October 25, 2017

Office of the United States Trade Representative
600 17th Street NW
Washington, DC 20508


Dear Sir or Madam:

The Information Technology and Innovation Foundation (ITIF) is pleased to submit a filing in response to the Federal Register Notice requesting public comments pursuant to Docket No. USTR-2017-0016, the Section 301 investigation and hearing regarding China’s Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation.

ITIF is a nonprofit, non-partisan public policy think tank committed to articulating and advancing a pro-productivity, pro-innovation, and pro-technology public policy agenda that spurs growth, prosperity, and progress. ITIF frequently engages with technology companies and policymakers from China and around the world and has done extensive research and analysis of public policy and technological innovation issues in China. ITIF is based in Washington, DC.

Sincerely,

Stephen Ezell
Vice President, Global Innovation Policy, The Information Technology and Innovation Foundation
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INTRODUCTION/CONTEXTUALIZATION OF CHINESE ECONOMIC AND TRADE POLICIES

As ITIF has written in numerous reports and testimony—including “Testimony Before the U.S. House Foreign Affairs Subcommittee on China’s Threat to U.S. Advanced Industries” (April 2017), “Stopping China’s Mercantilism: A Doctrine of Constructive, Alliance-Backed Confrontation” (March 2017), “Testimony Before the U.S.-China Economic and Security Review Commission on Chinese Foreign Direct Investment” (January 2017), “False Promises: The Yawning Gap Between China’s WTO Commitments and Practices” (September 2015), and “Enough is Enough: Confronting Chinese Innovation Mercantilism” (February 2012)—for too long, China has systematically flouted the spirit, and often even the letter, of its World Trade Organization (WTO) commitments. Even more than 15 years after it joined the WTO, China remains the world’s leading purveyor of “innovation mercantilism,” fielding every mercantilist policy imaginable—from forced transfer of technology or intellectual property (IP) as a condition of market access to IP theft, production and export subsidies, and currency and standards manipulation—in sectors ranging from information and communications technology (ICT) to solar panels, steel, and automobiles.

It’s important to recognize that China’s objective is to become competitive across virtually all advanced-technology industries—and that the techniques China is using to become so pose a direct, and even existential, threat to America’s high-tech industries and those of foreign counterparts. China’s economic development policy has fundamentally evolved over the past decade and a half from a foreign direct investment (FDI) attraction strategy to an indigenous innovation strategy. That approach was originally articulated in China’s 2006 Medium- and Long-Term Program for Science and Technology Development (MLP), which was updated earlier this year by the “Made in China 2025 Strategy,” which calls for China to develop and become global leaders in at least 10 key strategic emerging industries—including artificial intelligence, integrated circuits, 5G mobile telecom, biotechnology, aircraft, robots, electric cars, and high-speed rail, among others.

Backed with over $330 billion in funds, the strategy seeks to leverage low-interest loans from state-owned investment funds; production subsidies; a vast panoply of mercantilist practices including IP theft or forced tech or IP transfer; and assistance in buying foreign competitors or their technology in order to foster Chinese competitiveness in these sectors. A core objective of the Made in China 2025 Strategy is to supplant foreign imports of advanced-technology products with Chinese domestic production of these same goods. For instance, with regard to ICT-enabled manufacturing (i.e., “smart manufacturing”) the Strategy calls for 80 percent domestic market share of high-end computer numeric controlled (CNC) machines by 2025; 70 percent for robots and robot core components; 60 percent for big data; 60 percent for IT for smart manufacturing; and 50 percent for industrial software. An import substitution mindset clearly lies at the heart of China’s Made in China 2025 Strategy.

One clear manifestation of this is China’s National Integrated Circuit (IC) Strategy, which calls for investing $160 billion over the next decade to create a completely closed-loop semiconductor manufacturing ecosystem in China, including every stage from IC design and manufacturing to packaging and testing as well as producing the related materials and equipment. The strategy unabashedly calls for China to reduce imports...
of U.S. semiconductors by half in 10 years and to eliminate them entirely within 20 years, with 70 percent of the semiconductor chips used by companies operating in China to be domestically produced by 2025 and China becoming the world’s leading semiconductor manufacturer by 2030.\footnote{The fundamental issue here is that, especially in advanced-technology industries like these, Chinese policymakers reject the principle of “comparative advantage”—the classic trade notion that countries specialize in production of goods or services at which they are the most efficient and then trade for the rest—for they would rather have China achieve “absolute advantage” across any number of high-tech industries. Essentially, China desires to become autarkic, or self-sufficient, in production of advanced-technology goods such as wide-bodied aircraft, semiconductors, biologic drugs, and high-speed rail while still enjoying unfettered access to global markets for its exports of these products. Moreover, it wants to shield domestic enterprises in advanced-technology industries from foreign competitors, allowing them to achieve scale and competitiveness in domestic markets, empowering their subsequent ability to compete more effectively on global markets.

