–534.

†A full list of the alleged attacks reported to the HKJA can be found in PEN American Center, “Threatened Harbor: Encroachments on Press Freedom in Hong Kong,” January 16, 2015, 40–44. The Hong Kong Government maintains the Hong Kong Police Force is politically neutral and does not consider the political stance of arrestees in carrying out duties. Letter from Millie Ng (Secretary for Security, Hong Kong Security Bureau) to Betty Ma (Clerk to the LegCo Panel on Security), June 1, 2015.

ior” by police, including arrests without cause, assault, and use of pepper spray against journalists carrying out legitimate reporting duties during the protests.*⁵⁵ Another prominent target is Jimmy Lai, outspoken prodemocracy supporter and former head of outlet Next Media and news tabloid *Apple Daily*, whose home and Next Media headquarters were attacked with firebombs in January 2015.⁵⁶ Mr. Lai had previously suffered various threats and attacks, including a failed assassination attempt, presumably for his prodemocracy stance.⁵⁷

Politically Motivated Censorship

Since the outbreak of prodemocracy protests in mid-2014, news media outlets and journalists in Hong Kong continue to face political and economic pressure to self-censor, sometimes at the risk of shutting down or job loss. Journalists are particularly concerned: 537 journalists surveyed by the HKJA rated self-censorship in Hong Kong as averaging 7 out of 10, with 10 denoting the problem is very common.⁵⁸ Seventy-one percent of those surveyed stated the Hong Kong government was one of the sources of press freedom suppression.⁵⁹ Some media organizations, including television and print news outlets, faced accusations of self-censorship over coverage of the prodemocracy movement, raising concerns about the publications’ credibility.⁶⁰ This trend is highlighted by the shuffling of senior management and editors and controversial editorial practices at several of Hong Kong’s most prominent news outlets, as described below:

- In 2013, the *Hong Kong Economic Journal*, one of the more influential publications in Hong Kong, underwent major senior-level staffing changes after receiving letters of complaint about critical reporting on the chief executive.⁶¹ Throughout 2014, several *Journal* reporters and columnists reported receiving editorial guidance to withdraw or alter content critical of the chief executive or related to political matters.⁶²
- In May 2014, Chong Tien-siong became de facto principal editor of *Ming Pao*, a position formerly held by Mr. Lau (who was assaulted shortly after his departure from the publication), raising suspicion that Mr. Chong’s appointment was related to his status as a prominent businessman on the Mainland.⁶³ Under Mr. Chong’s management, an editorial director violated standard editorial procedures by making middle-of-the-night changes to the headline of a front-page story about the July 1, 2014, rally for universal suffrage. The headline wording—originally composed by the editing team in accordance with established practice—was altered to downplay the politically sensitive event. More than 190 *Ming Pao* staff members signed a joint statement calling on the editor to apologize for violating editorial practices, and the HKJA and the Independent Com-

* For example, seven Hong Kong police officers on October 15 were charged with causing bodily harm and common assault for the beating—which was caught on video—of Ken Tsang, a prodemocracy activist and Civic Party member, during the 2014 prodemocracy demonstrations. Alan Wong, “Hong Kong Police Officers Are Charged in Beating of Protester,” *New York Times*, October 15, 2015.

mentators Association in Hong Kong condemned the editor's action for "seriously undermining" editorial independence at the paper.⁶⁴

- In February 2015, Mr. Chong was responsible for a unilateral editorial decision at *Ming Pao* to drop a front-page story on a Canadian government report about the 1989 Tiananmen Square Massacre and run it on an inside page, despite strong objections from senior editorial staff.⁶⁵
- In April 2015, it was announced that an undisclosed stake in Young Lion Holdings—the controlling shareholder of 26 percent of shares of Television Broadcasts (TVB), the dominant free-to-air televised news channel in Hong Kong known for its pro-Beijing reporting—was sold to a company controlled by Li Ruigang, nicknamed "China's Rupert Murdoch" for his status as a media mogul.⁶⁶ Acquisition of the TVB shares by Mr. Li, former deputy secretary general of the Shanghai Communist Party's administration office, marks a further injection of mainland capital into the local media, according to the HKJA.⁶⁷
- In May 2015, Wang Xiangwei, chief editor of prominent English-language newspaper *South China Morning Post*, notified all columnists featured on its Opinion and Insight pages that regular column submissions were no longer required, and that columnists must instead submit proposals for topics to the op-ed editor for preapproval, marking a departure from the paper's long-established policy of allowing regular columnists ample scope to decide what to write.⁶⁸ As a result, several widely read regular columns have disappeared. After more than 40 years combined writing for the *Post*, four veteran columnists—three of whom had written government-critical columns in the past—were reportedly dismissed from the paper in May.⁶⁹ The *Post* cited its updated op-ed policy as the reason for the change.⁷⁰

Control of the media in Hong Kong is influenced by ownership. According to HKJA's 2013 annual report, the influence of the Chinese and Hong Kong governments over major news outlets in Hong Kong is on the rise—media owners "controlled," directly or indirectly, by the Hong Kong or central government hold leading positions in an estimated 86.7 percent of Hong Kong's 30 major media outlets.⁷¹ Moreover, as of 2013, the owners of 36.7 percent of outlets had been appointed to China's main political assemblies, the NPC and the Chinese People's Political Consultative Conference.⁷² The HKJA's research shows only four of the 30 outlets "escape[d] mainland or Hong Kong government favor" as of 2013; two of these four outlets were published by Next Media Group, known for its prodemocracy stance.⁷³ Revelations that "some China-funded companies had pulled their advertisements from some Chinese-language newspapers," including *Apple Daily*, the free daily *am730*, and the *Hong Kong Economic Journal*, stoked concerns about growing mainland interference in Hong Kong's media.⁷⁴

In a positive development, some newly established Hong Kong news outlets are pursuing crowdfunding in order to avoid the political and economic influence associated with media ownership. These outlets include bilingual investigative news agency FactWire, English-language news website Hong Kong Free Press, and Chinese-language site Initium Media, which seeks to “provide neutral, free, and professional news to the Chinese community around the globe.”⁷⁵

Freedom of Information Legislation

No law in Hong Kong governs the management of official archives, which results in stifled government transparency and accountability and generates concerns that certain documents and records made during the Occupy Central movement may be destroyed.⁷⁶ Local journalists have consistently and strongly supported implementation of freedom of information legislation to ensure they and the general public have a legal right to access information held by the government and public entities; 89 percent of media workers surveyed by the HKJA indicated the government needed to protect press freedom through enactment of the legislation.⁷⁷ In a 2014 report released after concluding a year-long study, Hong Kong’s Office of the Ombudsman recommended the enactment of such legislation after finding key components of freedom of information laws are “missing or are not adequately manifested” in the existing administrative code governing public requests for information.⁷⁸ Despite this report, the legislative process has been held up by two relevant subcommittees, which were established by the Law Reform Commission of Hong Kong to make recommendations on options for reform.⁷⁹ According to Freedom House, the Hong Kong government stated it would defer a decision on such legislation until the release of a report on the issue from a Law Reform Commission subcommittee.⁸⁰ Stephen Wong Kai-yi, secretary of the Law Reform Commission, said the subcommittee’s report was expected before 2016.⁸¹ Despite signing a pledge to do so, Chief Executive Leung has not taken any action to promote freedom of information legislation.⁸²

Academic Freedom Challenged

Unlike in mainland China, universities in Hong Kong enjoy a high degree of academic freedom, autonomy, and freedom of expression. But the role of academics has come under government scrutiny following last year’s prodemocracy protests, organized by student groups and other academics. In 2015, this treatment extended to leadership at Hong Kong’s most prestigious university. In December 2014, a University of Hong Kong (HKU) search committee unanimously recommended former HKU law school dean Johannes Chan Man-mun for the position of pro-vice chancellor at the university.⁸³ Mr. Chan was critical of the government during the prodemocracy protests (Benny Tai, leader of the Occupy Central movement, was one of Mr. Chan’s law school faculty members), and is a member of Hong Kong 2020, a prodemocracy group led by Anson Chan.⁸⁴ But Mr. Chan’s appointment was postponed twice and ultimately blocked in September 2015 at the insistence of HKU’s 24-

member governing council, seven of whom—including the chairman—are appointed by the chief executive, and up to 80 percent of whom are members of the pro-establishment camp, according to Fung Wai-wah, president of the Professional Teachers' Union in Hong Kong.⁸⁵ The Hong Kong chief executive not only serves as chancellor of all eight Hong Kong higher education institutions funded by the University Grants Committee (UGC),* which advises the government on university funding and development, but also appoints members of the UGC.⁸⁶

According to one student representative present during the council's deliberations, Mr. Chan was not appointed based on criticisms that he was not qualified because he lacked a Ph.D., had not published a sufficient number of academic works, and lacked integrity.⁸⁷ However, some council members, academics, and students have claimed the prolonged delay and ultimate rejection of Mr. Chan's appointment involved interference from the central and Hong Kong government.⁸⁸ In February, Mr. Lau wrote that "some extremely influential people in the government" had contacted HKU council members, urging them to reject Mr. Chan's promotion.⁸⁹ The same month, two central government-run newspapers in Hong Kong, *Wen Wei Po* and *Ta Kung Pao*, published "Cultural Revolution-style" attacks on Mr. Chan spanning several pages, prematurely releasing an "extremely confidential" assessment by the UGC that HKU faculty's research quality was lower than that of the Chinese University of Hong Kong, and attacking Mr. Chan for his "poor performance."⁹⁰ One Hong Kong journalist estimated the two newspapers alone published more than 300 articles targeting Mr. Chan since November 2014.⁹¹

Students, professors, and alumni of Hong Kong's universities have shown strong opposition to the council's delay and ultimate rejection of Mr. Chan's appointment and the flawed governance structure at higher education institutions there. On July 29, a group of students stormed the council's meeting room after the council again voted to delay Mr. Chan's appointment, while more than 100 alumni gathered there in support of academic freedom.⁹² More than 1,400 HKU alumni and members of the public signed a petition titled "Safeguard HKU," calling for the preservation of the university's independence and timely resolution of Mr. Chan's appointment.⁹³ In August, nearly 300 academics voiced opposition in a joint petition—at least the third major petition filed—in support of Mr. Chan out of concern that the government is interfering in university affairs.⁹⁴ During the Commission's July trip to Hong Kong, Nathan Law, president of the Hong Kong Federation of Students, expressed that the student organization wants to pursue reform of the university governance structure, but that such legislation is unlikely to garner LegCo or chief executive support. At an annual convocation of HKU alumni in September, 9,298 alumni overwhelmingly voted to revise the law so the Hong Kong chief executive is no longer chancellor of the university.⁹⁵

*The chief executive is chancellor of all eight UGC-funded institutions in Hong Kong. The UGC is a non-statutory advisory committee responsible for advising the Hong Kong Government on the development and funding needs of its funded institutions. Its members are appointed by the chief executive and comprise local and overseas academics, higher education administrators and community leaders. University Grants Committee, "Brief History." <http://www.ugc.edu.hk/eng/ugc/about/overview/history.htm>.

The controversy surrounding alleged government interference in HKU's appointment procedures is only one example of Beijing's interference in Hong Kong academia. Hong Kong legislators told the Commission that the central government is worried about Hong Kong universities producing "rebellious" students, especially after seeing the impact scholars like Benny Tai and student protest leaders like Joshua Wong had on the prodemocracy movement.⁹⁶ As a result, there appears to be an effort to control the research topics, activities, and funding of liberal academics in Hong Kong. Joseph Cheng Yu-shek, a political science professor at the City University of Hong Kong, describes a phenomenon whereby pressure on academics to toe the Party line "trickles down" from top-level management to influence faculty promotion.⁹⁷ Meanwhile, according to Mr. Cheng, academics loyal to Beijing are rewarded with honors and posts at mainland universities, but "if [academics] are perceived unfavorably, there are distinct difficulties."⁹⁸ Mr. Cheng, who founded a group called Alliance for True Democracy that was active during the Occupy Central protests, was attacked in *Wen Wei Po* and demoted from his position as chairman of the political science department at his university three months before his retirement.⁹⁹

Hong Kong's Economic Ties with Mainland China

For the 21st consecutive year, Hong Kong in 2015 retained its ranking as the world's freest economy* for its efficient regulatory framework, simple and low taxation, and sophisticated capital markets, according to the U.S. think tank Heritage Foundation.¹⁰⁰ With global foreign direct investment (FDI) inflows of \$103 billion in 2014, Hong Kong was the second-largest recipient of FDI in Asia after China (\$129 billion), while FDI outflows from Hong Kong reached \$143 billion, ranking second highest behind U.S. outflows.¹⁰¹ Due to its status as a global financial hub,[†] Hong Kong's total stock of inward FDI by the end of 2013 reached \$1.34 trillion—about 4.9 times its gross domestic product (GDP) that year—largely driven by incoming capital from tax haven economies like the British Virgin Islands (33.7 percent), the Netherlands (6.6 percent), and Bermuda (5.9 percent).¹⁰² Overall, Hong Kong's economic growth moderated in 2014—real GDP growth fell from 3.1 percent in 2013 to 2.5 percent in 2014, and is projected to land between 2 and 3 percent in 2015—primarily due to the global economic recovery, slowing growth in China, and weaker tourist arrivals and spending, including on luxury goods, in Hong Kong.¹⁰³

The bilateral economic relationship between the United States and Hong Kong is strong. During the Commission's July trip to Hong Kong, U.S. Consulate officials reported 85,000 Americans are living in Hong Kong, and around 1,300 U.S. businesses operate there.¹⁰⁴ U.S. companies have 800 regional headquarters and offices in Hong Kong—the largest number of any country.¹⁰⁵ As of

*The Index of Economic Freedom is measured based on four categories of factors—rule of law, limited government, regulatory efficiency, and open markets—and is calculated by the Heritage Foundation, a conservative U.S. think tank based in Washington, DC.

†In accordance with the Basic Law, Hong Kong maintains its status as a free port and separate customs territory. However, it participates in international economic agreements as "Hong Kong, China," as in the World Trade Organization. Hong Kong Special Administrative Region, "Hong Kong as Asia's World City," in *The Basic Law and Hong Kong—The 15th Anniversary of Reunification with the Motherland*, 142–143.

2014, cumulative U.S. FDI in Hong Kong measured \$66.2 billion, according to official U.S. data, while total Hong Kong FDI into the United States measured \$7.6 billion.¹⁰⁶ Additionally, Hong Kong is a key U.S. trading partner. The United States maintains its largest trade surplus with Hong Kong: at \$35.1 billion in 2014, the U.S. surplus with Hong Kong measured more than \$12 billion greater than its trade surplus with the Netherlands, the second largest.¹⁰⁷ Hong Kong is the tenth-largest market for U.S. exports and a top ten export market for U.S. agricultural products, led by tree nuts, beef, pork, fruit, and wine.¹⁰⁸

The region's economy remains highly integrated with that of mainland China in terms of bilateral trade and investment. Hong Kong is the second-largest trading partner of mainland China after the United States, accounting for 8.7 percent of China's total trade in 2014, according to China's Customs statistics.¹⁰⁹ Hong Kong plays the most important role in intermediating trade between China and the rest of the world by distributing a large fraction of China's exports: according to Hong Kong government statistics, in 2014, 60 percent of re-exports were of Chinese origin, and 54 percent were destined for the Chinese mainland.¹¹⁰ Cross-border investment shows an even stronger trend: in 2014, Hong Kong was the largest source of overseas FDI in mainland China, with cumulative capital inflow from Hong Kong reaching \$745.9 billion, or 49.3 percent of total FDI on the Mainland.¹¹¹ Similarly, mainland China remains a leading investor in Hong Kong, with \$428 billion in Chinese investment—or 31.9 percent of the total stock—flowing into Hong Kong at the end of 2013.¹¹²

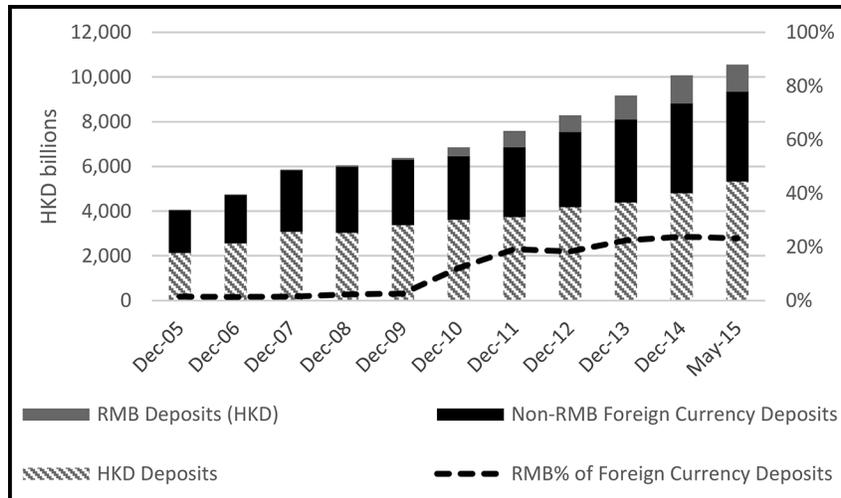
Hong Kong's Role in Mainland China's Financial Reforms

Historically, Hong Kong has played a pivotal role in pushing through mainland China's economic and financial reform objectives. Aside from its significant role as a trade and direct investment partner, Hong Kong is the center for cross-border renminbi (RMB) trade settlement and offshore RMB business. In addition, mainland Chinese enterprises increasingly pursue listings on the Stock Exchange of Hong Kong (SEHK) to access foreign capital. In its capacity as an international financial center and offshore RMB hub, Hong Kong is being used by the Mainland to push through reforms, including development of its domestic financial market, improvement of the international competitiveness of its firms, and managed liberalization of its capital account.¹¹³ These developments are expected to enhance market transparency and foreign investor access on the Mainland, and enhance cross-border fund flows and complement the mature financial services industry in Hong Kong. Moreover, growing trade between the two markets will accelerate the RMB's internationalization. But increasing Hong Kong's exposure to the risks inherent in China's underdeveloped equity market, such as recent stock market volatility and subsequent policy intervention by the central government, calls into question the pace of China's future financial reforms and presents operational risks for some investors.¹¹⁴ Aside from systemic risks, foreign investment into mainland markets through Hong Kong faces structural limitations, especially given the incremental deployment of reform programs.