While some contended that China’s accession to the WTO would lead to the gradual yet continuing abatement of its use of innovation mercantilist practices, the reality is that China’s aggressive innovation mercantilism has only grown stronger in recent years. As The Economist writes, “to modernize its economy, China has remained wedded to industrial policies, state-owned enterprises (SOEs), and a ‘techno-nationalism’ that protects and promotes home-grown technologies.” In that article, even Long Yongtu, who as China’s chief trade negotiator in 2001 helped the country win WTO admission, admitted that China is now moving further away from the organization’s principles. As the Mercator Institute for China Studies (MERICS) in Germany writes in its report, “Made in China 2025: The Making of a High-Tech Superpower and Consequences for Industrial Countries,” “Made in China 2025 in its current form [means that] China’s leadership systematically intervenes in domestic markets so as to benefit and facilitate the economic dominance of Chinese enterprises and to disadvantage foreign competitors.” This is diametrically opposed to the fundamental principles that underpin the multilateral trading system embodied in the World Trade Organization.

It’s also important to recognize that, while the U.S. and Chinese economies have been locked in increasingly fierce competition for some time, the last contest was about low- and mid-tech manufacturing, in which Chinese policies hollowed out many sectors of traditional U.S. manufacturing; whereas the current contest revolves around who is going to lead in advanced industries.” As Michael Schuman, writing for Bloomberg’s Business Week, notes, the U.S.-China contest now is nothing less than “a battle for the high-tech industries of tomorrow.” As he writes, “China is an economic rival to the U.S., and Washington has to start acting like it.” In this contest, assimilating foreign technology and knowhow represents a key component of China’s efforts to become a global innovation leader. In general, China’s technology acquisition strategy is to develop the technology indigenously, if possible; if not, then to try to induce technology or IP transfer, often as part of
compelled joint ventures; or, failing that, then resort to mergers and acquisitions (M&A), often state-directed or state-supported, of key foreign enterprises and their technologies. Finally (though often overlaying the above efforts) China has resorted to outright intellectual property theft, whether of technologies, trade secrets, or even corporate strategies. Not coincidentally, and appropriately, such practices represent several of the focal areas of the administration’s Section 301 investigation, which as stated include an investigation into:

1. Chinese policies that induce forced technology and intellectual property transfer across a wide range of advanced-technology industries;
2. Chinese policies that engage in state-directed foreign direct investment as well as mergers and acquisition activity that specifically targets foreign advanced-technology enterprises as part of efforts to move China “up the value chain” in advanced-technology sectors;
3. Chinese policies that orchestrate cyber-based IP and technology theft in the context of overall commercial espionage;
4. Chinese policies that compel exchange on unbalanced licensing terms;
5. Chinese policies that utilize a range of additional “innovation mercantilism” measures that disadvantage U.S. (and other foreign) advanced-technology enterprises.

**CHINESE FORCED TECH TRANSFER/INTELLECTUAL PROPERTY POLICIES**

Although China’s WTO accession agreement contains rules forbidding the country from tying foreign direct investment or market access to requirements to transfer technology to the country, it remains commonplace to require that firms transfer technology in exchange for being granted the ability to invest, operate, or sell in China. This despite the fact that in the November 2001 “Report of the Working Party on the Accession of China to the WTO,” “The representative of China confirmed that China would only impose, apply or enforce laws, regulations or measures relating to the transfer of technology, production processes, or other proprietary knowledge to an individual or enterprise in its territory that were not inconsistent with the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) and the Agreement on Trade-Related Investment Measures (TRIMs Agreement).” And while The Economist recently wrote, “Thanks to the WTO, foreign firms are no longer required to hand over technology in exchange for entry to China’s market,” too often that’s simply not the case.

Indeed, United States Trade Representative Office (USTR) annual reports to Congress on China’s WTO compliance continue to highlight its use of such discriminatory practices. Unfortunately, this shouldn’t be a surprise, as China has explicitly outlined aims for domestic production in many sectors, including through forced joint ventures (JVs) and tech-transfer provisions, as part of its “Made in China 2025” strategic plan. As Harvard Business School professors Thomas Hout and Pankaj Ghemawat document in their report “China vs the World: Whose Technology Is It?”, Chinese technology transfer requirements as a condition of market access have affected scores of companies in industries as diverse as aviation, automotives, chemicals, renewable energy, and high-speed rail. To be sure, because such conditions contravene China’s WTO commitments, Chinese officials are careful not to put such requirements in writing, often resorting to oral
communications and informal “administrative guidance” to pressure foreign firms to transfer technology. In 2011, then-U.S. Treasury Secretary Timothy Geithner laid such concerns about China’s technology transfer requirements in the open, stating that “we’re seeing China continue to be very, very aggressive in a strategy they started several decades ago, which goes like this: you want to sell to our country, we want you to come produce here. If you want to come produce here, you need to transfer your technology to us.”