Trade Settlement

As the premier offshore RMB hub, Hong Kong plays a vital role in the Mainland's capital account liberalization. (For more on China's financial reforms, see Chapter 1, Section 3, "China's State-Led Market Reform and Competitiveness Agenda," of this Report.) In China's 12th Five-Year Plan for financial development and reform (2011–2015), the central government set policy directives for freer cross-border capital flow and a higher degree of RMB capital account convertibility, with the ultimate aim of internationalizing the RMB.¹¹⁵ To achieve these goals, Chinese financial authorities employ Hong Kong as a testing ground for use of the RMB as a settlement, investment, and funding currency.¹¹⁶ As of December 2014, a total of 149 authorized banking institutions in Hong Kong engaged in RMB business, with RMB deposits worth more than \$161 billion (RMB 1 trillion), accounting for approximately 24 percent of foreign currency deposits among authorized institutions there (see Figure 2).¹¹⁷ At year-end 2014, the value of outstanding RMB-denominated debt instruments and bonds lodged with the Central Moneymarkets Unit of the Hong Kong Monetary Authority reached \$65.4 billion (RMB 407 billion)—52 percent of the total value of outstanding debt issues—representing a 6 percent increase year-on-year.¹¹⁸

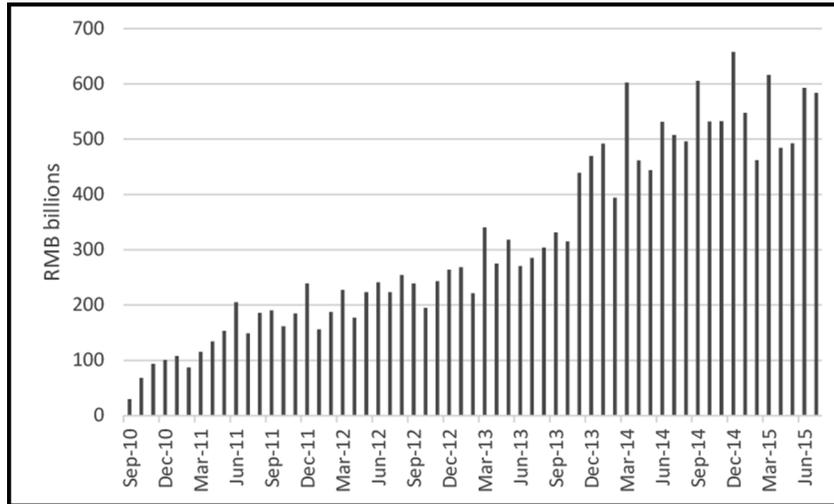
Figure 2: RMB Deposits in Hong Kong Banking Institutions, 2005–2015



Source: Hong Kong Monetary Authority, *Monthly Statistical Bulletin*, Issue No. 251, July 2015.

Hong Kong also serves as a platform for enterprises and financial institutions all over the world to conduct RMB trade settlement, payments, financing, and investments. In the first half of 2015, total RMB trade settlement conducted through banks in Hong Kong reached \$513.4 billion (RMB 3.2 trillion) (see Figure 3).¹¹⁹

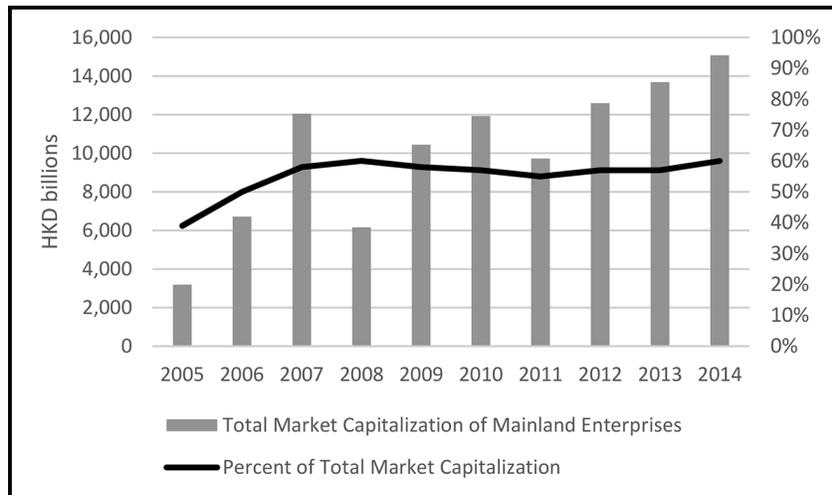
Figure 3: Cross-Border RMB Trade Settlement through Hong Kong Banks
(monthly)



Source: Hong Kong Monetary Authority, *Monetary Statistics*.

Stock Exchange Listings

Hong Kong's active international securities market has consolidated its position as the second-largest initial public offering (IPO) market in the world—in 2014, nearly \$30 billion (Hong Kong dollar (HKD) 232.5 billion) was raised, a 38 percent increase from the previous year.¹²⁰ In line with China's "going global" strategy, which encourages Chinese firms to both invest abroad and expand overseas operations, mainland firms are increasingly participating in Hong Kong's equity market: among the \$30 billion in IPO funds raised last year on the SEHK, Chinese firms contributed approximately 86 percent.¹²¹ As of December 31, 2014, 876 mainland enterprises were listed on the SEHK—50 percent of the total number of listed companies—accounting for 60 percent of the total market capitalization (see Figure 4).¹²² Mainland enterprises benefit from raising capital in a freely convertible currency and taking advantage of the Hong Kong market's greater liquidity and more effective and better regulated risk management investment instruments.¹²³

Figure 4: Market Capitalization of Mainland Firms Listed in Hong Kong

Note: “Mainland firms” refers to the following: (1) H-share companies, which are incorporated on the Mainland and controlled by either mainland government entities or individuals; (2) red chip companies, which are incorporated outside of the Mainland and controlled by mainland government entities; and (3) mainland private enterprises, which are incorporated outside of the Mainland and controlled by mainland individuals. Hong Kong Exchanges and Clearing, “Market Statistics 2014,” January 8, 2015, 14.

Source: Hong Kong Exchanges and Clearing, “Market Statistics 2014,” January 8, 2015, 16.

Shanghai-Hong Kong Stock Connect

Another pillar of China’s currency internationalization efforts is the Shanghai-Hong Kong Stock Connect, a mutual market access service between the Shanghai and Hong Kong stock exchanges launched in November 2014. The link enables institutional or retail foreign investors for the first time to trade A-shares—shares in mainland China-based companies traded on Chinese exchanges—which were previously only available to certain investors licensed under China’s Qualified Foreign Institutional Investor (QFII) and RMB QFII programs.¹²⁴ For Hong Kong, the Stock Connect provides additional liquidity and supports the region’s offshore RMB business and its role as a financial gateway to China.¹²⁵

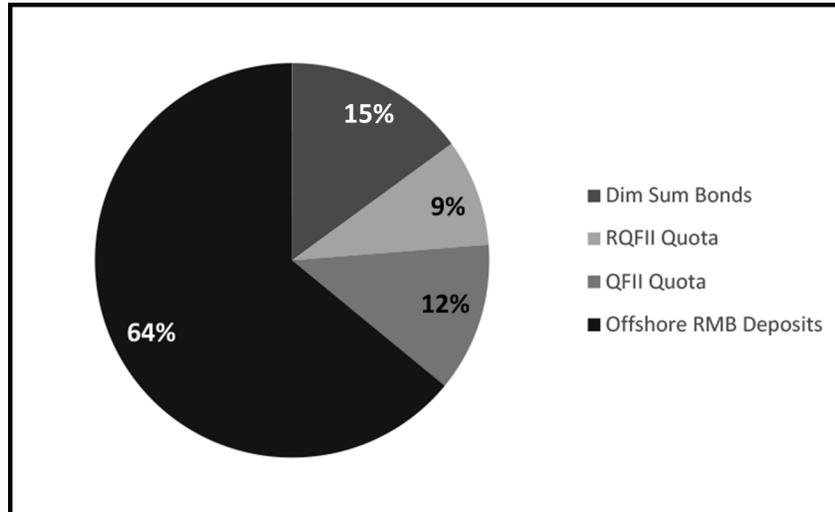
The northbound link—referring to funds flowing north from Hong Kong to China—allows investors outside the Mainland to trade selected equities on the Shanghai Stock Exchange (SSE), routed through Hong Kong brokers; the southbound link—referring to funds flowing south from China to Hong Kong—allows investors in mainland China to trade selected equities on the SEHK, through members of the SSE (see Table 1).¹²⁶

Table 1: Framework of the Shanghai-Hong Kong Stock Connect

	Northbound	Southbound
Asset Classes	Selected SSE A-shares	Selected SEHK stocks
Investors	International and Hong Kong institutional and retail investors	Domestic institutional investors and qualified retail investors
Brokers	SEHK members who fulfill eligibility requirements	SSE members who fulfill eligibility requirements
Currency	Traded and settled in offshore RMB	Traded in HKD and settled in RMB
Trading Venue	SSE	SEHK
Clearing House	ChinaClear	Hong Kong Securities Clearing Co.

Source: Hong Kong Exchanges and Clearing, “Shanghai-Hong Kong Stock Connect,” March 26, 2015.

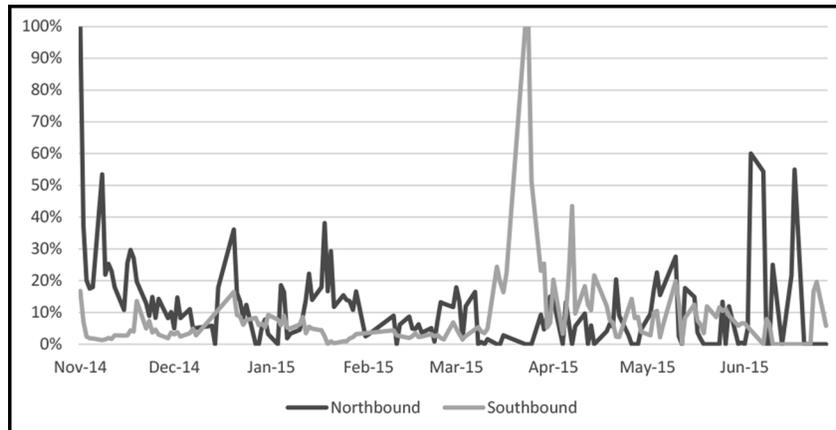
RMB internationalization is still in the early stages, largely due to the deliberate and incremental pace of China’s regulators in their efforts to control potential risks. For this reason, trading is subject to a maximum cross-border investment quota (i.e., aggregate quota), together with a daily quota. The northbound aggregate quota is set at \$49 billion (RMB 300 billion)—less than 1 percent of the total A-share market—and the southbound aggregate quota is set at \$41 billion (RMB 250 billion).¹²⁷ The daily quota limits the maximum net buy value of any cross-border trades under the program each day: the northbound daily quota is set at \$2.1 billion (RMB 13 billion), and the southbound daily quota is set at \$1.7 billion (RMB 10.5 billion).¹²⁸ The program’s initial northbound aggregate quota of \$49 billion is equivalent to 9 percent of all offshore RMB assets (\$548 billion as of 2014) (see Figure 5).¹²⁹ Before the launch of the Stock Connect, quotas for the QFII and RMB QFII programs—the only available channels for international investment in China’s A-shares—were \$67 billion and \$48 billion respectively in 2014, according to China’s State Administration of Foreign Exchange.¹³⁰

Figure 5: International RMB Holdings, 2014

Note: Dim sum bonds are bonds issued outside of China but denominated in RMB. RQFII denotes the RMB QFII program.

Source: Neil Katkov and Hua Zhang, "Shanghai-Hong Kong Stock Connect: It's Just the Beginning," *Celent*, June 2015, 14.

Given the previous limits on access, the initial response from international investors was strong: northbound trading on the link's first day attained 100 percent usage of the daily quota (see Figure 6). While subsequent months of operation saw less active northbound daily trading, Chinese investors for the first time used the entire southbound daily quota in April 2015, reaching a record high in turnover for the link at \$4.8 billion (RMB 29.9 billion) and making the Hong Kong exchange the highest market capitalization exchange in the world.¹³¹ Some analysts credit the allowance by Chinese regulators for mutual funds to buy Hong Kong shares under the program the preceding week for the surge, a change that made it easier to get around southbound barriers like high capital thresholds.¹³²

Figure 6: Daily Trading Quota Usage Rate

Source: Hong Kong Stock Exchange and Clearing Limited; Shanghai Stock Exchange via CEIC database.

A June 2015 report from research and consulting firm Celent* identified a number of restrictive features of the stock link that may create operational complexity and introduce risk.¹³³ These include a complex settlement cycle, no day trading and limited support for short selling, a requirement to settle in RMB, asset fungibility issues, and onerous shareholder risk and reporting requirements.¹³⁴ Despite these risks, however, the report predicts that forthcoming improvements to the program will enable greater participation by institutional investors and initiate inclusion of A-shares in global equity benchmark indices within the next few years.¹³⁵ If Chinese regulators remain committed and active in opening the country's capital account, quotas are expected to be expanded to meet investor demand. The Celent report estimates these factors will drive international holdings of A-shares to \$428 billion by 2017, setting the stage for other similar joint initiatives such as a stock link between Shenzhen and Hong Kong.¹³⁶ While a Shenzhen-Hong Kong stock link was initially slated to launch by year-end 2015, the project was reportedly put on hold in June due to technical difficulties.¹³⁷ During the Commission's July trip to Hong Kong, Andrew Wong, Permanent Secretary of Hong Kong's Financial Services and the Treasury Bureau, said the technical issues had been sorted out, and China's State Council would determine the best time to launch the program. In spite of the fluctuation in the mainland stock markets since late June, according to the Financial Services and the Treasury Bureau, "the Hong Kong securities markets have been trading and operating in an orderly and smooth manner."¹³⁸

Because the level of trading through the Stock Connect is low, Hong Kong is not expected to suffer contagion from the downturn in the Mainland's equity markets through that channel, according to Mr. Wong.¹³⁹ But markets in the two economies tend to move

*Celent, a division of management consulting firm Oliver Wyman, is a research and consulting firm focused on information technology in the financial services industry.

in tandem. Since the Hang Seng index—the main indicator of overall market performance in Hong Kong—hit a seven-year high in April, it has fallen 25.5 percent as of September 1, following Shanghai’s plummeting index, which has fallen more than 38 percent as of September 1 since it peaked this year in mid-June amid massive Chinese government intervention.¹⁴⁰ Given the strong presence of Chinese companies listed on the SEHK—mainland firms account for 60 percent of market capitalization there—it is not surprising that falling valuations in Shanghai would affect the prices of their shares in Hong Kong.¹⁴¹ Overall, according to Mr. Wong, volatility in the mainland markets is partly related to the prevalence of margin financing (i.e., borrowing money to invest) among China’s retail investor-dominated traders.*

During the Commission’s July trip to Hong Kong, U.S. Consulate officials indicated Hong Kong’s strict rules on transparency and strong regulatory capabilities highlight the maturity of its financial markets and enhance the ability of the SEHK to withstand sharp fluctuations in the mainland markets.¹⁴² Hong Kong has also introduced a host of measures to control risks. When the Stock Connect was established in late 2014, Hong Kong and Chinese regulators signed a memorandum of understanding to enforce information disclosure and sharing.¹⁴³ In July 2015, Hong Kong Exchanges & Clearing Limited, the holding company of the SEHK, announced the introduction of volatility curbs that will use an auction at the end of the trading day to reduce volatility when calculating closing prices—a measure used by all major stock exchanges—when it goes into effect in mid-2016.¹⁴⁴

Mutual Recognition of Funds

In a move to further deepen financial cooperation and promote the joint development of the Hong Kong and mainland capital markets, the China Securities Regulatory Commission and Hong Kong Securities and Futures Commission jointly announced the introduction of a long-awaited “Mutual Recognition of Funds” initiative, giving international asset managers a channel to access mainland China’s growing and previously untapped retail investor market—the number of new individual investor accounts on the SSE grew thirty-fold year-on-year in June 2015—boosted by a growing middle class and a huge pool of domestic savings.¹⁴⁵ Implemented on July 1, 2015, the Mutual Recognition of Funds initiative enables mainland China and Hong Kong funds to be distributed in each other’s markets through a streamlined vetting process, enabling non-mainland Chinese retail investors and fund managers to enter the Chinese retail fund market through Hong Kong.¹⁴⁶ The move is expected to increase the diversity of asset management activities in Hong Kong’s asset management industry, which previously relegated fund management services largely to sales and marketing, by incentivizing fund managers to base their funds in the city.¹⁴⁷ The initiative is intended to further expand cross-border RMB flows and facilitate China’s efforts to open up its capital markets and internationalize the RMB by providing an avenue to convert

* For more details on fluctuations in the mainland stock markets, see Chapter 1, Section 1, “Year in Review: Economics and Trade,” of this Report.

domestic savings in mainland China into cross-border investments.¹⁴⁸

Implications for the United States

The United States has a long history of positive bilateral relations with Hong Kong and is committed to the region's stability, prosperity, and continued success as an international trade and financial center. The United States and Hong Kong share many values, including respect for rule of law and for civil liberties. To bolster Hong Kong's stability and prosperity, the U.S. government encourages Beijing and Hong Kong to continue to work together to further Hong Kong's democratic development in accordance with the Basic Law and the aspirations of the people of Hong Kong.¹⁴⁹

Hong Kong's high degree of autonomy and economic freedom make it a valuable and preferable destination for U.S. investors and an important U.S. trading partner. Approximately 1,300 U.S. businesses operate in Hong Kong, drawn in part by the region's openness, transparency, free market, and strong rule of law.¹⁵⁰ After mainland China, the United States is Hong Kong's second-largest trading partner. The United States maintains its largest trade surplus with Hong Kong and its tenth-largest goods export market.¹⁵¹ Moreover, Hong Kong and the United States continue to cooperate economically in a number of bilateral and multilateral fora, including the World Trade Organization, the Asia-Pacific Economic Cooperation, and the Financial Action Task Force. The two also maintain a strong law enforcement partnership in areas including customs, intellectual property rights protection, financial fraud, counterterrorism, and immigration.