The automotive sector has seen some of the most glaring examples of forced technology transfer requirements. Effectively, global auto brands are only allowed to manufacture cars domestically in China through joint ventures with local partners. For example, China made General Motors’ access to subsidies for electric-vehicle purchases contingent on the company handing over the IP behind its electric hybrid car, the Volt. Ford was forced to do the same. Ford Motor Company has opened several automobile plants in China, but as a condition of access had to do so as part of a joint venture with a Chinese auto firm. Moreover, the Chinese government required Ford to open a research and development (R&D) laboratory employing at least 150 Chinese engineers. More recently, a January 2017 law required that joint ventures must demonstrate that they have mastered the complete technology for “new energy vehicles” (NEVs) before they receive permission to produce them.

Similar stories abound across other sectors. The CEO of a large multinational telecommunications equipment company recently shared with ITIF that he opened up a large R&D facility in Beijing that employs over 500 scientists and engineers. When asked if he did this to access Chinese engineering talent, he responded bluntly: “Unless I promised the Chinese government that I would open up an advanced technology lab there, I was told that I would not be able to sell to the Chinese telecommunications providers,” (most of which are de facto controlled by the Chinese government). A top executive at a large U.S. plant biotechnology firm told ITIF recently of its experience in China. China was dumping the chemicals for a particular herbicide the U.S. company sold on global markets. The company confronted the Chinese agricultural minister with this fact and said that it was planning to bring a complaint before the WTO. The Chinese minister simply responded that if the case were brought, the company would lose access to the Chinese market. Needless to say, the U.S. firm did not bring the case, even as it continued to lose global market share and jobs in the United States.

Chinese forced technology transfer requirements continue despite the fact that China promised to remove these types of measures at the U.S.-China Joint Commission on Commerce and Trade (JCCT) in 2011. The U.S.-China Business Council’s “2014 China Business Environment Survey” reports that 62 percent of companies had concerns about transferring technology to China, while 20 percent reported that they had been requested to transfer technology to China within the past three years. To be sure, many multinational U.S. tech firms have entered into joint ventures with Chinese firms, and while some of these have certainly been voluntary and conducted on market-based terms, a great many were entered into with some level of coercion or pressure.
One other important note here is China’s linkage of commercial and national security interests. As Darren Tromblay and Robert Spelbrink note in *Securing U.S. Innovation: The Challenge of Preserving a Competitive Advantage in the Creation of Knowledge*, “The transfer of capacities for innovation to China is not simply a benefit to its economy but also is a contribution to its military and intelligence services.” As they note, “As of 2014, Chinese companies that acquire advanced technology are legally required by state security laws to share these acquisitions with the People’s Liberation Army and Chinese intelligence if they are requested to do so.”

**CHINESE STATE-DIRECTED FDI AND M&A ACTIVITIES**

An increasingly important way for Chinese firms to gain access to needed technology is to simply buy up U.S. technology companies. Indeed, a not-insignificant share of Chinese FDI into the United States is now in technology industries. According to Select USA, the top four industrial categories in terms of numbers for Chinese FDI projects from 2003 to 2015 were electronics, industrial machinery, software and information technology services, and communications. The Rhodium Group reports that over the last 16 years there were roughly $18 billion of Chinese FDI into ICT and electronics industries deals, with most of that in just the last few years. Of the $4.9 billion invested in electronics, $4.2 billion was invested in 2016, with 99.99 percent of that going to buy U.S. firms. Of the $14.2 billion invested in ICT, 74 percent was made from 2014 to 2016, with more than 95 percent going to acquisitions. These numbers would have actually been considerably larger if the federal government had not informally or formally blocked some deals through the Committee on Foreign Investment in the United States (CFIUS).

Much Chinese FDI comes from state-owned enterprises that often have different motives than simply maximizing profits. Rather, their investments often serve strategic state goals. According to the Rhodium Group, from 2002 to 2016, of the 582 acquisition deals, about 20 percent (116) were made by government-owned corporations, accounting for about 30 percent of the total monetary value. Information and communications technology and electronics industries deals totaled roughly $18 billion, with government-backed deals accounting for roughly $5 billion of this amount. Moreover, the lines between public and private in Chinese firms is opaque, with many “private” firms having deep financial and other ties to the Chinese government.

The role of Chinese government money in U.S. deals is underreported in part because of the opaque nature of this support. As Wang and Wang note, many Chinese firms lack transparency, making it difficult for host countries to know enough about the investing firm. This was evident for example in the attempted purchase of the German semiconductor equipment firm Aixtron by a Chinese investor where there were “a web of relations among the customer, the buyer, and the Chinese state.” Moreover, the Chinese government channels funds to supposedly private investment bodies, making it look as if these deals are commercial. One Center for Strategic and International Studies report admits that “in order to successfully lobby the Ministry and receive adequate financial resources, the private enterprises have to link corporate goals with national government initiatives, otherwise the Ministry will be reluctant to endorse the companies’ OFDI [overseas foreign direct investment] initiatives.”

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Thus, the main purpose of most Chinese technology companies buying U.S. technology companies is not to make a profit, but to take U.S. technology in order to upgrade their own technology capabilities. The Rhodium Group notes that in the aviation sector, “The dominant player is aviation conglomerate AVIC, which is looking to the U.S. market to upgrade its technology and other capabilities.” Likewise, in the electronics and electrical equipment sector, “Chinese investors are drawn to the U.S. electronics and electrical equipment sector for building their brands, expanding their sales and distribution channels, and upgrading their innovative capacity and technology portfolios.” Investments in pharmaceuticals and biotechnology are likewise “often driven by upgrading technology (such as Wuxi’s acquisition of AppTec, a laboratory services firm).” As one study of Chinese FDI estimated, 30 percent of the private firm deals and 46 percent of the SOE deals are motivated by technology acquisition. The authors go on to state that Chinese acquisition of overseas firms “has become the most widely used methods [of investing overseas] for Chinese firms, largely because it provides rapid access to proprietary technology…”

And as the German Mercator Center for Chinese Studies notes:

Chinese high-tech investments need to be interpreted as building blocks of an overarching political programme. It aims to systematically acquire cutting-edge technology and generate large-scale technology transfer. In the long term, China wants to obtain control over the most profitable segments of global supply chains and production networks. If successful, Made in China 2025 could accelerate the erosion of industrial countries’ current technological leadership across industrial sectors.

The report goes on to note that, “There are strong indications that the absorption of advanced technology is an increasingly prevalent motive for the state’s push for outbound FDI. From this perspective, Made in China 2025 can be read as a grand strategy for technology-seeking investment.” As the report continues:

The Chinese state promotes investment in leading foreign technology enterprises with the aim of systematically acquiring cutting-edge technology and generating large-scale technology transfer. Since state-led FDI in high-tech sectors is a new phenomenon, its full extent and precise effects are not yet entirely clear. But it is a realistic scenario that the widespread technology absorption by China will contribute to the erosion of industrial countries’ technological leadership in specific industries.

In other words, Chinese tech-based FDI acquisitions are just one tactic in a comprehensive strategy of global knowledge acquisition in order to catch and ultimately surpass current technology leaders, including the United States. As one study of Chinese acquisitions of German firms noted, “Cherry picking strategic assets of hidden champions, knowledge absorption, and gaining access to high-end markets are major strategic intentions behind the M&As.” The report goes on to note that “[what] most acquirers were targeting was the inherent knowledge of the target firms held by the employees in the form of engineering capabilities or
process know-how, the knowledge embodied in its technological assets like products, machines and plants, the brand in terms of reputation and customer relationships as well as the worldwide distribution and service assets. The report concludes that this is different than most FDI from other nations where the acquirer seeks integration, synergy, and efficiencies.

A sector where Chinese FDI/M&A activity is clearly and aggressively at play is semiconductors. China has long seen the semiconductor industry as a key industry for development, though it was not until recently that it made a serious play to grow its domestic industry. China’s government has set ambitious, long-term national guidelines for the development of its semiconductor industry, including specific revenue targets of 20 percent compound annual growth and increasing the industry’s size to $140 billion by 2020. As noted, the strategy also calls for China to reduce imports of U.S. semiconductors by half in 10 years and to eliminate them entirely within 20 years and make China the world’s leader in IC manufacturing by 2030. China tries to justify this strategy on the basis that integrated circuits are the nation’s largest import. But, as ITIF has shown, the only reason for this is because China runs a massive trade surplus in products that include semiconductors. Indeed, over half of the semiconductors imported to China are reexported.

As noted, between national and provincial government funds, China’s semiconductor industry is expected to be supported with as much as $160 billion of government-backed funds. Chinese government leaders, including at the Ministry of Industry and Information Technology (MIIT), are well aware that they cannot meet the IC plan’s objectives without buying up the expertise and knowledge they need through foreign acquisitions. Indeed, as a report from Bain Consulting counseling Chinese IC companies stated, “Since reaching scale through organic growth would be an almost insurmountable challenge, domestic Chinese players should look for partnerships (often with followers with strong IP that could benefit from funding and access to China’s market) and takeover opportunities of companies looking to leave the industry or divest, both inside and outside of China.” Likewise, as a report from a major integrated circuit conference in Shanghai noted, “clearly there will be a focus on [foreign] M&A [mergers and acquisitions] to achieve the rapid technological scale up necessary to realize the vision of the new national policy.”