In line with the Commission's recommendation in its 2014 Annual Report to Congress, the Hong Kong Policy Act report was updated in 2015 after an eight-year hiatus pursuant to H.R. 5013, the State, Foreign Operations, and Related Programs Appropriations Bill, 2015, which mandated the Secretary of State report to Congress on key developments in Hong Kong.¹⁵² According to the report, Hong Kong has maintained a sufficiently high degree of autonomy under the "one country, two systems" model to justify continued special economic treatment by the United States for bilateral agreements and programs.¹⁵³ But recent trends have sparked U.S. concern over growing constrictions of Hong Kong's press and media freedoms, including increasing reports of political pressure to self-censor, violent assaults against members of the press, firing of journalists critical of the central government, and cyberattacks against prodemocracy media.¹⁵⁴

As the economies of Hong Kong and mainland China become even more integrated through liberalization efforts like the Shanghai-Hong Kong Stock Connect, U.S. investors will look to Hong Kong's regulators to uphold rule of law and international financial standards and best practices to minimize risks to the global financial system to the highest degree possible.

Conclusions

- In June 2015, Hong Kong's Legislative Council voted down electoral reform legislation based on a framework designed by Chi-

na's central government. This framework would have limited the candidates eligible for chief executive nomination to those acceptable to Beijing. As a result, election of the chief executive in 2017 will employ the same method as the 2012 chief executive election, whereby a 1,200 member committee elects the leader.

- Members of the general public, legislators, students, and other vested parties lack consensus on how to pursue electoral reform in Hong Kong's future chief executive and Legislative Council elections.
- Press freedom in Hong Kong is increasingly under pressure due to recent instances of violence against journalists, increasing political and economic pressure to self-censor, and use of economic coercion to disrupt independent reporting. The absence of a freedom of information law in Hong Kong also contributes to a lack of transparency with regard to open access to and preservation of government records.
- Hong Kong's world-class economy, particularly its capital markets, is playing an increasingly pivotal role in mainland China's efforts to push through financial reforms, including development of its domestic financial market, improvement of the international competitiveness of its firms, and liberalization of its capital account.
- In an effort to internationalize the renminbi, among other objectives, Hong Kong and mainland China have jointly established a number of pilot programs, including the Shanghai-Hong Kong Stock Connect and the Mutual Recognition of Funds initiative, to boost international participation in China's markets. These developments are expected to enhance market transparency and foreign investor access on the Mainland and enhance cross-border fund flows.
- Deepening integration exposes Hong Kong to the risks inherent in China's volatile equity markets, presenting operational risks for some investors. Moreover, foreign investment into mainland markets through Hong Kong still faces structural and quantitative limitations.

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RECOMMENDATIONS

China and Central Asia

The Commission recommends:

- Congress request classified briefings from the U.S. Intelligence Community on the nature of U.S.-China cooperation on counterterrorism to ensure the U.S. government is not inadvertently supporting Chinese counterterror policies and tactics that undermine human rights.
- Congress direct the U.S. Government Accountability Office to prepare a report assessing the U.S. New Silk Road policy. This report should evaluate the New Silk Road's strengths and weaknesses and its current status and future prospects for meeting U.S. policy objectives in Central Asia. This report should investigate how U.S. policy toward Central Asia intersects and interacts with U.S. policy toward China more broadly, and how the U.S. and Chinese Silk Road initiatives interact in Central Asia.
- Members of Congress and their staffs consider traveling to Central Asia, and, when doing so, engage with U.S. business community and nongovernmental organizations to discuss ways of improving human rights, rule of law, environmental protection, and business environment.

China and Southeast Asia

The Commission recommends:

- Congress direct the U.S. Government Accountability Office to prepare a report assessing the effectiveness of recent U.S. efforts to enhance the maritime security capabilities of allies and partners in Southeast Asia and identifying the remaining challenges and opportunities.
- Congress urge the Administration to enhance its support for regional information sharing institutions focused on maritime security in Southeast Asia.
- Congress direct the U.S. Government Accountability Office to expand its August 2015 report *Southeast Asia: Trends in U.S. and Chinese Economic Engagement* to evaluate whether Chinese government funded investment and assistance projects in Southeast Asia negatively affect U.S.-funded projects in Southeast Asia.

Taiwan

The Commission recommends:

- Congress urge the Administration to make available to Taiwan, consistent with the Taiwan Relations Act, defense articles and services required to address the continuing shift in the cross-Strait military balance toward China.
- Congress direct the Administration to invite Taiwan to participate at least as an observer at U.S.-led bilateral and multilateral military and security exercises, including future Rim of the Pacific (RIMPAC) and Cyber Storm exercises.
- Congress encourage the Administration to increase its public support of Taiwan's participation in international organizations,* which would help Taiwan expand its status and legitimacy in the international community.
- Congress require the U.S. Department of State, the U.S. Department of Defense, and the U.S. Department of Commerce to jointly prepare a classified report on Taiwan's role in the U.S. strategy in Asia. The report should include an overview of Taiwan's current role in the strategy; U.S.-Taiwan defense cooperation and a description of all joint programs; and opportunities for Taiwan's inclusion in U.S. Asia strategy.

Hong Kong

The Commission recommends:

- Members of Congress, when visiting mainland China, also visit Hong Kong, and that Congress encourage senior Administration officials, including the secretaries of State, Defense, and Commerce, to make visits to Hong Kong part of their travel.
- Congress sustain the language in the Department of State, Foreign Operations, and Related Programs Appropriations Act of 2016 reauthorizing the report requirement under the U.S.-Hong Kong Policy Act of 1992 supporting human rights and democracy in accordance with the Sino-British Joint Declaration.
- Congress urge the Department of State to increase its public diplomacy efforts in Hong Kong in support of press freedom, media independence, and academic freedom.
- Congress engage parliamentarians from the United Kingdom in an interparliamentary review of China's adherence to the Basic Law since the handover of Hong Kong to China in 1997, with specific attention to rule of law, progress in achieving universal suffrage, and press freedom.

*These organizations may include: the United Nations Framework Convention on Climate Change, International Atomic Energy Agency, International Civil Aviation Organization, International Maritime Organization, and International Criminal Police Organization (Interpol).

COMPREHENSIVE LIST OF THE COMMISSION'S RECOMMENDATIONS

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

Section 2: Foreign Investment Climate in China

The Commission recommends:

1. Congress assess the ability of, and if necessary amend, existing U.S. trade laws to address China's industrial policies, abusive legal or administrative processes, and discriminatory treatment of foreign investors, and to determine the consistency of these practices with China's World Trade Organization commitments.
2. Congress consider legislation requiring the President to submit a request to Congress for approval before any change occurs, either for the country as a whole or for individual sectors or entities, in China's status as a non-market economy. Under such legislation, any change to the designation of China could not proceed without the consent of both Houses of Congress.
3. Congress consider legislation conditioning the provision of market access to Chinese investors in the United States on a reciprocal, sector-by-sector basis to provide a level playing field for U.S. investors in China.
4. Congress direct U.S. antitrust enforcement agencies to conduct an analysis and legal assessment of alleged anticompetitive behavior by Chinese antitrust enforcers, and report in full on enforcement activities.
5. Congress expand the guidelines for consultation and transparency relating to trade negotiations covered by Trade Promotion Authority to include negotiations on a Bilateral Investment Treaty between the United States and China.
6. Congress require the Administration to provide a comprehensive, publicly-available assessment of Chinese foreign direct investments in the United States prior to completion of negotiations on a Bilateral Investment Treaty. This assessment should include an identification of the nature of investments, whether investments received support of any kind from the Chinese government and at which level (national, provincial, or municipal), and the sector in which the investment was made.
7. Congress urge the U.S. Trade Representative to initiate consultations with China's Ministry of Commerce to identify the extent to which China's policy regarding subsidies and other incentives for purchases of domestically-produced new energy vehicles may violate its World Trade Organization commitments and what steps should be taken to address any inconsistencies with those commitments.

Section 3: China's State-Led Market Reform and Competitiveness Agenda

The Commission recommends:

8. Congress direct the U.S. Government Accountability Office to prepare a report that analyzes U.S. exposure to China's financial sector, the progress of China's financial sector reforms, and the effect of China's financial sector reforms on the U.S. and global financial systems, and identifies the policies the U.S. government is adopting to protect U.S. interests in light of this changing environment.
9. Congress urge the U.S. Department of Commerce to undertake a comprehensive review and prepare a report on China's Made in China 2025 and Internet Plus initiatives, including their forced localization of manufacturing and research and development requirements, to determine their potential impact on domestic U.S. production and market access for U.S. firms.
10. Congress direct the U.S. Environmental Protection Agency, U.S. Department of Energy, and U.S. Department of Commerce to jointly prepare a report that outlines China's stated targets to address pollution and climate change, and evaluates whether the Chinese government has allocated sufficient resources (including expenditures) to meet those commitments.

Section 4: Commercial Cyber Espionage and Barriers to Digital Trade in China

The Commission recommends:

11. Congress assess the coverage of U.S. law to determine whether U.S.-based companies that have been hacked should be allowed to engage in counterintrusions for the purpose of recovering, erasing, or altering stolen data in offending computer networks. In addition, Congress should study the feasibility of a foreign intelligence cyber court to hear evidence from U.S. victims of cyber attacks and decide whether the U.S. government might undertake counterintrusions on a victim's behalf.
12. Congress require the Administration to prepare an annual classified report on foreign government-sponsored cyber attacks against all Federal Government agencies, including but not limited to an assessment of the damage and the affected agencies' plans to secure their networks against further attacks.
13. Congress consider legislation amending the Federal Information Security Modernization Act of 2014 to require an annual review by the U.S. Department of Homeland Security of the steps taken by all federal agencies to ensure that adequate systems are in place to protect cyber assets.
14. Congress pass legislation to require the Securities and Exchange Commission (SEC) to make clear to publicly traded companies and their investors the circumstances under which the theft of intellectual property through a computer network intrusion may be a material fact that might affect a company's revenues and should therefore be required to be disclosed to the SEC.

15. Congress evaluate existing consumer right-to-know laws to determine whether a cloud-based computing company has an affirmative duty to identify the physical location of its cloud-based assets.

Chapter 2: Security and Foreign Policy Issues Involving China

Section 2: China's Space and Counterspace Programs

The Commission recommends:

16. Congress continue to support the U.S. Department of Defense's efforts to reduce the vulnerability of U.S. space assets through cost-effective solutions, such as the development of smaller and more distributed satellites, hardened satellite communications, and non-space intelligence, surveillance, and reconnaissance assets such as unmanned aerial vehicles.
17. Congress direct the U.S. Department of Defense, U.S. Air Force, and relevant agencies within the U.S. Intelligence Community to jointly prepare a classified report that performs a net assessment of U.S. and Chinese counterspace capabilities. The report should include a strategic plan for deterring, with active and passive systems, strikes against U.S. assets in light of other countries' rapid advancements in kinetic and non-kinetic counterspace technology.
18. Congress direct appropriate jurisdictional entities to undertake a review of (1) the classification of satellites and related articles on the U.S. Munitions List under the International Trafficking in Arms Regulations and (2) the prohibitions on exports of Commerce Control List satellites and related technologies to China under the Export Administration Regulations, in order to determine which systems and technologies China is likely to be able to obtain on the open market regardless of U.S. restrictions and which are critical technologies that merit continued U.S. protection.
19. Congress allocate additional funds to the Director of National Intelligence Open Source Center for the translation and analysis of Chinese-language technical and military writings, in order to deepen U.S. understanding of China's defense strategy, particularly related to space.

Section 3: China's Offensive Missile Forces

The Commission recommends:

20. Congress direct the U.S. Department of Defense to provide an unclassified estimate of the People's Liberation Army Second Artillery Force's inventory of missiles and launchers, by type, in future iterations of its *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, as included previously but suspended following the 2010 edition.

21. Congress direct the U.S. Department of Defense to prepare a report on the potential benefits and costs of incorporating ground-launched short-, medium-, and intermediate-range conventional cruise and ballistic missile systems into the United States' defensive force structure in the Asia Pacific, in order to explore how such systems might help the U.S. military sustain a cost-effective deterrence posture.
22. Congress continue to support initiatives to harden U.S. bases in the Asia Pacific, including the Pacific Airpower Resiliency Initiative, in order to increase the costliness and uncertainty of conventional ballistic and cruise missile strikes against these facilities, and thereby dis-incentivize a first strike and increase regional stability.
23. Congress continue to support "next-generation" missile defense initiatives such as directed energy and rail gun technologies, and require the U.S. Department of Defense to report to committees of jurisdiction on the status of current component sourcing plans for the development and production of directed energy weapons.

Chapter 3: China and the World

Section 1: China and Central Asia

The Commission recommends:

24. Congress request classified briefings from the U.S. Intelligence Community on the nature of U.S.-China cooperation on counterterrorism to ensure the U.S. government is not inadvertently supporting Chinese counterterror policies and tactics that undermine human rights.
25. Congress direct the U.S. Government Accountability Office to prepare a report assessing the U.S. New Silk Road policy. This report should evaluate the New Silk Road's strengths and weaknesses and its current status and future prospects for meeting U.S. policy objectives in Central Asia. This report should investigate how U.S. policy toward Central Asia intersects and interacts with U.S. policy toward China more broadly, and how the U.S. and Chinese Silk Road initiatives interact in Central Asia.
26. Members of Congress and their staffs consider traveling to Central Asia, and, when doing so, engage with U.S. business community and nongovernmental organizations to discuss ways of improving human rights, rule of law, environmental protection, and business environment.

Section 2: China and Southeast Asia

The Commission recommends:

27. Congress direct the U.S. Government Accountability Office to prepare a report assessing the effectiveness of recent U.S. efforts to enhance the maritime security capabilities of allies and partners in Southeast Asia and identifying the remaining challenges and opportunities.

28. Congress urge the Administration to enhance its support for regional information sharing institutions focused on maritime security in Southeast Asia.
29. Congress direct the U.S. Government Accountability Office to expand its August 2015 report *Southeast Asia: Trends in U.S. and Chinese Economic Engagement* to evaluate whether Chinese government funded investment and assistance projects in Southeast Asia negatively affect U.S.-funded projects in Southeast Asia.

Section 3: Taiwan

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Section 4: Hong Kong

The Commission recommends:

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35. Congress sustain the language in the Department of State, Foreign Operations, and Related Programs Appropriations Act of 2016 reauthorizing the report requirement under the U.S.-Hong Kong Policy Act of 1992 supporting human rights and democracy in accordance with the Sino-British Joint Declaration.
36. Congress urge the U.S. Department of State to increase its public diplomacy efforts in Hong Kong in support of press freedom, media independence, and academic freedom.

*These organizations may include: the United Nations Framework Convention on Climate Change, International Atomic Energy Agency, International Civil Aviation Organization, International Maritime Organization, and International Criminal Police Organization (Interpol).

37. Congress engage parliamentarians from the United Kingdom in an interparliamentary review of China's adherence to the Basic Law since the handover of Hong Kong to China in 1997, with specific attention to rule of law, progress in achieving universal suffrage, and press freedom.

DISSENTING VIEWS OF WILLIAM A. REINSCH, COMMISSIONER

With regret, I must dissent from this year's report. I believe it is, on the whole, a good report which accurately details the Commission's work in 2015 and the recommendations supported by a majority of commissioners. However, one of those recommendations represents, in my judgment, such poor policy that it is impossible for me to support a report that includes it. I address that issue below.

Last year, my additional views were more pessimistic about the U.S.-China relationship than in previous years. Reaction to that was largely, "It's about time," or "What took you so long?" The answer is that I have never viewed China as a single entity monolithically opposing our interests. Instead, its government is a complicated structure of competing and disparate elements that can and do challenge and change policies. The China of Xi Jinping is very different from the China of Jiang Zemin and Zhu Rongji, and my comments last year were intended to highlight the changes that have occurred for the worse while acknowledging the possibility of future change for the better.

Change for the better, however, has not arrived yet. Business, labor, numerous nongovernmental organizations and the U.S. government itself are all dissatisfied with aspects of the bilateral relationship—economic, military and political.

Many of us had hoped Xi Jinping would launch reforms that would improve the multilateral climate. So far not only is that prospect unrealized, but his regime is proving itself far more aggressive against its neighbors, less cooperative in multilateral fora, and much quicker to suppress alternative voices inside China than its predecessors. Historians and political scientists are already beginning to find echoes of traditional Chinese imperial policies in the new leadership's bullying approach to its neighbors and its discriminatory actions against foreigners doing business inside the country. The latter have led more and more companies, both American and European, to reconsider their presence in China. While most will not leave, some will reduce their profile there, and many will begin to put the larger share of their new investment dollars or euros elsewhere.

This is disappointing. I have spent a good part of my professional life studying China and arguing for greater efforts at mutual understanding that focus on the benefits of cooperation rather than give in to the mutual suspicion that is rapidly enveloping both of us. I have always been an optimist about the relationship, but that view is becoming increasingly untenable, as China asserts itself in ways that are inevitably going to bump up against our interests in the region and in multilateral fora. It is common knowledge that there is no shortage of people in each country who believe the other is an existential threat, and I have thought for some time the fundamental policy goal for each country should be to keep those people out of power. I have not changed my view about that, but it does not appear to be happening in China, which will only make it harder to prevent it from happening here.