That is why China has been on a global buying spree to try buy up companies all along the IC value chain, including Spreadtrum Communications, RDA Microelectronics, and Micron. As the Mercator Center for Chinese Studies notes, “Since 2014, new policies by the Chinese government to promote the development of China’s semiconductor industry have fueled a boom in acquisitions in this segment. The first major deals were completed in 2015, including the purchase of Integrated Silicon Solutions for about $736 million.”

To defend against charges of inappropriate government subsidies being leveraged in these acquisitions, the Chinese government claims that its China Integrated Circuit Industry Investment Fund Co. Ltd., is actually a private sector entity operating according to market principles. In reality it is a fund established by MIIT, staffed in large part by former MIIT officials, and funded by the Ministry of Finance and Chinese SOEs—including China Mobile, China Tobacco, and the China Development Bank—presumably because the latter
were “asked” to do so by MIIT and the State Council. MIIT presumably established the fund this way, as opposed to simply funneling subsidies through MIIT, in order to avoid any potential WTO challenge against unfair government subsidies. But this laundered money does not make it any less of a subsidy. Chinese central government officials also supported the creation of a number of local semiconductor subsidy funds which also are used to subsidize foreign acquisitions. Thus, when Chinese officials assert that this is a new kind of IC strategy based not on government subsidies, but rather on market principles, they are obscuring the fact that the new strategy is still based on government subsidies, but in this case usually in the form of equity investments that may or may not ever get paid back. Indeed, many of these Chinese firms would be unable to acquire foreign IC firms without such subsidies, as their balance sheets would be inadequate.

For example, Jiangsu Changjiang Electronics Technology Co. used $300 million from the national IC fund to help pay for the $780 million acquisition of Singapore’s STATs Chip Pac Ltd., a leading provider of semiconductor packaging design assembly and test solutions. The IC fund backed the buyout firm seeking to buy U.S.-based Lattice Semiconductor Corp. And they were purportedly behind the purchase of Germany’s Aixtron. In some cases, these deals are truly perverse, as in the case of Chinese firm Apex Microelectronics buying the U.S. printer company Lexmark. Prior to the acquisition, Apex had been accused of producing counterfeit printer cartridges and infringing the patents of U.S. printer companies, including Lexmark. And despite having revenues about one-tenth those of Lexmark, Apex was able to purchase Lexmark at a 17 percent premium over listed stock price, in part because it received funding from the Chinese national IC fund. Indeed, the company is now 5 percent owned by the IC fund.

China has also tried to acquire other U.S. enterprises in the semiconductor sector, including Western Digital and Micron. The Western Digital deal was one of a string of numerous acquisitions that Chinese firms have attempted along the semiconductor value chain. Notably, China’s Tsinghua Unigroup—a state-owned enterprise once headed by the son of former Chinese President Hu Jintao—bid $23 billion for Idaho-based Micron Technologies. That deal fell apart after Senators Orrin Hatch (R-UT) and Chuck Schumer (D-NY) raised national security concerns. So Unigroup pivoted, working through its Unisplendour subsidiary to try to acquire a 15 percent stake in Western Digital (though that investment was also blocked by CFIUS).

In conclusion, there is ample evidence that the Chinese government has directed Chinese enterprises, including SOEs and private equity entities, to conduct strategic and targeted acquisitions of U.S. and other foreign enterprises in advanced-technology industries with the express and explicit goals of acquiring key technologies and bolstering Chinese market share in advanced-technology industries.

**CHINESE INTELLECTUAL PROPERTY AND TECHNOLOGY THEFT**

Another way China acquires technology and intellectual property is to steal it. China is the leading instigator of IP theft and the cost to the U.S. economy in terms of counterfeit goods, pirated software, and theft of trade secrets may have grown as high as $600 billion annually. (Likewise, a recent European Union-commissioned study found that, among European manufacturers, the loss of IP in China reduces their potential profits by 20 percent annually.) As a recent *MIT Sloan Management Review* article, “Protecting Intellectual Property in
China,” succinctly put it, “Intellectual property protection is the No. 1 challenge for multinational corporations operating in China.” In a recent survey of the business environment in China conducted by the U.S.-China Business Council, 98 percent of companies surveyed report that intellectual property rights enforcement in China remains a concern for them.

Meanwhile, China still has one of the highest rates of unlicensed software usage in the world, with 74 percent of the software in use unlicensed and the market value of unlicensed software usage exceeding $8.7 billion in 2013. Then-Microsoft CEO Steve Ballmer once estimated that as much as 95 percent of the copies of Microsoft’s Office software and 80 percent of its Windows operating systems in China were pirated. 240,000 Internet cafés in China rely on illegal copies of entertainment software. Chinese firms even sell technology to allow users to circumvent encryption protection so they can pirate video games. In fact, China has factories that produce and sell video game circumvention devices around the world. Nor is China’s piracy confined to digital products; it’s rampant on analog products as well. For example, the U.S. Customs and Border Protection agency found that 79 percent of imports of U.S. trademark-infringing goods came from China (and an additional 10 percent came from Hong Kong).