With respect to specific recommendations, the Commission has unfortunately succumbed to fears of Chinese investment in the U.S. through its inclusion of a recommendation that suggests Congress consider legislation that would essentially mandate reciprocity in our investment approval process—that those sectors closed to foreign investment in China should likewise be closed to Chinese investment here. On its face, this is an attractive policy. Who can be against reciprocity? It's the modern version of the Golden Rule, but a closer look suggests such an approach is misguided.

First, from a national security perspective, the U.S. has adequate means in place via the Committee on Foreign Investment in the United States to review a foreign investment's national security implications, which is the appropriate criterion, and to block it if it poses a risk. A reciprocity criterion means that we conform our policy to China's definition of national security, protecting a sector because the Chinese have decided to protect it. It is far better for us to decide for ourselves what is in our security interest and not leave it to others to define.

Second, the proposal rejects our decades-old policy of welcoming investment in favor of an approach that will significantly expand the universe of investments subject to review, signal uncertainty about the likelihood of approval, and as a result drive investors away, including those who are not Chinese. That, in turn, means foregoing the badly needed boost in economic growth that goes along with new investment. The reality is that significant economic activity and wealth accumulation goes on outside our borders. If we limit inward investment, we are simply exporting growth and job opportunities to other countries that will be happy to receive them.

Third, over the years the Commission has had many witnesses who have strongly criticized Chinese policies, including investment restrictions, and then advised that we do the same thing in response. If it is bad policy for China, it is hard to see how it would be good policy for the United States.

The Chinese have pushed us to this point because they typically respond in a "tit for tat" manner, making it easy for others to justify the same approach. It is, however, not a very mature or creative policy approach. It risks bogging us down in a cycle of retaliation in which it is all too easy to lose sight of our interests along the way.

One of our interests is maintaining our global leadership to ensure stability of the international trading system. The Chinese seem less interested in that and have pursued policies that may have served them well in the short term but have not reinforced the principles of open trade and rule of law. In today's complicated world we best lead by good example. Adopting reciprocity proposals copies China's bad example, which does not help the U.S. or the trading system.

**ADDITIONAL VIEWS OF
COMMISSIONER TALENT
JOINED BY COMMISSIONERS BARTHOLOMEW,
FIEDLER, SLANE, TOBIN, AND WESSEL**

I am pleased to join in supporting the Report, which is another strong contribution to Congressional and public understanding of what is happening in China. I wanted to write separately to highlight my views on the economic reform agenda in China and its implications for the United States.

In 2013 at its Third Plenum, the Chinese government announced an ambitious set of economic reforms, signaling, on its face, the desire of the leadership to move to a freer economy. That was not the first time the Chinese Communist Party (CCP) has proclaimed such goals; they did the same thing ten years ago in a different Plenum and have since periodically reaffirmed their official commitment to the effort.

The Commission's Report, as has been its practice, assesses the amount of actual progress towards the CCP's stated goals. As in the past, the Report finds that the actions of the Chinese leadership have not lived up to their promises.

The CCP says that it wants a private stock market, but then engages in the rankest kind of government manipulation when the market drops.

The CCP says that it wants to lessen the power of State Owned Enterprises, but its actual policy is not to sell off the SOEs but to merge them into even bigger conglomerates that the State still owns and manages.

The CCP says that it wants a real banking system that serves the private sector, but the state banks continue to control most financial assets and to lend almost exclusively to SOEs, and the government refuses to permit anything like real competition or market rates of interest on deposits.

The CCP says that it wants the kind of impartial legal system that is the foundation of free economies, but ruthlessly suppresses its own legal reformers and engages in arbitrary and discriminatory enforcement of vague regulatory laws against foreign competitors.

The CCP says that it wants to rebalance the economy towards services and consumer spending, but focuses less on reducing overcapacity at home than financing infrastructure projects in foreign countries using Chinese companies and Chinese workers, with a view towards securing resources, and gaining captive markets, for its uncompetitive heavy industries. Whether the costs of the "Silk Road" and similar grand schemes will eventually outweigh the benefits remains to be seen, but such policies can hardly be described as rebalancing the economy.

The list goes on and on. It's easy to write the pattern off as taking "two steps forward and one back"; but I think it could more accurately be described as taking "one step forward and two steps back" while proclaiming, for the benefit of foreign ears, that the ultimate destination has not changed.

In short, it is time to judge the CCP's intentions by its actions rather than its words, and to question whether its leaders are still seeking, if they ever did, a transformation of the Chinese economy.

As the Commission has repeatedly recognized, the CCP is not and never has been committed in principle to political or economic liberty. It wants growth, not freedom, and it wants growth for purely utilitarian ends—chiefly to fund the ambitions of the State and to convince the Chinese people, or enough of them for the regime to remain in power, that CCP stewardship is producing a better standard of living.

The leaders may well believe that they can get enough growth, even without fundamental reform, to achieve those ends. The structural weaknesses of the Chinese economy have not to this point caused any reduction in the government's military spending, or inhibited other foreign initiatives, like the Asian Infrastructure Investment Bank, by which the regime is seeking greater influence and prestige in world affairs. And though the Chinese people are restive, the CCP has means other than economic reform to deal with that.

To be sure, there are officials within the CCP who want to push for a broad economic reform agenda. But based on the record so far, I believe the Party's top leaders have concluded that it is cheaper, safer, and more consistent with the authoritarian impulse to suppress dissent through repression and propaganda, than to finance a broad social safety net for a billion people, or risk the consequences of allowing a culture of freedom to take hold, even in the economic sphere.

If that turns out to be the case, the implications for the United States will be profound. The CCP will still seek as much economic growth as possible, but without fundamentally restructuring the economy. That will mean more of the outlier activity which the Commission's Report documents so thoroughly: more commercial cyberespionage, more pressure and discrimination against foreign companies, more theft of intellectual property, more evasion of China's WTO obligations, and potentially, more use of China's growing regional power to seek economic advantage in violation of international norms.

Nothing about China is certain, but it clearly is time to stop giving China's leaders the benefit of the doubt. Their actions to this point don't justify it, and worse days may well be coming.

**ADDITIONAL VIEWS OF
COMMISSIONERS WESSEL AND TALENT
JOINED BY
COMMISSIONERS BARTHOLOMEW AND TOBIN**

U.S.-China relations have reached a critical juncture. The accession of China to the World Trade Organization signaled, to many, that China had decided to abide by Western concepts of market-oriented economics. Unfortunately, in the fifteen years since China was granted Permanent Normal Trade Relations by Congress, China has proven, time and time again, that it is pursuing a different path.

China's economic policies have had a profound impact upon the United States, its producers, their workers and its citizens. The partial melt-down of China's stock markets this summer, while somewhat contained, identified that our economies are increasingly linked. China's economic slowdown has had broader repercussions on the economies of other nations across the globe. China is now exporting its economic problems.

It is time to recognize that China is not interested in playing by the rules or conforming to economic theories advanced by elite academics and policy makers. When China's leaders pronounce that it wishes to reform its economy, as President Xi did at the Third Plenum and in subsequent statements, they do not mean "reform" as we envision it. We must stop simply hoping for the best or China's reformation to Western ideals. Rather, we must deal with the hard reality of the unique characteristics of state-led capitalism.

Reform, to most, is a positive concept. We must carefully analyze and respond to Chinese policies if they adversely impact upon our interests. China's reform efforts may not necessarily advance U.S. interests. Already we have seen that China's economic slowdown has adversely affected U.S. corporate interests in achieving greater market access. China's claimed economic "rebalancing" may not result in new market opportunities for Western firms. China's "reforms" of its state-owned entities are not designed to reduce the role of the state or diminish the preferential treatment they receive but rather to strengthen them at home and in world markets.

Other nations are watching and learning, from China. Vietnam, Brazil, India and other countries are advancing industrial policies, led by state interventions, to support their industries. China's currency manipulation, essentially unaddressed by U.S. policymakers, is being mimicked by other countries.

The critical juncture we face is whether a more realistic, pragmatic, self-interested and self-assured policy will be advanced by U.S. government officials or whether they will continue to engage in endless dialogue while U.S. economic and security interests continue to be undermined. The U.S. must more effectively and consistently address China's failure to be a responsible international stakeholder. Failing to respond sends a dangerous message to the Chinese that their economic policies, diplomatic approaches, territorial assertiveness and military buildup may continue without significant cost. That is no longer acceptable. A clear, comprehensive and consistent policy towards China is needed that recognizes that

China is a great country, entitled to its place on the world stage but that it has a greater responsibility to advance, rather than undermine, the policies and approaches that have been the foundation of the international system since the end of the Cold War.

APPENDIX I CHARTER

The Commission was created on October 30, 2000 by the Floyd D. Spence National Defense Authorization Act for 2001 § 1238, P.L. 106–398 (codified at 22 U.S.C. § 7002 (2001)), as amended by:

- The Treasury and General Government Appropriations Act for 2002 § 645 (regarding employment status of staff), P.L. 107–67 (Nov. 12, 2001);
- Division P of the “Consolidated Appropriations Resolution, 2003,” P.L. 108–7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of Commission);
- P.L. 109–108 (enacted Nov. 22, 2005) (regarding responsibilities of Commission and applicability of FACA);
- Division J of the “Consolidated Appropriations Act, 2008,” P.L. 110–161 (Dec. 26, 2007) (regarding responsibilities of the Commission and changed annual report due date from June to December);
- The Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015, P.L. 113–291 (Dec. 19, 2014) (regarding responsibilities of the Commission).

22 U.S.C. § 7002—United States-China Economic and Security Review Commission

(a) Purposes. The purposes of this section are as follows:

(1) To establish the United States-China Economic and Security Review Commission to review the national security implications of trade and economic ties between the United States and the People’s Republic of China.

(2) To facilitate the assumption by the United States-China Economic and Security Review Commission of its duties regarding the review referred to in paragraph (1) by providing for the transfer to that Commission of staff, materials, and infrastructure (including leased premises) of the Trade Deficit Review Commission that are appropriate for the review upon the submittal of the final report of the Trade Deficit Review Commission.

(b) Establishment of United States-China Economic and Security Review Commission.

(1) In general. There is hereby established a commission to be known as the United States-China Economic and Security Review Commission (in this section referred to as the “Commission”).

(2) Purpose. The purpose of the Commission is to monitor, investigate, and report to Congress on the national security implications of the bilateral trade and economic relationship between the United States and the People’s Republic of China.

(3) Membership. The United States-China Economic and Security Review Commission shall be composed of 12 members, who shall be appointed in the same manner provided for the appointment of members of the Trade Deficit Review Commission under section 127(c)(3) of the Trade Deficit Review Commission Act (19 U.S.C. 2213 note), except that—

(A) Appointment of members by the Speaker of the House of Representatives shall be made after consultation with the chairman of the Committee on Armed Services of the House of Representatives, in addition to consultation with the chairman of the Committee on Ways and Means of the House of Representatives provided for under clause (iii) of subparagraph (A) of that section;

(B) Appointment of members by the President pro tempore of the Senate upon the recommendation of the majority leader of the Senate shall be made after consultation with the chairman of the Committee on Armed Services of the Senate, in addition to consultation with the chairman of the Committee on Finance of the Senate provided for under clause (i) of that subparagraph;

(C) Appointment of members by the President pro tempore of the Senate upon the recommendation of the minority leader of the Senate shall be made after consultation with the ranking minority member of the Committee on Armed Services of the Senate, in addition to consultation with the ranking minority member of the Committee on Finance of the Senate provided for under clause (ii) of that subparagraph;

(D) Appointment of members by the minority leader of the House of Representatives shall be made after consultation with the ranking minority member of the Committee on Armed Services of the House of Representatives, in addition to consultation with the ranking minority member of the Committee on Ways and Means of the House of Representatives provided for under clause (iv) of that subparagraph;

(E) Persons appointed to the Commission shall have expertise in national security matters and United States-China relations, in addition to the expertise provided for under subparagraph (B)(i)(I) of that section;

(F) Each appointing authority referred to under subparagraphs (A) through (D) of this paragraph shall—

(i) appoint 3 members to the Commission;

(ii) make the appointments on a staggered term basis, such that—

(I) 1 appointment shall be for a term expiring on December 31, 2003;

(II) 1 appointment shall be for a term expiring on December 31, 2004; and

(III) 1 appointment shall be for a term expiring on December 31, 2005;

(iii) make all subsequent appointments on an approximate 2-year term basis to expire on December 31 of the applicable year; and

(iv) make appointments not later than 30 days after the date on which each new Congress convenes.

(G) Members of the Commission may be reappointed for additional terms of service as members of the Commission; and

(H) Members of the Trade Deficit Review Commission as of the date of the enactment of this Act [enacted Oct. 30, 2000] shall serve as members of the United States-China Economic and Security Review Commission until such time as members are first appointed to the United States-China Economic and Security Review Commission under this paragraph.

(4) Retention of support. The United States-China Economic and Security Review Commission shall retain and make use of such staff, materials, and infrastructure (including leased premises) of the Trade Deficit Review Commission as the United States-China Economic and Security Review Commission determines, in the judgment of the members of the United States-China Economic and Security Review Commission, are required to facilitate the ready commencement of activities of the United States-China Economic and Security Review Commission under subsection (c) or to carry out such activities after the commencement of such activities.

(5) Chairman and vice chairman. The members of the Commission shall select a Chairman and Vice Chairman of the Commission from among the members of the Commission.

(6) Meetings.

(A) Meetings. The Commission shall meet at the call of the Chairman of the Commission.

(B) Quorum. A majority of the members of the Commission shall constitute a quorum for the transaction of business of the Commission.

(7) Voting. Each member of the Commission shall be entitled to one vote, which shall be equal to the vote of every other member of the Commission.

(c) Duties.

(1) Annual report. Not later than Dec. 1 each year [beginning in 2008], the Commission shall submit to Congress a report, in both unclassified and classified form, regarding the national security implications and impact of the bilateral trade and economic relationship between the United States and the People's Republic of China. The report shall include a full analysis, along with conclusions and recommendations for legislative and administrative actions, if any, of the national security implications for the United States of the trade and current balances with the People's Republic of China in goods and services, financial transactions, and technology transfers. The Commission shall also take into account patterns of trade and transfers through third countries to the extent practicable.

Contents of report. Each report under paragraph (1) shall include, at a minimum, a full discussion of the following:

(A) The portion of trade in goods and services with the United States that the People's Republic of China dedicates to military systems or systems of a dual nature that could be used for military purposes.

(B) The acquisition by the People's Republic of China of advanced military or dual-use technologies from the United States by trade (including procurement) and other technology transfers, especially those transfers, if any, that contribute to the proliferation of weapons of mass destruction or their delivery systems, or that undermine international agreements or United States laws with respect to nonproliferation.

(C) Any transfers, other than those identified under subparagraph (B), to the military systems of the People's Republic of China made by United States firms and United States-based multinational corporations.

(D) An analysis of the statements and writing of the People's Republic of China officials and officially-sanctioned writings that bear on the intentions, if any, of the Government of the People's Republic of China regarding the pursuit of military competition with, and leverage over, or cooperation with, the United States and the Asian allies of the United States.

(E) The military actions taken by the Government of the People's Republic of China during the preceding year that bear on the national security of the United States and the regional stability of the Asian allies of the United States.

(F) The effects, if any, on the national security interests of the United States of the use by the People's Republic of China of financial transactions and capital flow and currency manipulations.

(G) Any action taken by the Government of the People's Republic of China in the context of the World Trade Organization that is adverse or favorable to the United States national security interests.

(H) Patterns of trade and investment between the People's Republic of China and its major trading partners, other than the United States, that appear to be substantively different from trade and investment patterns with the United States and whether the differences have any national security implications for the United States.

(I) The extent to which the trade surplus of the People's Republic of China with the United States enhances the military budget of the People's Republic of China.

(J) An overall assessment of the state of the security challenges presented by the People's Republic of China to the United States and whether the security challenges are increasing or decreasing from previous years.

(3) Recommendations of report. Each report under paragraph (1) shall also include recommendations for action by Congress or the President, or both, including specific recommendations for the United States to invoke Article XXI (relating to security exceptions) of the General Agreement on Tariffs and Trade 1994 with respect to the People's Republic of China, as a result of any adverse impact on the national security interests of the United States.

(d) Hearings.

(1) In general. The Commission or, at its direction, any panel or member of the Commission, may for the purpose of carrying out the provisions of this section, hold hearings, sit and act at times and places, take testimony, receive evidence, and administer oaths to the extent that the Commission or any panel or member considers advisable.

(2) Information. The Commission may secure directly from the Department of Defense, the Central Intelligence Agency, and any other Federal department or agency information that the Commission considers necessary to enable the Commission to carry out its duties under this section, except the provision of intelligence information to the Commission shall be made with due regard for the protection from unauthorized disclosure of classified information

relating to sensitive intelligence sources and methods or other exceptionally sensitive matters, under procedures approved by the Director of Central Intelligence.

(3) Security. The Office of Senate Security shall—

(A) provide classified storage and meeting and hearing spaces, when necessary, for the Commission; and

(B) assist members and staff of the Commission in obtaining security clearances.

(4) Security clearances. All members of the Commission and appropriate staff shall be sworn and hold appropriate security clearances.

(e) Commission personnel matters.

(1) Compensation of members. Members of the United States-China Economic and Security Review Commission shall be compensated in the same manner provided for the compensation of members of the Trade Deficit Review Commission under section 127(g)(1) and section 127(g)(6) of the Trade Deficit Review Commission Act (19 U.S.C. 2213 note).