Chinese trade secret theft also represents an increasing challenge. A prime example is Boston-based American Superconductor (AMSC), which provides software, design, and hardware solutions for wind manufacturers and energy providers. American Superconductor’s top customer, the Chinese-based wind turbine manufacturer Sinovel Wind Group, faced criminal and civil actions for paying an AMSC employee to steal proprietary power-converter and control-system software, which it then used illegally in its wind turbines to meet electricity grid standards. The employee, an engineer at one of AMSC’s subsidiary’s, was recently found guilty of industrial espionage in Austria. In another telling case, the global agriculture firm Monsanto decided to open production and research facilities for advanced corn technology in China and proceeded to develop experimental fields growing genetically enhanced corn. It wasn’t long before the advanced corn was systematically stolen, clearly an effort by the Chinese government to gain access to the IP embedded in Monsanto’s corn.

One reason counterfeiting and IP theft remains rampant in China is in part due to the Shanzhai ethos of prideful counterfeiting, or reverse engineering foreign products as a way to enter a market without having to incur significant R&D expenditures. Moreover, the Chinese government “tends to tacit consent of the phenomenon.” In an article in the *Journal of Science and Technology Policy in China*, edited by the Chinese Academy of Sciences, Sheng Zhu and Yongjiang Shi write about how the cell phone industry “cluster” in Shenzhen is “turning to the Shanzhai ethos, starting with producing counterfeited mobile phones to rebel against the expensive world-leading brands…. The Shanzhai idea of rebellion has evolved into a desire to take on global corporations by producing copies of the world leading brands.”

Elsewhere, China’s 2007 antimonopoly law (AML) was designed to treat legitimately acquired intellectual property rights as a monopolistic abuse. For instance, Article 55 of the AML states, “This Law is not applicable to undertakings’ conduct in exercise of intellectual property rights pursuant to provisions of laws
and administrative regulations relating to intellectual property rights; but this Law is applicable to undertakings’ conduct that eliminates or restricts competition by abusing their intellectual property rights.”68 And for the Chinese government, abuse means charging market-based IP licensing fees to Chinese companies. This provision has been used to take legal action against companies whose only “crime” is to be innovative and hold patents. Indeed, the Chinese law allows compulsory licensing of IP by a “dominant” company that refuses to license its IP if access to it is “essential for others to effectively compete and innovate.”69 And with Chinese courts largely rubber-stamping Communist Party dictates, foreign companies have little choice but to comply. And, all too often, complying means changing their terms of business so that they sell to the Chinese for less and/or transfer even more IP and technology to Chinese-owned companies.

Moreover, when China’s State Administration for Industry and Commerce finalized its antitrust-related enforcement regulations in 2015, its interpretation of Article 7 of China’s AML made certain refusals to license critical IP to third parties, most notably including competitors, a potential violation of the AML. This despite the fact that treating a refusal to license IP as an antitrust violation is inconsistent with global antitrust law and even a violation of TRIPS commitments.

Interestingly, there is new evidence that China favors domestic over foreign patent applicants when it comes to strategic industries. As the report “Technology Protectionism and the Patent System: Strategic Technologies in China,” published in 2016 by Gaétan da Rassenfosse and Emilio Raiteri finds, “Foreign applications in technology fields that are of strategic importance to China (as defined by being listed on the MLP) are 4 to 7 percentage points less likely to be approved than local applications, all else equal.”70 As they note, “While much analysis has focused on unequal enforcement of IP rights in China, this is the first study to find systematic evidence of bias in the granting of patents against foreigners in China. Given the importance of industrial policy in China and the country’s strong focus on indigenous innovation and intellectual property, the empirical results provide a case of technology protectionism by means of the patent system.”71

Separately, there exists growing concern that “secure and controllable” measures mandated by China’s National Security Law and Cybersecurity Law may force source code (i.e., intellectual property) disclosure and may also induce or force the localization of design or manufacturing processes of ICT products such as semiconductors or servers. Specifically, on November 7, 2016, China enacted a new Cybersecurity Law that introduces (further) restrictive requirements on foreign technology companies: The Economist aptly described it as a “techno-nationalist Trojan horse.”72 China’s new cybersecurity law—through discriminatory standards and forced local data-storage requirements—reinforces existing policies that segment its citizens and tech firms, in addition to its broader Internet ecosystem, from the rest of the world. The law is significant, as it represents China’s first enactment of rules on the collection and use of personal data. The law forces companies in “critical information infrastructure” to store users’ “personal information and other important business data” in China, a concept known as “forced localization.”73
China may use the law to expand an existing—and controversial—cybersecurity regulation that is highly discriminatory toward foreign tech firms and products. The cybersecurity law states that China will introduce a cybersecurity multilevel protection scheme (MLPS) for ICT products used in network security by CII sectors. This requirement is perhaps based off an existing MLPS that China has applied for information security (although this is unclear from the wording in the law).

This potential relationship raises serious concerns for foreign technology companies, as this earlier MLPS was highly discriminatory—it prohibited certain sectors from using foreign IT products and forced foreign companies to transfer IP and source code to China for review.

Equally troubling is the potential for China to use the law to revive the use of a highly discriminatory standard for IT products—the so-called “secure and controllable” concept—and intrusive security audits, both of which can be used to discriminate against foreign firms and to force the disclosure of valuable intellectual property. The law calls for the use of “secure and trusted” network services and productions, without defining the term. Current deliberations by China’s National Information Security Standards Technical Committee (NISSTC) on what this concept means (see below) and past Chinese government policy proposals point toward its mercantilist intent.

This concept, along with its analogous “independent and controllable,” “secure and controllable,” or “indigenous and controllable” terms have been a part of Chinese technology policymaking debates ever since the country backed down on implementing such a rule as part of a banking law in 2015. (That proposed banking law used a “secure and controllable” provision as part of an explicit aim to replace foreign technology goods with local ones. China decided to “withdraw” this provision after it generated significant opposition from tech companies and trading partners, especially the United States.)

Essentially, China wants to force software companies, network-equipment makers, and other tech companies to disclose source code to supposedly prove their products can’t be compromised by hackers. Source code—the instructions that make a computer program run—enable technology to do the amazing things it does. For companies developing software, protecting source code is necessary to prevent other entities from stealing and free riding on the large research and development costs associated with software development. Source code is at the heart of a company’s competitive advantage, but being digital, it is at heightened risk of duplication. Given China’s poor protection of IP, not to mention its role in the cybertheft of foreign trade secrets, it’s unsurprising that foreign firms and trading partners, such as the United States, have reasonable fears that such intrusive inspections are simply a way to access and steal valuable intellectual property.

Fears about China’s mercantilist intent have been confirmed during the process to define standards and key concepts under this law. Foreign companies submitted comments on implementing provisions, such as the definition of “secure and controllable,” to China’s NISSTC after the law was released. For instance, some of Microsoft’s comments focused on legitimate concerns about the utility in viewing source code for cybersecurity purposes, stating in its comments to NISSTC that “sharing source code in itself can’t prove the capability to be secure and controllable. It only proves there is source code.”
Yet, indicative of China’s ulterior motives, the NISSTC rejected this feedback, saying that this comment was “not accepted.” This is despite the fact that Microsoft had already taken the significant step of providing Chinese authorities with viewing access to its source code at its “Transparency Center” in Beijing, a step that most other technology companies have not taken, given the risks of unauthorized disclosure. China’s reaction to Microsoft’s comments on the draft law is indicative of how intrusive the law is likely to be and how it may get even tougher than it already is for foreign technology companies to operate in China. China’s underlying mercantilist intent was further evident in comments and feedback provided to the NISSTC by the chief engineer at China’s Ministry of Public Security’s Network Security Bureau, who commented on the draft regulations by stating “the big trend is called shifting to favour domestic production … but it can’t be written that way, so one calls it independent and controllable.” NISSTC’s response was to mark that comment “approved.”

As this section has demonstrated, China has deployed a range of strategies to acquire U.S. and other foreign intellectual property through outright theft or other compulsory means. While in some respects China’s internal IP system (i.e., process for awarding patents, for example) has improved in recent years, this has in no way changed the reality of China’s systemic efforts to acquire foreign intellectual property, often through illegitimate means.

**CHINESE UNBALANCED LICENSING REQUIREMENTS**

The United States needs a new regime to contest China’s strict technology-licensing laws. Under Chinese contract law and technology import-export regulations (TIER), a foreign licensor into China is obligated to offer an indemnity against third-party infringement to the Chinese licensee. In other words, a foreign licensor licensing into China has to provide an insurance that practicing the licensed technology does not infringe any IP held by a third party. But, under TIER, this legal obligation only attaches to “technology import contracts.” That is, this obligation only attaches to a foreigner licensing technologies into China; the Chinese licensor has no such obligation. This discriminates against foreign licensors. The foreign licensor is legally bound to offer something that the Chinese licensee is not, making it difficult for small companies, companies which may experience high litigation risks in China’s litigious environment, and companies engaged in collaborative research and development (such as cross-licensing, open-source licensing, and charitable activities) to arrive at mutually beneficial licensing agreements. TIER makes it almost impossible for small companies, such as start-ups, to license their breakthrough technologies in China, because no start-ups (due to their limited resources) would be able to conduct the complex analysis required by China’s high-litigation environment and industrial policies that limit the value of foreign IP in order to offer insurance against third-party infringement disputes. While large multinational companies could avoid this issue by licensing technology (e.g., through their China-based subsidiaries), start-up companies cannot do so because they typically do not have subsidiaries in China. Consequently, the impact of the mandatory indemnification requirement on small- and medium-sized companies, and especially start-ups, is particularly acute.