(2) Travel expenses. Travel expenses of the United States-China Economic and Security Review Commission shall be allowed and conducted under the rules and procedures applying to travel by members of the House of Representatives and its staff. [House Rule 25]

(3) Staff. An executive director and other additional personnel for the United States-China Economic and Security Review Commission shall be appointed, compensated, and terminated in the same manner provided for the appointment, compensation, and termination of the executive director and other personnel of the Trade Deficit Review Commission under section 127(g)(3) and section 127(g)(6) of the Trade Deficit Review Commission Act [19 USCS § 2213 note]. The executive director and any personnel who are employees of the United States-China Economic and Security Review Commission shall be employees under section 2105 of title 5, United States Code, for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title [language of 2001 amendment, Sec. 645]. Compensation for the executive director may not exceed the rate payable for level II of the executive schedule [5 U.S.C. 5314]

(4) Detail of government employees. Federal Government employees may be detailed to the United States-China Economic and Security Review Commission in the same manner provided for the detail of Federal Government employees to the Trade Deficit Review Commission under section 127(g)(4) of the Trade Deficit Review Commission Act [19 USCS § 2213 note].

(5) Foreign travel for official purposes. Foreign travel for official purposes by members and staff of the Commission may be authorized by either the Chairman or the Vice Chairman of the Commission.

(6) Procurement of temporary and intermittent services. The Chairman of the United States-China Economic and Security Review Commission may procure temporary and intermittent services for the United States-China Economic and Security Review Commission in the same manner provided for the procurement of temporary and intermittent services for the Trade Deficit Review Com-

mission under section 127(g)(5) of the Trade Deficit Review Commission Act [19 USCS § 2213 note].

(f) Authorization of appropriations.

(1) In general. There is authorized to be appropriated to the Commission for fiscal year 2001, and for each fiscal year thereafter, such sums as may be necessary to enable the Commission to carry out its functions under this section.

(2) Availability. Amounts appropriated to the Commission shall remain available until expended.

(g) Federal Advisory Committee Act. The provisions of the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Commission.

(h) Effective date. This section shall take effect on the first day of the 107th Congress.

AMENDMENT: Enacted into law by Public Law 107-67:

SEC. 645. (a) Section 1238(e)(3) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted by Public Law 106-398) is amended by adding at the end the following: “The executive director and any personnel who are employees of the United States-China Economic and Security Review Commission shall be employees under section 2105 of title 5, United States Code, for purposes of chapters 63, 81, 83, 84, 85, 87, 89, and 90 of that title.” (b) The amendment made by this section shall take effect on January 3, 2001.”

AMENDMENT: Enacted into law by Division P of Public Law 108-7:

SECTION 1. SHORT TITLE.—This division may be cited as the “United States-China Economic and Security Review Commission”.

SEC. 2. (a) APPROPRIATIONS.—There are appropriated, out of any funds in the Treasury not otherwise appropriated, \$1,800,000, to remain available until expended, to the United States-China Economic and Security Review Commission.

(b) NAME CHANGE.—

(1) IN GENERAL.—Section 1238 of the Floyd D. Spence National Defense Authorization Act of 2001 (22 U.S.C. 7002) is amended—

(A) in the section heading by inserting “ECONOMIC AND” before “SECURITY”;

(B) in subsection (a)—

(i) in paragraph (1), by inserting “Economic and” before “Security”; and

(ii) in paragraph (2), by inserting “Economic and” before “Security”;

(C) in subsection (b)—

(i) in the subsection heading, by inserting “ECONOMIC AND” before “SECURITY”;

(ii) in paragraph (1), by inserting “Economic and” before “Security”;

(iii) in paragraph (3)—

(I) in the matter preceding subparagraph (A), by inserting “Economic and” before “Security”; and

(II) in subparagraph (H), by inserting “Economic and” before “Security”; and

(iv) in paragraph (4), by inserting “Economic and” before “Security” each place it appears; and

(D) in subsection (e)—

(i) in paragraph (1), by inserting “Economic and” before “Security”;

(ii) in paragraph (2), by inserting “Economic and” before “Security”;

(iii) in paragraph (3)—

(I) in the first sentence, by inserting “Economic and” before “Security”; and

(II) in the second sentence, by inserting “Economic and” before “Security”;

(iv) in paragraph (4), by inserting “Economic and” before “Security”; and

(v) in paragraph (6), by inserting “Economic and” before “Security” each place it appears.

(2) REFERENCES.—Any reference in any Federal law, Executive order, rule, regulation, or delegation of authority, or any document of or relating to the United States-China Security Review Commission shall be deemed to refer to the United States-China Economic and Security Review Commission.

(c) MEMBERSHIP, RESPONSIBILITIES, AND TERMS.—

(1) IN GENERAL.—Section 1238(b)(3) of the Floyd D. Spence National Defense Authorization Act of 2001 (22 U.S.C. 7002) is amended by striking subparagraph (F) and inserting the following:

“(F) each appointing authority referred to under subparagraphs (A) through (D) of this paragraph shall—

“(i) appoint 3 members to the Commission;

“(ii) make the appointments on a staggered term basis, such that—

“(I) 1 appointment shall be for a term expiring on December 31, 2003;

“(II) 1 appointment shall be for a term expiring on December 31, 2004; and

“(III) 1 appointment shall be for a term expiring on December 31, 2005;

“(iii) make all subsequent appointments on an approximate 2-year term basis to expire on December 31 of the applicable year; and

“(iv) make appointments not later than 30 days after the date on which each new Congress convenes;”.

(2) RESPONSIBILITIES OF THE COMMISSION.—The United States-China Commission shall focus, in lieu of any other areas of work or study, on the following:

(A) PROLIFERATION PRACTICES.—The Commission shall analyze and assess the Chinese role in the proliferation of weapons of mass destruction and other weapons (including dual use technologies) to terrorist-sponsoring states, and suggest possible steps which the United States might take, including economic sanctions, to encourage the Chinese to stop such practices.

(B) ECONOMIC REFORMS AND UNITED STATES ECONOMIC TRANSFERS.—The Commission shall analyze and assess the qualitative and quantitative nature of the shift of United States production activities to China, including the relocation of

high-technology, manufacturing, and R&D facilities; the impact of these transfers on United States national security, including political influence by the Chinese Government over American firms, dependence of the United States national security industrial base on Chinese imports, the adequacy of United States export control laws, and the effect of these transfers on United States economic security, employment, and the standard of living of the American people; analyze China's national budget and assess China's fiscal strength to address internal instability problems and assess the likelihood of externalization of such problems.

(C) ENERGY.—The Commission shall evaluate and assess how China's large and growing economy will impact upon world energy supplies and the role the United States can play, including joint R&D efforts and technological assistance, in influencing China's energy policy.

(D) UNITED STATES CAPITAL MARKETS.—The Commission shall evaluate the extent of Chinese access to, and use of United States capital markets, and whether the existing disclosure and transparency rules are adequate to identify Chinese companies which are active in United States markets and are also engaged in proliferation activities or other activities harmful to United States security interests.

(E) CORPORATE REPORTING.—The Commission shall assess United States trade and investment relationship with China, including the need for corporate reporting on United States investments in China and incentives that China may be offering to United States corporations to relocate production and R&D to China.

(F) REGIONAL ECONOMIC AND SECURITY IMPACTS.—The Commission shall assess the extent of China's "hollowing out" of Asian manufacturing economies, and the impact on United States economic and security interests in the region; review the triangular economic and security relationship among the United States, Taipei and Beijing, including Beijing's military modernization and force deployments aimed at Taipei, and the adequacy of United States executive branch coordination and consultation with Congress on United States arms sales and defense relationship with Taipei.

(G) UNITED STATES-CHINA BILATERAL PROGRAMS.—The Commission shall assess science and technology programs to evaluate if the United States is developing an adequate coordinating mechanism with appropriate review by the intelligence community with Congress; assess the degree of non-compliance by China and United States-China agreements on prison labor imports and intellectual property rights; evaluate United States enforcement policies; and recommend what new measures the United States Government might take to strengthen our laws and enforcement activities and to encourage compliance by the Chinese.

(H) WORLD TRADE ORGANIZATION COMPLIANCE.—The Commission shall review China's record of compliance to date with its accession agreement to the WTO, and explore what incentives and policy initiatives should be pursued to promote further compliance by China.

(I) MEDIA CONTROL.—The Commission shall evaluate Chinese government efforts to influence and control perceptions of the United States and its policies through the internet, the Chinese print and electronic media, and Chinese internal propaganda.

(3) EFFECTIVE DATE.—This section shall take effect on the date of enactment of this Act.

AMENDMENT: Enacted into law by SEC. 635 of Public Law 109–108

SEC. 635. (a) MODIFICATION OF RESPONSIBILITIES.—Notwithstanding any provision of section 1238 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (22 U.S.C. 7002), or any other provision of law, the United States-China Economic and Security Review Commission established by subsection (b) of that section shall investigate and report exclusively on each of the following areas:

(1) PROLIFERATION PRACTICES.—The role of the People’s Republic of China in the proliferation of weapons of mass destruction and other weapons (including dual use technologies), including actions the United States might take to encourage the People’s Republic of China to cease such practices.

(2) ECONOMIC TRANSFERS.—The qualitative and quantitative nature of the transfer of United States production activities to the People’s Republic of China, including the relocation of high technology, manufacturing, and research and development facilities, the impact of such transfers on United States national security, the adequacy of United States export control laws, and the effect of such transfers on United States economic security and employment.

(3) ENERGY.—The effect of the large and growing economy of the People’s Republic of China on world energy supplies and the role the United States can play (including through joint research and development efforts and technological assistance) in influencing the energy policy of the People’s Republic of China.

(4) ACCESS TO UNITED STATES CAPITAL MARKETS.—The extent of access to and use of United States capital markets by the People’s Republic of China, including whether or not existing disclosure and transparency rules are adequate to identify People’s Republic of China companies engaged in harmful activities.

(5) REGIONAL ECONOMIC AND SECURITY IMPACTS.—The triangular economic and security relationship among the United States, Taipei, and the People’s Republic of China (including the military modernization and force deployments of the People’s Republic of China aimed at Taipei), the national budget of the People’s Republic of China, and the fiscal strength of the People’s Republic of China in relation to internal instability in the People’s Republic of China and the likelihood of the externalization of problems arising from such internal instability.

(6) UNITED STATES–CHINA BILATERAL PROGRAMS.—Science and technology programs, the degree of non-compliance by the People’s Republic of China with agreements between the United States and the People’s Republic of China on prison labor imports and intellectual property rights, and United States enforcement policies with respect to such agreements.

(7) WORLD TRADE ORGANIZATION COMPLIANCE.—The compliance of the People’s Republic of China with its accession agreement to the World Trade Organization (WTO).

(8) FREEDOM OF EXPRESSION.—The implications of restrictions on speech and access to information in the People’s Republic of China for its relations with the United States in the areas of economic and security policy.

(b) APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.—Subsection (g) of section 1238 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 is amended to read as follows:

“(g) APPLICABILITY OF FACA.—The provisions of the Federal Advisory Committee Act (5 U.S.C. App.) shall apply to the activities of the Commission.”.

SEC. 636. Section 635 of division B of Public Law 108–447 is amended by striking “balance” and inserting “and unexpended balances”.

SEC. 637. None of the funds made available in this Act may be used to pay expenses for any United States delegation to any specialized agency, body, or commission of the United Nations if such commission is chaired or presided over by a country, the government of which the Secretary of State has determined, for purposes of section 6(j)(1) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(1)), has provided support for acts of international terrorism.

AMENDMENT: Enacted into law by Title I of Public Law 110–161

For necessary expenses of the United States-China Economic and Security Review Commission, \$4,000,000, including not more than \$4,000 for the purpose of official representation, to remain available until September 30, 2009: *Provided*, That the Commission shall submit a spending plan to the Committees on Appropriations no later than March 1, 2008, which effectively addresses the recommendations of the Government Accountability Office’s audit of the Commission (GAO–07–1128): *Provided further*, That the Commission shall provide to the Committees on Appropriations a quarterly accounting of the cumulative balances of any unobligated funds that were received by the Commission during any previous fiscal year: *Provided further*, That for purposes of costs relating to printing and binding, the Commission shall be deemed, effective on the date of its establishment, to be a committee of Congress: *Provided further*, That compensation for the executive director of the Commission may not exceed the rate payable for level II of the Executive Schedule under section 5314 of title 5, United States Code: *Provided further*, That section 1238(c)(1) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, is amended by striking “June” and inserting “December”: *Provided further*, That travel by members of the Commission and its staff shall be arranged and conducted under the rules and procedures applying to travel by members of the House of Representatives and its staff.

AMENDMENT: Enacted into law by Public Law 113–291

Sec. 1259B—Modification of matters for discussion in annual reports of the United States-China Economic and Security Review Commission.

(a) MATTERS FOR DISCUSSION.—Section 1238(c)(2) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted into law by Public Law 106–398; 22 U.S.C. 7002(c)(2)) is amended by striking subparagraphs (A) through (J) and inserting the following new subparagraphs:

(A) The role of the People’s Republic of China in the proliferation of weapons of mass destruction and other weapon systems (including systems and technologies of a dual use nature), including actions the United States might take to encourage the People’s Republic of China to cease such practices.

(B) The qualitative and quantitative nature of the transfer of United States production activities to the People’s Republic of China, including the relocation of manufacturing, advanced technology and intellectual property, and research and development facilities, the impact of such transfers on the national security of the United States (including the dependence of the national security industrial base of the United States on imports from China), the economic security of the United States, and employment in the United States, and the adequacy of United States export control laws in relation to the People’s Republic of China.

(C) The effects of the need for energy and natural resources in the People’s Republic of China on the foreign and military policies of the People’s Republic of China, the impact of the large and growing economy of the People’s Republic of China on world energy and natural resource supplies, prices, and the environment, and the role the United States can play (including through joint research and development efforts and technological assistance) in influencing the energy and natural resource policies of the People’s Republic of China.

(D) Foreign investment by the United States in the People’s Republic of China and by the People’s Republic of China in the United States, including an assessment of its economic and security implications, the challenges to market access confronting potential United States investment in the People’s Republic of China, and foreign activities by financial institutions in the People’s Republic of China.

(E) The military plans, strategy and doctrine of the People’s Republic of China, the structure and organization of the People’s Republic of China military, the decision-making process of the People’s Republic of China military, the interaction between the civilian and military leadership in the People’s Republic of China, the development and promotion process for leaders in the People’s Republic of China military, deployments of the People’s Republic of China military, resources available to the People’s Republic of China military (including the development and execution of budgets and the allocation of funds), force modernization objectives and trends for the People’s Republic of China military, and the implications of such objectives and trends for the national security of the United States.

(F) The strategic economic and security implications of the cyber capabilities and operations of the People's Republic of China.

(G) The national budget, fiscal policy, monetary policy, capital controls, and currency management practices of the People's Republic of China, their impact on internal stability in the People's Republic of China, and their implications for the United States.

(H) The drivers, nature, and implications of the growing economic, technological, political, cultural, people-to-people, and security relations of the People's Republic of China's with other countries, regions, and international and regional entities (including multilateral organizations), including the relationship among the United States, Taiwan, and the People's Republic of China.

(I) The compliance of the People's Republic of China with its commitments to the World Trade Organization, other multilateral commitments, bilateral agreements signed with the United States, commitments made to bilateral science and technology programs, and any other commitments and agreements strategic to the United States (including agreements on intellectual property rights and prison labor imports), and United States enforcement policies with respect to such agreements.

(J) The implications of restrictions on speech and access to information in the People's Republic of China for its relations with the United States in economic and security policy, as well as any potential impact of media control by the People's Republic of China on United States economic interests.

(K) The safety of food, drug, and other products imported from China, the measures used by the People's Republic of China Government and the United States Government to monitor and enforce product safety, and the role the United States can play (including through technical assistance) to improve product safety in the People's Republic of China.

(b) **EFFECTIVE DATE.**—The amendments made by subsection (a) shall take effect on the date of the enactment of this Act, and shall apply with respect to annual reports submitted under section 1238(c) of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 after such date of enactment.

APPENDIX II

BACKGROUND OF COMMISSIONERS

The Honorable William A. Reinsch, Chairman

Chairman William Reinsch was reappointed to the Commission by Senate Majority Leader Harry Reid for the two-year term expiring December 31, 2015. He was elected as Chairman of the Commission for the 2015 Report cycle effective January 1, 2015, and previously served as Vice Chairman of the Commission for the 2014 Report cycle. Chairman Reinsch served as Under Secretary for Export Administration in the U.S. Department of Commerce. As head of the Bureau of Export Administration, later named the Bureau of Industry and Security, Chairman Reinsch was charged with administering and enforcing the export control policies of the U.S. government, including its antiboycott laws. Major accomplishments during his tenure included refocusing controls regarding economic globalization, most notably on high-performance computers, microprocessors, and encryption, and completing the first full revision of the Export Administration regulations in over forty years. In addition, he revised the interagency process for reviewing applications and permitted electronic filing of applications over the Internet.

During this time, Chairman Reinsch delivered more than two hundred speeches and testified fifty-three times before various committees of the Congress. Before joining the Department of Commerce, Chairman Reinsch was a senior legislative assistant to Senator John Rockefeller and was responsible for the senator's work on trade, international economic policy, foreign affairs, and defense. He also provided staff support for Senator Rockefeller's related efforts on the Finance Committee and the Commerce, Science, and Transportation Committee.

For fourteen years, Chairman Reinsch served on the staff of Senator John Heinz as chief legislative assistant, focusing on foreign trade and competitiveness policy issues. During that period, Senator Heinz was either the chairman or the ranking member of the Senate Banking Committee's Subcommittee on International Finance. Senator Heinz was also a member of the International Trade Subcommittee of the Finance Committee. Chairman Reinsch provided support for the senator on both subcommittees. This work included five revisions of the Export Administration Act and work on four major trade bills. Prior to joining Senator Heinz's staff, Chairman Reinsch was a legislative assistant to Representatives Richard Ottinger and Gilbert Gude, acting staff director of the House Environmental Study Conference, and a teacher in Maryland.

Today Chairman Reinsch is president of the National Foreign Trade Council. Founded in 1914, the council is the largest business organization dedicated solely to trade policy, international tax, and

human resources issues. The organization represents over two hundred companies through its offices in New York City and Washington.

In addition to his legislative and private sector work, Chairman Reinsch serves as an adjunct associate professor at the University of Maryland's School of Public Policy and, earlier, its University College Graduate School of Management and Technology, teaching a course in international trade and trade policy. He is also a member of the boards of the Executive Council on Diplomacy and the Center for International Private Enterprise (CIPE). Chairman Reinsch's publications include "Why China Matters to the Health of the U.S. Economy," published in *Economics and National Security*; "The Role and Effectiveness of U.S. Export Control Policy in the Age of Globalization" and "Export Controls in the Age of Globalization," both published in *The Monitor*. In addition, Chairman Reinsch has published "Should Uncle Sam Control U.S. Technology Exports," published in *Insight* magazine; "Encryption Policy Strikes a Balance," published in the *Journal of Commerce*, and "Building a New Economic Relationship with Japan," published with others in *Beyond the Beltway: Engaging the Public in U.S. Foreign Policy*.

The Honorable Dennis C. Shea, Vice Chairman

Vice Chairman Dennis Shea was reappointed by Senate Republican Leader Mitch McConnell for a term expiring December 31, 2016. An attorney with more than 25 years of experience in government and public policy, he is the founder of Shea Public Strategies LLC, a public affairs firm based in Alexandria, Virginia. Before starting the firm, he served as Vice President for Government Affairs—Americas for Pitney Bowes Inc., a Fortune 500 company.

Vice Chairman Shea's government service began in 1988 when he joined the Office of Senate Republican Leader Bob Dole as counsel, subsequently becoming the Senator's deputy chief of staff in the Office of the Senate Majority Leader. In these capacities, he advised Senator Dole and other Republican Senators on a broad range of domestic policy issues, was involved in the drafting of numerous pieces of legislation, and was recognized as one of the most influential staffers on Capitol Hill. In 1992, Vice Chairman Shea's service with Senator Dole was interrupted when he ran for Congress in the Seventh District of New York.

During the 1996 elections, Vice Chairman Shea continued to help shape the national public policy debate as the director of policy for the Dole for President Campaign. Following the elections, he entered the private sector, providing legislative and public affairs counsel to a wide range of clients while employed at BKSH & Associates and Verner, Liipfert, Bernhard, McPherson, and Hand.

In 2003, Vice Chairman Shea was named the Executive Director of the President's Commission on the United States Postal Service. Many of the Commission's recommendations were subsequently adopted in the landmark 2006 postal reform legislation.

In 2004, Vice Chairman Shea was confirmed as Assistant Secretary for Policy Development and Research at the U.S. Department of Housing and Urban Development. As Assistant Secretary, Vice Chairman Shea led a team responsible for conducting much

of the critical analysis necessary to support the Department's mission. In 2005, Vice Chairman Shea left to serve as Senior Advisor to Senator Elizabeth Dole in her capacity as chairman of the National Republican Senatorial Committee.

Vice Chairman Shea received a J.D., an M.A. in History, and a B.A. in Government, from Harvard University. He is admitted to the bar in New York and the District of Columbia. The Vice Chairman currently resides in Alexandria, Virginia with his wife Elizabeth and daughter Juliette.

Carolyn Bartholomew

Carolyn Bartholomew was reappointed to the Commission by House Democratic Leader Nancy Pelosi for a sixth two-year term expiring on December 31, 2015. She previously served as the Commission's chairman for the 2007 and 2009 Report cycles and served as vice chairman for the 2010, 2008, and 2006 Report cycles.

Commissioner Bartholomew has worked at senior levels in the U.S. Congress, serving as counsel, legislative director, and chief of staff to now House Democratic Leader Nancy Pelosi. She was a professional staff member on the House Permanent Select Committee on Intelligence and also served as a legislative assistant to then U.S. Representative Bill Richardson.

In these positions, Commissioner Bartholomew was integrally involved in developing U.S. policies on international affairs and security matters. She has particular expertise in U.S.-China relations, including issues related to trade, human rights, and the proliferation of weapons of mass destruction. Ms. Bartholomew led efforts in the establishment and funding of global AIDS programs and the promotion of human rights and democratization in countries around the world. She was a member of the first Presidential Delegation to Africa to Investigate the Impact of HIV/AIDS on Children and a member of the Council on Foreign Relations' Congressional Staff Roundtable on Asian Political and Security Issues.

In addition to U.S.-China relations, her areas of expertise include terrorism, trade, proliferation of weapons of mass destruction, human rights, U.S. foreign assistance programs, and international environmental issues. She is a consultant to non-profit organizations and also serves on the board of directors of the Kaiser Aluminum Corporation and the nonprofit organization Asia Catalyst.

Commissioner Bartholomew received a Bachelor of Arts degree from the University of Minnesota, a Master of Arts in Anthropology from Duke University, and a Juris Doctorate from Georgetown University Law Center. She is a member of the State Bar of California.

Peter Brookes

Commissioner Brookes was reappointed to the Commission by House Republican Leader John Boehner for a two-year term expiring December 31, 2016. Commissioner Brookes served in the George W. Bush Administration as the Deputy Assistant Secretary of Defense for Asian and Pacific Affairs. Prior to joining the Bush Administration, Commissioner Brookes was a Professional Staff Member with the Committee on International Relations in the U.S. House of Representatives. Before his service in the Congress, Com-

missioner Brookes worked in the Central Intelligence Agency, for the State Department at the United Nations, and in the private sector.

Now, Commissioner Brookes is a Senior Fellow at The Heritage Foundation and works to develop and communicate the Foundation's stance on foreign policy and national security affairs through media appearances, research, published articles, congressional testimony, and speaking engagements.

Commissioner Brookes is a decorated military veteran, having served on active duty with the U.S. Navy in Latin America, Asia, and the Middle East. Dr. Brookes is a graduate of Georgetown University, The Johns Hopkins University, the Defense Language Institute, the Naval War College, and U.S. Naval Academy.

Robin Cleveland

Commissioner Cleveland was reappointed by Senate Republican Leader Mitch McConnell for a two-year term expiring December 31, 2016. After three decades of government service, Commissioner Cleveland is now serving as the Executive Director of the Office of Student Life at the Graduate School of Education and Human Development at The George Washington University. Having received her Masters degree in school counseling, Ms. Cleveland also is pursuing her doctorate as a counselor educator. Previously, Commissioner Cleveland worked for U.S. Senator Mitch McConnell in a number of positions in his personal office, on the Senate Select Committee on Intelligence, the Foreign Relations Committee, and the Senate Appropriations Committee. In addition, Commissioner Cleveland served as the Counselor to the President of the World Bank, and as the Associate Director of the Office of Management and Budget in the Executive Office of the President. During her tenure serving President Bush, Commissioner Cleveland co-lead the interagency effort to develop and operationalize two Presidential initiatives: the Millennium Challenge Corporation and the President's Emergency Plan for AIDS Relief. These efforts reflect her commitment to link policy, performance, and resource management.

Commissioner Cleveland graduated from Wesleyan University with honors and received her M.A. in Education and Human Development from The George Washington University.

Jeffrey L. Fiedler

Commissioner Fiedler was reappointed to the Commission by House Democratic Leader Nancy Pelosi for a fifth term expiring December 31, 2015. He is Assistant to the General President, and Director, Special Projects and Initiatives, for the International Union of Operating Engineers. Previously, he was President of Research Associates of America (RAA) and the elected president of the Food and Allied Service Trades Department, AFL-CIO ("FAST"). This constitutional department of the AFL-CIO represented ten unions with a membership of 3.5 million in the United States and Canada. The focus of RAA, like FAST before it, was organizing and bargaining research for workers and their unions. He served as a member of the AFL-CIO Executive Council committees on International Affairs, Immigration, Organizing, and Strategic

Approaches. He also served on the board of directors of the Consumer Federation of America and is a member of the Council on Foreign Relations. In 1992, Mr. Fiedler co-founded the Laogai Research Foundation (LRF), an organization devoted to studying the forced labor camp system in China. When the foundation's Executive Director, Harry Wu, was detained in China in 1995, Mr. Fiedler coordinated the campaign to win his release. He no longer serves as director of the LRF.

Mr. Fiedler has testified on behalf of the AFL-CIO before the Senate Foreign Relations Committee and the House International Affairs Committee and its various subcommittees, as well as the Trade Subcommittee of the House Ways and Means Committee concerning China policy. He attended three of the American Assembly conferences on China sponsored by Columbia University and has participated in a Council on Foreign Relations task force and study group on China. He has been interviewed on CBS, NBC, ABC, CNN, and CNBC on China policy, international trade issues, human rights, and child labor.

A Vietnam veteran, he served with the U.S. Army in Hue in 1967-68. He received his B.A. in Political Science from Southern Illinois University. He is married with two adult children and resides in Virginia.

The Honorable Carte P. Goodwin

Senator Carte P. Goodwin was appointed to the Commission by Senate Majority Leader Harry Reid for a second two-year term expiring on December 31, 2015.

He is an attorney with the Charleston, West Virginia, law firm of Goodwin & Goodwin, LLP. His practice includes commercial litigation, appellate advocacy, and intellectual property.

In July 2010, West Virginia Governor Joe Manchin III appointed Senator Goodwin to the United States Senate to fill the vacancy caused by the passing of Senator Robert C. Byrd, where he served until a special election was held to fill the remainder of Senator Byrd's unexpired term.

From 2005 to 2009, Senator Goodwin served four years as General Counsel to Governor Manchin, during which time he also chaired the Governor's Advisory Committee on Judicial Nominations. In addition, Senator Goodwin chaired the West Virginia School Building Authority and served as a member of the State Consolidated Public Retirement Board. Following his return to private practice in 2009, Senator Goodwin was appointed to chair the Independent Commission on Judicial Reform, along with former Supreme Court Justice Sandra Day O'Connor, which was tasked with evaluating the need for broad systemic reform to West Virginia's judicial system.

Senator Goodwin also previously worked as a law clerk for the Honorable Robert B. King of the United States Court of Appeals for the Fourth Circuit. A native of Mt. Alto, West Virginia, Senator Goodwin received his Bachelor of Arts degree in Philosophy from Marietta College in Marietta, Ohio, in 1996 and received his Doctor of Law degree from the Emory University School of Law, graduating Order of the Coif in 1999.

Senator Goodwin currently resides in Charleston, West Virginia, with his wife, Rochelle; son, Wesley Patrick; and daughter, Anna Vail.

Daniel M. Slane

Daniel Slane was reappointed to the Commission by Speaker of the House John Boehner for a fourth two-year term expiring on December 31, 2015. Commissioner Slane served as the Commission's Chairman for the 2010 Report cycle and as Vice Chairman for the 2011 Report cycle.

Commissioner Slane served for two years on active duty as a U.S. Army Captain in Military Intelligence; in addition he served for a number of years as a Case Officer with the U.S. Central Intelligence Agency. Commissioner Slane worked in The White House during the Ford Administration.

In 1996, Commissioner Slane became a member of the board of trustees of The Ohio State University and was chairman from 2005 to 2006. The Ohio State University is the nation's largest university, with an annual budget of over \$4 billion. He is also the former chairman of University Hospital, a 1,000-bed regional hospital in Columbus, and the former chairman of the James Cancer Hospital, a National Cancer Institute Comprehensive Cancer Center. Commissioner Slane serves on the board of two financial institutions and a number of nonprofit organizations.

Commissioner Slane is the founder and co-owner of the Slane Company, whose principal business includes real estate development, lumber, and furniture. He has extensive international business experience, including operating a business in China. Prior to becoming a member of the Commission, Commissioner Slane manufactured plywood and related wood products at factories in Harbin, Dalian, and Balu (Pizhou), China. In 2007, he sold his interest in that company.

Commissioner Slane received a Bachelor of Science in Business Administration and a Juris Doctorate from The Ohio State University. He holds a Master's Degree in International Law from the Europa Institute at the University of Amsterdam in The Netherlands. Commissioner Slane is a member of the Ohio Bar and was formerly a partner in the law firm of Grieser, Schafer, Blumenstiel, and Slane.

The Honorable James M. Talent

Senator Jim Talent is a national security leader who specializes in issues related to the Department of Defense. He has been active in Missouri and national public policy for over 25 years.

Senator Talent's public service began in 1984, when at the age of 28 he was elected to the Missouri House of Representatives where he served eight years, the last four as the Republican leader in the Missouri House.

In 1992, he was elected to the first of four terms in the U.S. House of Representatives where he represented Missouri's Second Congressional District. During his eight years in the U.S. House of Representatives, Talent co-authored the historic welfare reform bill, championed national security issues on the House Armed Serv-

ices Committee, and enacted legislation to help revitalize distressed neighborhoods, both urban and rural. He was the Chairman of the House Small Business Committee from 1997–2001, where he worked on regulatory reform issues and on legislation to lower health care costs for small business people and their employees. Under Senator Talent’s leadership, the Small Business Committee became one of the most prolific and bi-partisan in the House of Representatives, passing numerous bills without a single dissenting vote.

In 2002, Missourians elected Talent to serve in the United States Senate where he worked with Republicans and Democrats to enact critical legislation for Missouri. He served on the Senate Armed Services, Energy and Natural Resources, and Agriculture Committees. Working with Oregon Democrat Ron Wyden, Senator Talent was successful in securing critical funding through construction bonding in the highway bill. He and Senator Dianne Feinstein (D–CA) succeeded in passing the most comprehensive anti-methamphetamine bill ever enacted into law. Senator Talent was a leader on energy issues and was instrumental in the passage of the renewable fuel standard.

After leaving the Senate in 2007, Senator Talent joined The Heritage Foundation as a Distinguished Fellow specializing in military affairs and conservative solutions to poverty. In 2008, he served as Vice Chairman of the Commission on Prevention of Weapons of Mass Destruction Proliferation and Terrorism. In 2010, he served on the independent panel that reviewed the Quadrennial Defense Review of the Department of Defense. He also served on the independent panel that reviewed the Quadrennial Defense Review of 2014. He also has been a member of the executive panel advising the Chief of Naval Operations. Senator Talent was the first national figure outside Massachusetts to endorse Governor Mitt Romney for president in 2007 and was Governor Romney’s senior policy advisor in both the 2008 and 2012 campaigns for president.

Senator Talent is an attorney. He earned his B.A. from Washington University in St. Louis and his J.D. from the University of Chicago Law School.

The Honorable Katherine C. Tobin, Ph.D.

Dr. Katherine Tobin was appointed to the U.S.-China Economic and Security Review Commission by Senate Majority Leader Harry Reid in December 2014 for a second two-year term expiring December 31, 2016. Dr. Tobin has fifteen years of experience as a business manager, market researcher and consultant in corporate America at institutions including Hewlett-Packard Corporation, IBM and Catalyst. She also has worked for fifteen years as a university faculty member and administrator.

In 2009, Dr. Tobin was appointed by President Obama as Deputy Assistant Secretary for Performance Improvement at the U.S. Department of Education. She focused on strengthening the Department’s capacity to work more effectively with its political and educational partners at the national, state and local levels.

In 2006, Dr. Tobin was appointed by President George W. Bush and served as a member of the Board of Governors of the U.S. Postal Service. Dr. Tobin provided strategic vision to the executive

team, helped direct and control expenditures, reviewed business practices, conducted long-range planning and set policies on all postal matters. She also chaired the Board's Audit and Finance Committee at a critical time, when, due to Congress's 2006 legislation, the U.S. Postal Service needed to strengthen its organizational and financial controls to become compliant by 2010 with the Sarbanes-Oxley Act.

During her years at Hewlett-Packard, Dr. Tobin worked in the Corporation's Computer Systems Division and the Systems Technology Division which were responsible for developing mini-computer systems purchased around the world for business, medical and scientific usage. Dr. Tobin worked closely with R&D and marketing teams early in the product development life cycle to insure that customer needs were clearly understood and translated into engineering and market specifications.

Working as a consultant with IBM's senior leaders, Dr. Tobin conducted research on the corporation's values across all its global operations, institutional brand awareness and preference, distribution channels management, and the creation of a new business plan for IBM's Global Financing business.

Dr. Tobin earned a Ph.D. and Master of Arts degree from Stanford University. She earned a Master of Arts degree in Teaching from the University of Massachusetts and a Bachelor of Arts in English from Skidmore College. Currently, she also serves as a member of the U.S. Postal Service's Citizens' Stamp Advisory Committee which recommends to the Postmaster General subjects reflecting America's values and achievements for portrayal on commemorative stamps.

Michael R. Wessel

Commissioner Michael R. Wessel, an original member of the U.S.-China Economic and Security Review Commission, was re-appointed by House Democratic Leader Nancy Pelosi for a eighth two-year term expiring on December 31, 2016.

Commissioner Wessel served on the staff of former House Democratic Leader Richard Gephardt for more than two decades, leaving his position as general counsel in March 1998. In addition, Commissioner Wessel was Congressman Gephardt's chief policy advisor, strategist, and negotiator. He was responsible for the development, coordination, management, and implementation of the Democratic leader's overall policy and political objectives, with specific responsibility for international trade, finance, economics, labor, and taxation.

During his more than 20 years on Capitol Hill, Commissioner Wessel served in a number of positions. As Congressman Gephardt's principal Ways and Means aide, he developed and implemented numerous tax and trade policy initiatives. He participated in the enactment of every major trade policy initiative from 1978 until his departure in 1998. In the late 1980s, he was the executive director of the House Trade and Competitiveness Task Force, where he was responsible for the Democrats' trade and competitiveness agenda as well as overall coordination of the Omnibus Trade and Competitiveness Act of 1988.

Commissioner Wessel was intimately involved in the development of comprehensive tax reform legislation in the early 1980s and every major tax bill during his tenure. Beginning in 1989, he became the principal advisor to the Democratic leadership on economic policy matters and served as tax policy coordinator to the 1990 budget summit. In 1995, he developed the Ten Percent Tax Plan, a comprehensive tax reform initiative that would enable roughly four out of five taxpayers to pay no more than a ten percent rate in federal income taxes, the principal Democratic tax reform alternative.

In 1988, he served as national issues director for Congressman Gephardt's presidential campaign. During the 1992 presidential campaign, he assisted the Clinton presidential campaign on a broad range of issues and served as a senior policy advisor to the Clinton Transition Office. In 2004, he was a senior policy advisor to the Gephardt for President Campaign and later co-chaired the Trade Policy Group for the Kerry presidential campaign. In 2008, he was publicly identified as a trade and economic policy advisor to the Obama presidential campaign.

He has coauthored a number of articles with Congressman Gephardt and a book, *An Even Better Place: America in the 21st Century*. Commissioner Wessel served as a member of the U.S. Trade Deficit Review Commission in 1999–2000, a congressionally created commission charged with studying the nature, causes, and consequences of the U.S. merchandise trade and current account deficits.

Today, Commissioner Wessel is President of The Wessel Group Incorporated, a public affairs consulting firm offering expertise in government, politics, and international affairs. He was formerly the Executive Vice President at the Downey McGrath Group, Incorporated. Commissioner Wessel holds a Bachelor of Arts and a Juris Doctorate from The George Washington University. He is a member of the Bars of the District of Columbia and of Pennsylvania and is a member of the Council on Foreign Relations. He and his wife Andrea have four children.

Larry M. Wortzel, Ph.D.

Larry Wortzel was reappointed by Speaker of the House John Boehner for a term expiring on December 31, 2016. He was the Commission's Chairman for the 2006 and 2008 Report cycles. A leading authority on China, Asia, and national security, Commissioner Wortzel had a distinguished thirty-two-year career in the U.S. Armed Forces. After three years as an infantryman in the U.S. Marine Corps, Commissioner Wortzel enlisted in the U.S. Army in 1970. His first assignment with the Army Security Agency took him to Thailand, where as a signals intelligence collector he focused on Chinese military communications in Vietnam and Laos. Within three years, he had graduated from the Infantry Officer Candidate School and the Airborne and Ranger schools.

After four years as an infantry officer in the 29th and 9th Infantry Regiments, Commissioner Wortzel shifted to military intelligence. Commissioner Wortzel traveled regularly throughout Asia while serving in the U.S. Pacific Command's intelligence center from 1978 to 1982. The following year, he attended the National

University of Singapore, where he studied advanced Chinese and traveled in China and Southeast Asia. He next worked for the Under Secretary of Defense for Policy, developing counterintelligence programs to protect emerging defense technologies from foreign espionage. Also, the Commissioner was active in programs to gather foreign intelligence for the Army Intelligence and Security Command.

From 1988 to 1990, Commissioner Wortzel was the Assistant Army Attaché at the U.S. Embassy in Beijing, China. After assignments on the Department of the Army staff, he returned to China in 1995 as the army attaché. In these assignments he represented U.S. defense interests in China and traveled around the country observing and reporting on military and political events for the U.S. government.

In December 1997, Commissioner Wortzel joined the faculty of the U.S. Army War College as Director of the Strategic Studies Institute. Concurrently he was professor of Asian studies. He retired from the U.S. Army as a colonel at the end of 1999. After retirement, Commissioner Wortzel continued to be active in defense and Asia-related policy matters. He was director of the Asian Studies Center at The Heritage Foundation and also vice president for foreign policy and defense studies at Heritage.

Commissioner Wortzel has written or edited ten books on China, including *Class in China: Stratification in a Classless Society*; *China's Military Modernization: International Implications*; *Dictionary of Contemporary Chinese Military History*; and *The Dragon Extends its Reach: Chinese Military Power Goes Global*.

A graduate of the U.S. Army War College, Commissioner Wortzel earned his Doctor of Philosophy degree from the University of Hawaii-Manoa. He and his wife live in Williamsburg, Virginia.

Michael R. Danis, Executive Director

Formerly served as a senior intelligence officer with the Defense Intelligence Agency. Mr. Danis managed the agency's technology transfer division; the U.S. government's sole analytical entity tasked with producing intelligence assessments regarding all aspects of foreign acquisition of U.S. controlled technology and high-tech corporations. He also established and led a unique team of China technology specialists producing assessments on China's military-industrial complex, and the impact of U.S. export-controlled and other foreign technology on Chinese weapons development programs. While serving in the U.S. Air Force, Mr. Danis was twice temporarily assigned to the office of the defense attaché in Beijing.

APPENDIX III

PUBLIC HEARINGS OF THE COMMISSION

Full transcripts and written testimonies are available online at the Commission's website: www.uscc.gov.

**January 28, 2015: Public Hearing on “The Foreign Investment Climate in China: Present Challenges and Potential for Reform”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman (Hearing Co-Chair); Hon. Dennis C. Shea, Vice Chairman; Carolyn Bartholomew; Jeffrey L. Fiedler; Hon. Carte P. Goodwin; Daniel M. Slane (Hearing Co-Chair); Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel.

Witnesses: Maureen K. Ohlhausen, Federal Trade Commission; Mark A. Cohen, U.S. Patent and Trademark Office; Oded Shenkar,* The Ohio State University; Robert D. Atkinson, Information Technology and Innovation Foundation; Dan Harris, Harris Moure; Abbott Lipsky, Jr., Latham & Watkins; Elizabeth Xiao-Ru Wang, Charles River Associates; William Kovacic, George Washington University Law School; Lucille Barale, Georgetown University School of Law; Joshua Eisenman, University of Texas at Austin; Scott Kennedy, Center for Strategic and International Studies.

**February 18, 2015: Public Hearing on “China’s Space and Counterspace Programs”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman; Carolyn Bartholomew; Jeffrey L. Fielder (Hearing Co-Chair); Hon. Carte P. Goodwin; Daniel M. Slane; Hon. James M. Talent (Hearing Co-Chair), Hon. Katherine C. Tobin, Michael R. Wessel.

Witnesses: Kevin Pollpeter, University of California, San Diego; Joan Johnson-Freese, U.S. Naval War College; Dean Cheng, The Heritage Foundation; Alanna Krolikowski, Harvard University; Tate Nurkin, Jane’s IHS Aerospace, Defense and Security; Mark Stokes, Project 2049 Institute; Richard D. Fisher, Jr., International Assessment and Strategy Center; Roger Handberg, University of Central Florida; Phillip Saunders, National Defense University.

**March 18, 2015: Public Hearing on “Looking West: China and Central Asia”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman (Hearing Co-Chair); Carolyn Bartholomew; Jeffrey L. Fiedler; Hon. Carte P. Goodwin; Daniel M. Slane; Hon. James M. Talent; Hon. Katherine C. Tobin (Hearing Co-Chair); Michael R. Wessel.

Witnesses: Marlene Laruelle, George Washington University; S. Frederick Starr, Johns Hopkins University School of Advanced International Studies; Raffaello Pantucci, Royal United Services Institute for Defence and Security Studies; Alexander Cooley, Columbia University; Sebastien Peyrouse, George Washington University; Erica Downs, Eurasia Group; Michael Clarke, Griffith University; Niklas Swanström, Institute for Security and Development Policy; Andrew Small, German Marshall Fund of the United States.

**April 1, 2015: Public Hearing on “China’s Offensive Missile Forces”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman (Hearing Co-Chair); Carolyn Bartholomew; Jeffrey L. Fiedler; Hon. James M. Talent; Hon. Katherine C. Tobin (Hearing Co-Chair).

Witnesses: Mark Stokes, Project 2049 Institute; Toshi Yoshihara, U.S. Naval War College; Dennis Gormley, University of Pittsburgh; Christopher Twomey, U.S. Naval Postgraduate School; Christopher Yeaw, Louisiana Tech Research Institute; James Acton, Carnegie Endowment for International Peace; Robert Haddick, U.S. Special Operations Command–Joint Special Operations University; Evan Montgomery, Center for Strategic and Budgetary Assessments; Elbridge Colby, Center for a New American Security.

**April 22, 2015: Public Hearing on “China Ahead of the 13th Five-Year Plan: Competitiveness and Market Reform”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman; Carolyn Bartholomew, Robin Cleveland (Hearing Co-Chair); Hon. Carte P. Goodwin; Daniel M. Slane; Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel (Hearing Co-Chair).

Witnesses: Stephen Roach, Yale University; Nicholas Consonery, Eurasia Group; Oliver K. Melton, U.S. Department of State; Gary H. Jefferson, Brandeis University; Xiaolan Fu, University of Oxford; Ernest Preeg, Manufacturers Alliance for Productivity and Innovation; David Frey, KPMG China; Eswar S. Prasad, Cornell University; Dali Yang, University of Chicago.

**May 13, 2015: Public Hearing on “China’s Relations with Southeast Asia”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman; Carolyn Bartholomew (Hearing Co-Chair); Jeffrey L. Fiedler; Hon. Carte P. Goodwin; Daniel M. Slane (Hearing Co-Chair); Hon. James M. Talent; Hon. Katherine C. Tobin; Michael R. Wessel.

Witnesses: Bonnie Glaser, Center for Strategic and International Studies; Mira Rapp Hooper, Center for Strategic and International Studies; Patrick Cronin, Center for a New American Security; Chin-Hao Huang,* Yale-NUS College; Peter Chalk,* RAND Corporation; Robert Sutter, George Washington University; Meredith Miller, National Bureau of Asian Research; David Dapice, Harvard University; Priscilla Clapp, U.S. Institute of Peace and the Asia Society; Pek Koon Heng, American University; Murray Hiebert, Center for Strategic and International Studies.

**June 15, 2015: Public Hearing on “Commercial Cyber Espionage and Barriers to Digital Trade in China”
Washington, DC**

Commissioners present: Hon. William A. Reinsch, Chairman; Hon. Dennis C. Shea, Vice Chairman (Hearing Co-Chair); Jeffrey L. Fiedler; Hon. Carte P. Goodwin (Hearing Co-Chair); Daniel M. Slane; Hon. Katherine C. Tobin; Michael R. Wessel.

Witnesses: Matthew Schruers, Computer & Communications Industry Association; Samm Sacks, Eurasia Group; Paul M. Tiao, Hunton & Williams; Dennis F. Poindexter, author; Jen Weedon, FireEye and Mandiant, Inc.

*Submitted material for the record.

APPENDIX IIIA
LIST OF WITNESSES TESTIFYING BEFORE
THE COMMISSION
2015 Hearings

Full transcripts and written testimonies are available online at the Commission's website: www.uscc.gov .

Alphabetical Listing of Panelists Testifying before the Commission

Panelist Name	Panelist Affiliation	Commission Hearing
Acton, James	Carnegie Endowment for International Peace	April 1, 2015
Atkinson, Robert D.	Information Technology and Innovation Foundation	January 28, 2015
Barale, Lucille	Georgetown University School of Law	January 28, 2015
Chalk, Peter *	RAND Corporation	May 13, 2015
Cheng, Dean	The Heritage Foundation	February 18, 2015
Clapp, Priscilla	U.S. Institute of Peace and the Asia Society	May 13, 2015
Clarke, Michael	Griffith University	March 18, 2015
Cohen, Mark A.	U.S. Patent and Trademark Office	January 28, 2015
Colby, Elbridge	Center for a New American Security	April 1, 2015
Consonery, Nicholas	Eurasia Group	April 22, 2015
Cooley, Alexander	Columbia University	March 18, 2015
Cronin, Patrick	Center for a New American Security	May 13, 2015
Dapice, David	Harvard University	May 13, 2015
Downs, Erica	Eurasia Group	March 18, 2015
Eisenman, Joshua	University of Texas at Austin	January 28, 2015

**Alphabetical Listing of Panelists Testifying before the
Commission—Continued**

Panelist Name	Panelist Affiliation	Commission Hearing
Fisher Jr., Richard D.	International Assessment and Strategy Center	February 18, 2015
Frey, David	KPMG China	April 22, 2015
Fu, Xiaolan	University of Oxford	April 22, 2015
Glaser, Bonnie	Center for Strategic and International Studies	May 13, 2015
Gormley, Dennis	University of Pittsburgh	April 1, 2015
Haddick, Robert	U.S. Special Operations Command—Joint Special Operations University	April 1, 2015
Handberg, Roger	University of Central Florida	February 18, 2015
Harris, Dan	Harris Moure	January 28, 2015
Heng, Pek Koon	American University	May 13, 2015
Hiebert, Murray	Center for Strategic and International Studies	May 13, 2015
Huang, Chin-Hao *	Yale-NUS College	May 13, 2015
Jefferson, Gary H.	Brandeis University	April 22, 2015
Johnson-Freese, Joan	U.S. Naval War College	February 18, 2015
Kennedy, Scott	Center for Strategic and International Studies	January 28, 2015
Kovacic, William	George Washington University Law School	January 28, 2015
Krolikowski, Alanna	Harvard University	February 18, 2015
Laruelle, Marlene	George Washington University	March 18, 2015
Lipsky Jr., Abbott	Latham & Watkins	January 28, 2015
Melton, Oliver K.	U.S. Department of State	April 22, 2015
Miller, Meredith	National Bureau of Asian Research	May 13, 2015
Montgomery, Evan	Center for Strategic and Budgetary Assessments	April 1, 2015
Nurkin, Tate	Jane's IHS Aerospace, Defense and Security	February 18, 2015
Ohlhausen, Maureen K.	Federal Trade Commission	January 28, 2015
Pantucci, Raffaello	Royal United Services Institute for Defence and Security Studies	March 18, 2015
Peyrouse, Sebastien	George Washington University	March 18, 2015

**Alphabetical Listing of Panelists Testifying before the
Commission—Continued**

Panelist Name	Panelist Affiliation	Commission Hearing
Poindexter, Dennis F.	author	June 15, 2015
Pollpeter, Kevin	University of California, San Diego	February 18, 2015
Prasad, Eswar S.	Cornell University	April 22, 2015
Preeg, Ernest	Manufacturers Alliance for Productivity and Innovation	April 22, 2015
Rapp Hooper, Mira	Center for Strategic and International Studies	May 13, 2015
Roach, Stephen	Yale University	April 22, 2015
Sacks, Samm	Eurasia Group	June 15, 2015
Saunders, Phillip	National Defense University	February 18, 2015
Schruers, Matthew	Computer & Communications Industry Association	June 15, 2015
Shenkar, Oded *	The Ohio State University	January 28, 2015
Small, Andrew	German Marshall Fund of the United States	March 18, 2015
Starr, S. Frederick	Johns Hopkins University School of Advanced International Studies	March 18, 2015
Stokes, Mark	Project 2049 Institute	February 18, 2015 April 1, 2015
Sutter, Robert	George Washington University	May 13, 2015
Swanström, Niklas	Institute for Security and Development Policy	March 18, 2015
Tiao, Paul M.	Hunton & Williams	June 15, 2015
Twomey, Christopher	U.S. Naval Postgraduate School	April 1, 2015
Wang, Elizabeth Xiao-Ru	Charles River Associates	January 28, 2015
Weedon, Jen	FireEye and Mandiant, Inc.	June 15, 2015
Yang, Dali	University of Chicago	April 22, 2015
Yeaw, Christopher	Louisiana Tech Research Institute	April 1, 2015
Yoshihara, Toshi	U.S. Naval War College	April 1, 2015

*Submitted material for the record.

**APPENDIX IV
INTERLOCUTORS' ORGANIZATIONS**

**Asia Fact-Finding Trip
July 2015**

**CHINA, KAZAKHSTAN, UZBEKISTAN, VIETNAM, AND
HONG KONG, JULY 2015**

During the visit of Commission delegations to China, Kazakhstan, Uzbekistan, Vietnam, and Hong Kong in July 2015, the delegations met with representatives of the following organizations:

In China

U.S. Government

- U.S. Embassy in Beijing
- U.S. Information Technology Office

Government of the People's Republic of China

- Academy of Military Sciences
- Chinese People's Institute of Foreign Affairs
- Ministry of Commerce
- National Development and Reform Commission of Xinjiang
- Xinjiang Foreign Affairs Office
- Xinjiang Provincial Government

Business Representatives

- American Chamber of Commerce in China
- China Great Wall Industrial Corporation
- Sinopec

Research Organizations

- China Center for International Economic Exchanges
- Chinese Academy of Social Sciences
- Institute of Central Asia, Xinjiang Academy of Social Sciences

In Kazakhstan

U.S. Government

- U.S. Embassy in Astana
- United States Agency for International Development

Government of the Republic of Kazakhstan

- Ministry of Energy
- Ministry of Foreign Affairs
- Ministry of Investment and Development
- Presidential Library

Government of the People's Republic of China

- Chinese Embassy in Astana

Business Representatives

- Bank of China
- Citibank Kazakhstan
- KazAtomProm
- PricewaterhouseCoopers Kazakhstan

Research Organizations

- Al-Farabi University

In Uzbekistan**U.S. Government**

- U.S. Embassy in Tashkent

Government of the Republic of Uzbekistan

- Institute for Strategic and Regional Studies
- Ministry of Foreign Affairs
- Ministry of Foreign Economic Relations, Investment, and Trade

Business Representatives

- American Chamber of Commerce in Uzbekistan
- Avialeasing Aviation
- BNZ Industrial Support
- Carlsberg Uzbekistan
- GM Powertrain Uzbekistan
- Uzbeknergo

In Vietnam**U.S. Government**

- U.S. Embassy in Hanoi

Government of Vietnam

- Central Committee of the Communist Party of Vietnam
- Ministry of Defense
- Ministry of Foreign Affairs
- Ministry of Public Security
- National Assembly
- National Border Commission

International Organizations

- World Bank

Nongovernmental Organizations

- Respect Vietnam

Private Citizens

- Labor scholar

Research Organizations

- Diplomatic Academy of Vietnam
- Vietnam Academy of Social Sciences

In Hong Kong**U.S. Government**

- U.S. Consulate in Hong Kong

Government of Hong Kong

- Financial Services and the Treasury Bureau
- Legislative Council members

Business Representatives

- American Chamber of Commerce in Hong Kong
- Citi Research

Nongovernmental Organizations

- Hong Kong Federation of Students
- Hong Kong Journalists Association
- Various human rights organizations

Private Citizens

- Retired Hong Kong administration official
- Retired Democratic Party legislator
- U.S. journalist

APPENDIX V
LIST OF RESEARCH MATERIAL
Contracted and Staff Research Reports
Released in Support of the 2015 Annual Report

Disclaimer

The reports in this section were prepared at the request of the Commission to support its deliberations. They have been posted to the Commission's website in order to promote greater public understanding of the issues addressed by the Commission in its ongoing assessment of U.S.-China economic relations and their implications for U.S. security, as mandated by P.L. 106-398, P.L. 108-7, P.L. 109-108, P.L. 110-161, and P.L. 113-291. The posting of these reports to the Commission's website does not imply an endorsement by the Commission or any individual Commissioner of the views or conclusions expressed therein.

Contracted Reports

China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States

Prepared for the Commission by Kevin Pollpeter, Eric Anderson, Jordan Wilson, and Fan Yang
University of California, Institute on Global Conflict and Cooperation
March 2015

http://origin.www.uscc.gov/sites/default/files/Research/China%20Dream%20Space%20Dream_Report.pdf

China's Incomplete Military Transformation: Assessing the Weaknesses of the People's Liberation Army (PLA)

Prepared for the Commission by Michael S. Chase, Jeffrey Engstrom, Tai Ming Cheung, Kristen A. Gunness, Scott Warren Harold, Susan Puska, and Samuel K. Berkowitz

RAND Corporation
February 2015

http://origin.www.uscc.gov/sites/default/files/Research/China%27s%20Incomplete%20Military%20Transformation_2.11.15.pdf

Staff Research Reports, Issue Briefs, and Backgrounders

China's New YJ-18 Antiship Cruise Missile: Capabilities and Implications for U.S. Forces in the Western Pacific

Written by Research Fellow Michael Pilger
October 2015

<http://origin.www.uscc.gov/sites/default/files/Research/China%E2%80%99s%20New%20YJ-18%20Antiship%20Cruise%20Missile.pdf>

***Directed by Hollywood, Edited by China: How China's
Censorship and Influence Affect Films Worldwide***

Written by Research Fellows Sean O'Connor and Nicholas Armstrong
October 2015

<http://origin.www.uscc.gov/sites/default/files/Research/Directed%20by%20Hollywood%20Edited%20by%20China.pdf>

October Monthly Trade Bulletin

Written by Economics and Trade Staff
October 2015

<http://origin.www.uscc.gov/sites/default/files/Research/October%20Trade%20Bulletin%202015.pdf>

September Monthly Trade Bulletin

Written by Economics and Trade Staff
September 2015

<http://origin.www.uscc.gov/sites/default/files/Research/September%20Trade%20Bulletin%202015.pdf>

August Monthly Trade Bulletin

Written by Economics and Trade Staff
August 2015

<http://origin.www.uscc.gov/sites/default/files/Research/August%20Trade%20Bulletin%202015.pdf>

***Taiwan's Global Fisheries Modestly Advance its
"International Space"***

Written by Policy Analysts Kimberly Hsu and Matthew Southerland
July 2015

<http://origin.www.uscc.gov/sites/default/files/Research/Taiwan%20Fisheries.pdf>

China's Stock Market Collapse and Government's Response

Written by Senior Policy Analyst Nargiza Salidjanova
July 2015

<http://origin.www.uscc.gov/sites/default/files/Research/China%E2%80%99s%20Stock%20Market%20Collapse%20and%20Government%E2%80%99s%20Response.pdf>

July Monthly Trade Bulletin

Written by Economics and Trade Staff
July 2015

<http://origin.www.uscc.gov/sites/default/files/Research/July%202015%20Bulletin.pdf>

***Naming and Shaming: U.S. Surveillance over China's Land
Reclamation Projects and Regional Reactions***

Written by Senior Policy Analyst Caitlin Campbell
June 2015

http://origin.www.uscc.gov/sites/default/files/Research/June%202015%20Shaming_Issue%20Brief_6.10.15_0.pdf

June Monthly Trade Bulletin

Written by Economics and Trade Staff

June 2015

<http://origin.www.uscc.gov/sites/default/files/Research/July%202015%20bulletin.pdf>**Highlights from China's New Defense White Paper, "China's Military Strategy"**

Written by Senior Policy Analyst Caitlin Campbell

June 2015

http://origin.www.uscc.gov/sites/default/files/Research/Issue%20Brief_Highlights%20from%20Chinas%20New%20Defense%20White%20Paper_Campbell_6.1.15.pdf**China's Trade Ambitions: Strategy and Objectives behind China's Pursuit of Free Trade Agreements**

Written by Senior Policy Analyst Nargiza Salidjanova

May 2015

<http://origin.www.uscc.gov/sites/default/files/Research/China%27s%20Trade%20Ambitions%20-%2005.28%2015.pdf>**China's Great Legal Firewall: Extraterritoriality of Chinese Firms in the United States**

Written by Senior Policy Analyst Kevin Rosier

May 2015

http://origin.www.uscc.gov/sites/default/files/Research/Extraterritoriality%20of%20Chinese%20Firms_Research%20Report_0.pdf**May Monthly Trade Bulletin**

Written by Economics and Trade Staff

May 2015

http://origin.www.uscc.gov/sites/default/files/Research/May%202015%20bulletin%20-%2006.2.15_updated.pdf**April Monthly Trade Bulletin**

Written by Economics and Trade Staff

April 2015

http://origin.www.uscc.gov/sites/default/files/Research/April%202015%20Bulletin_0.pdf**U.S. Allies Split with Washington, Bank of China**

Written by Research Fellow Sabrina Snell

March 2015

http://origin.www.uscc.gov/sites/default/files/Research/Asian%20Infrastructure%20Investment%20Bank_Issue%20Brief.pdf**Chinese Media Digest, Vol. 2, No. 4**

Prepared by Staff

March 2015

http://origin.www.uscc.gov/sites/default/files/Research/CMD_Vol%202_No%204_3%2027%2015_final.pdf

Diminishing China-North Korea Exchanges: An Assessment

Written by Research Intern Michael Pilger and
Senior Policy Analyst Caitlin Campbell

March 2015

http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Research%20Report_Diminishing%20China-North%20Korea%20Exchanges%20-%20An%20Assessment.pdf

China's Economic Ties with ASEAN: A Country-by-Country Analysis

Written by Senior Policy Analyst Nargiza Salidjanova,
Policy Analyst Iacob Koch-Weser, and
Research Intern Jason Klanderman

March 2015

<http://origin.www.uscc.gov/sites/default/files/Research/China%27s%20Economic%20Ties%20with%20ASEAN.pdf>

China's Wind and Solar Sectors: Trends in Deployment, Manufacturing, and Energy Policy

Written by Policy Analysts Iacob Koch-Weser and Ethan Meick
March 2015

http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Report_China%27s%20Wind%20and%20Solar%20Sectors.pdf

March Monthly Trade Bulletin

Written by Economics and Trade Staff
March 2015

http://origin.www.uscc.gov/sites/default/files/Research/March%202015%20Trade%20Bulletin_0.pdf

Chinese Media Digest, Issue No. 6

Prepared by Staff
February 2015

http://origin.www.uscc.gov/sites/default/files/Research/CMD6_2%2027%2015.pdf

Chinese Investment in the United States: Recent Trends in Real Estate, Industry, and Investment Promotion

Written by Policy Analyst Iacob Koch-Weser and
Research Intern Garland Ditz

February 2015

http://origin.www.uscc.gov/sites/default/files/Research/Ch%20inv%20paper_2%2026%2015.pdf

Chinese Media Digest, Issue No. 5

Prepared by Staff
February 2015

http://origin.www.uscc.gov/sites/default/files/Research/Chinese%20Media%20Digest_No5.pdf

February Monthly Trade Bulletin

Written by Economics and Trade Staff
February 2015

<http://origin.www.uscc.gov/sites/default/files/Research/February%202015%20bulletin%20FINAL%20-%202%205%2015%20FINAL.pdf>

Taiwan's Improving Patrol Fleet Could Enhance its Ability to Defend against a Chinese Invasion

Written by Research Intern Michael Pilger
February 2015

http://origin.www.uscc.gov/sites/default/files/Research/Taiwan%20Improving%20Patrol%20Fleet_Staff%20Report_0.pdf

Chinese Media Digest, Issue No. 4

Prepared by Staff
January 2015

http://origin.www.uscc.gov/sites/default/files/Research/Chinese%20Media%20Digest_No4_0.pdf

China's Position on the Sony Attack: Implications for the U.S. Response

Written by Research Fellow Jordan Wilson
January 2015

http://origin.www.uscc.gov/sites/default/files/Research/China%27s%20Position%20on%20the%20Sony%20Attack_0.pdf

January Monthly Trade Bulletin

Written by Economics and Trade Staff
January 2015

<http://origin.www.uscc.gov/sites/default/files/Research/January%202015%20Trade%20Bulletin.pdf>

Taiwan's 2014 Local Elections: Implications for Cross-Strait Relations

Written by Policy Analysts Matthew Southerland and Kevin Rosier
December 2014

http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Report_Taiwan%27s%20Local%20Elections-Implications%20for%20Cross-Strait%20Relations%20_12%2030%202014.pdf

China-India Relations: Tension Persist Despite Growing Cooperation

Written by Policy Analysts Matthew Southerland and Jacob Koch-Weser and Research Intern Angela Zhang
December 2014

http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Report_China-India%20Relations-Tensions%20Persist%20Despite%20Growing%20Cooperation_12%2022%202014.pdf

Chinese Media Digest, Issue No. 3

Prepared by Staff
December 2014

http://origin.www.uscc.gov/sites/default/files/Research/Chinese%20Media%20Digest_No3.pdf

China's First Airstrip in the Spratly Islands Likely at Fiery Cross Reef

Written by Policy Analyst Ethan Meick
December 2014

http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Report_China%27s%20First%20Airstrip%20in%20the%20Spratly%20Islands%20Likely%20at%20Fiery%20Cross%20Reef_12%2018%2014.pdf

December Monthly Trade Bulletin

Written by Economics and Trade Staff
December 2014

<http://origin.www.uscc.gov/sites/default/files/Research/December%202014%20bulletin.pdf>

Chinese Media Digest, Issue No. 2

Prepared by Staff
December 2014

http://origin.www.uscc.gov/sites/default/files/Research/Chinese%20media%20digest_Dec4.pdf

First Modern Tanker Observed at Chinese Airbase

Written by Research Intern Michael Pilger
November 2014

http://origin.www.uscc.gov/sites/default/files/Research/StaffBulletin_First%20Modern%20Tanker%20Observed%20at%20Chinese%20Airbase_0.pdf

China's Airspace Management Challenge

Written by Policy Analyst Kimberly Hsu
November 2014

<http://origin.www.uscc.gov/sites/default/files/Research/China%27s%20Airspace%20Management%20Challenge.pdf>

Chinese Media Digest, Issue No. 1

Prepared by Staff
November 2014

http://origin.www.uscc.gov/sites/default/files/Research/Ch%20media%20digest_November%202014.pdf

November Monthly Trade Bulletin

Written by Economics and Trade Staff
November 2014

http://origin.www.uscc.gov/sites/default/files/Research/November%202014%20Trade%20bulletin_0.pdf

APPENDIX VI

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
ADIZ	air defense identification zone
AIIB	Asian Infrastructure Investment Bank
AIP	air-independent propulsion
AmCham	American Chamber of Commerce
AML	Anti-Monopoly Law (China)
APSCO	Asia Pacific Space Cooperation Organization
APT	advanced persistent threat
ASBM	antiship ballistic missile
ASCM	antiship cruise missile
ASEAN	Association of Southeast Asian Nations
ATP	advanced technology products
BEA	U.S. Bureau of Economic Analysis
BIT	bilateral investment treaty
BRICS	Brazil, Russia, India, China, and South Africa
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CASC	China Aerospace Science and Technology Corporation
CASIC	China Aerospace Science and Industry Corporation
CBRC	China Banking Regulatory Commission
CCG	China Coast Guard
CCP	Chinese Communist Party
CDB	China Development Bank
CLTC	China Satellite Launch and Tracking Control General
CNSA	China National Space Administration
CSFC	China Securities Finance Corporation
CSIS	Center for Strategic and International Studies
CSRC	China Securities Regulatory Commission
CSSTA	Cross-Strait Services Trade Agreement
DDoS	distributed denial of service
DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DPP	Democratic Progressive Party (Taiwan)
DRC	development and reform commission
EAR	U.S. Export Administration Regulations
ECFA	Economic Cooperation Framework Agreement
EEZ	exclusive economic zone
ELINT	electronic intelligence
EO	electro-optical
EU	European Union
FBI	U.S. Federal Bureau of Investigation

FDI	foreign direct investment
FIE	foreign-invested entity
FIL	foreign investment law
FRAND	fair, reasonable, and non-discriminatory
FTA	free trade agreement
	free trade area
FTC	U.S. Federal Trade Commission
FTZ	free trade zone
FYP	Five-Year Plan
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GLONASS	Global Navigation Satellite System (Russia)
GPS	Global Positioning System
HA/DR	humanitarian assistance/disaster relief
HKJA	Hong Kong Journalists Association
HKU	University of Hong Kong
ICBM	intercontinental ballistic missile
ICT	information and communication technology
IMF	International Monetary Fund
INF	Intermediate Range Nuclear Forces
IP	intellectual property
IPR	intellectual property rights
IRBM	intermediate-range ballistic missile
ISIL/ISIS	Islamic State in Iraq and the Levant/Islamic State in Iraq and Syria
ISR	intelligence, surveillance, and reconnaissance
IT	information technology
ITA	Information Technology Agreement
	International Trade Administration
ITAR	U.S. International Traffic in Arms Regulations
JCCT	Joint Commission on Commerce and Trade
JV	joint venture
km	kilometer
KMT	Kuomintang (Taiwan)
LACM	land-attack cruise missile
LegCo	Legislative Council (Hong Kong)
LGFV	local government financing vehicle
LM	Long March
LMI	Lower Mekong Initiative
M&A	mergers and acquisitions
MAC	Mainland Affairs Council
MaRV	maneuverable reentry vehicle
MERICs	Mercator Institute for China Studies
mi	mile
MIRV	multiple independently-targetable reentry vehicle
MND	Ministry of National Defense (Taiwan)
MOFCOM	Ministry of Commerce (China)
MOST	Ministry of Science and Technology (China)
MOU	memorandum of understanding
MRBM	medium-range ballistic missile
NASA	U.S. National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NDB	New Development Bank (China)
NDRC	National Development and Reform Commission

NEO	noncombatant evacuation operation
NEV	new energy vehicle
nm	nautical mile
NOAA	U.S. National Oceanic and Atmospheric Administration
NPC	National People's Congress (China)
NSA	U.S. National Security Agency
ODA	official development assistance
OECD	Organization for Economic Co-operation and Development
OPM	U.S. Office of Personnel Management
OSTP	U.S. Office of Science and Technology Policy
PBOC	People's Bank of China
PLA	People's Liberation Army
PMI	Purchasing Managers' Index
PNT	positioning, navigation, and timing
PRC	People's Republic of China
QDII	Qualified Domestic Institutional Investor
QFII	Qualified Foreign Institutional Investor
R&D	research and development
RATS	Regional Anti-Terrorist Structure
RCEP	Regional Comprehensive Economic Partnership
RIMPAC	Rim of the Pacific
RMB	renminbi
ROA	return on assets
RRR	reserve requirement ratio
RWB	Reporters without Borders
S&ED	Strategic and Economic Dialogue
S&T	science and technology
SAIC	State Administration for Industry and Commerce (China)
SAR	synthetic aperture radar
SASTIND	State Administration of Science, Technology, and Industry for National Defense
SCO	Shanghai Cooperation Organization
SDR	Special Drawing Rights
SEC	U.S. Securities and Exchange Commission
SEHK	Stock Exchange of Hong Kong
SEP	standard essential patent
SLBM	submarine-launched ballistic missile
SME	small- and medium-sized enterprises
SOE	state-owned enterprise
SRBM	short-range ballistic missile
SSBN	nuclear-powered ballistic missile submarine
TIFA	Trade and Investment Framework Agreement
TPP	Trans-Pacific Partnership
UAV	unmanned aerial vehicle
UNCLOS	UN Convention on the Law of the Sea
USCBC	U.S. China Business Council
USD	U.S. dollar
USTR	Office of the U.S. Trade Representative
VAT	value-added tax
VIE	variable interest entity
WTO	World Trade Organization

2015 COMMISSION STAFF

MICHAEL R. DANIS, *Executive Director*

KRISTIEN T. BERGERSON, *Senior Policy Analyst, Security and Foreign Affairs*
 RICKISHA C. BERRIEN-LOPEZ, *Human Resources and Administrative Specialist*
 CAITLIN E. CAMPBELL, *Supervisory Senior Policy Analyst, Security and Foreign Affairs*
 ANTHONY J. DEMARINO, *Congressional Liaison and Communications Director*
 CHRISTOPHER P. FIORAVANTE, *Management Analyst*
 LAUREN E. GLOUDEMAM, *Policy Analyst, Economics and Trade*
 KATHERINE E. KOLESKI, *Research Director and Policy Analyst, Economics and Trade*
 ETHAN S. MEICK, *Policy Analyst, Security and Foreign Affairs*
 KEVIN J. ROSIER, *Senior Policy Analyst, Economics and Trade*
 NARGIZA S. SALIDJANOVA, *Supervisory Senior Policy Analyst, Economics and Trade*
 MATTHEW SNYDER, *Policy Analyst, Economics and Trade*
 MATTHEW O. SOUTHERLAND, *Policy Analyst, Security and Foreign Affairs*
 KATHLEEN WILSON, *Finance and Operations Director*

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