Another provision in TIER mandates that in technology-import contracts, improvements belong to the party making the improvements, which typically is the Chinese licensee. Thus, foreign licensors, including U.S.
firms, cannot negotiate to own any improvements or share the improvements with Chinese licensees, even if both licensing parties desire for the improvements to be shared or owned by the foreign licensors. Moreover, TIER prohibits any technology-import contracts to “unreasonably restrict the export channels” of the Chinese licensee, thereby impeding the ability of the two licensing parties to allocate markets as they see mutually beneficial. Put simply, U.S. companies are obligated under TIER to let Chinese firms own the improvements and cannot freely negotiate market allocation with Chinese companies.

Overall, the relative disparity between China’s production and exports of high-tech goods as well as its low level of utilization of foreign IP suggests that China is a severely under-licensed economy; addressing the inequalities of TIER could help improve this by ensuring that China deregulates contracts regarding the acquisition of U.S. technology. Conversely, the United States is the largest technology exporter in the world. This could help increase the value of these exports to China, which has substantially underperformed in its potential as a technology export market.

It should be noted that a submission made by the China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME) contends that that “allegations of this Section 301 Investigation [related to technology licensing terms] are not in accordance with actual situation.” CCCME asserts that China’s TIER accords with the UN International Code of Conduct on the Transfer of Technology and holds that TIER’s relevant Articles 24 and 27 are “neutral in nature.” Yet they are not, for CCCME omits that the articles only apply in a “technology import contract.”

CCCME cites language from Article 24 of China’s Regulations on Technology Import and Export Administration which states that “the assignee or licensee shall make use of the technologies of the licensor according to the stipulations of a technology import contract. Where any of the lawful interests of any other person is infringed upon, the liabilities shall be borne by the licensor” and Article 27, which states “during the term of validity of a contract of import of technologies, the right over any improvement on the technologies shall be vested with the party which has made the improvement.” CCCME contends that these provisions are “neutral in nature” contending that “the former provision only mentions the liability of the licensor, and the latter only mentions the right of the party who had made the improvement…Either Chinese companies or U.S. companies can be licensor and the party who has made the improvement. Thus, both provisions extend the same requirement to all parties, and they are not necessarily in favor of Chinese companies.” But this fails to rebut or address the real issue at hand, for it omits the fact that both articles only apply “in a technology import contract” but do not hold with regard to a technology license contract.

Further, CCCME asserts that licensor’s “defect warranty obligation” is “a widely recognized international rule…similar to Article 5(4) of the International Code of Conduct on Transfer of Technology.” However, Article 5(4) only refers to “[t]he technology supplier’s representation that on the date of the signing of the agreement, it is, to the best of its knowledge, not aware of third parties’ valid patent rights or similar protection for inventions which would be infringed by the use of the technology when used as specified in the agreement.” The unaware-of-dominant-patent fundamentally differs from TIER Article 24’s “licensor shall bear liability.” Article 24 requires that licensor (licensor importing technology into China for that matter) to
bear full liability regardless whether or the licensor is aware that use of the licensed technology may “infringe upon the lawful rights and interests of another person.” In fact, not only does awareness not matter, the liability could result from any third party’s “lawful rights and interest.” That is, the liability could include tort and other liability beyond IP infringements.

Finally, CCCME argues that TIER Article 27 “intends to prevent the assignor from using its dominant position to abuse intellectual property rights.” But CCCME’s argument is based on the assumption that all licensor/transferor (large or small) arrangements must be in a “dominant position” and must be abusing IP rights by wanting to own improvements. In other words, grantback becomes a per se antitrust violation, including grantback from a large company to a small company. Moreover, like Article 24, Article 27 applies to “technology import contracts” only.

In summary, China imposes onerous restrictions on foreign parties involved in technology licensing activities in China which disadvantages foreign parties to the benefit of the Chinese counterparty.

**ADDITIONAL CHINESE INNOVATION MERCANTILIST MEASURES**

China has fielded a wide range of additional innovation mercantilist measures, including: the ongoing use of production and export subsidies and denial or restriction of market access to a wide range of cloud computing, telecommunications, and services enterprises.

**Production and Export Subsidies**

China’s entry into the WTO has done little to curtail its use of production or export subsidies. The subsides for China’s steel, energy, glass, paper, and auto parts industries have been particularly intensive, contributing substantially to Chinese firms’ competitiveness in global markets and to global overcapacity in these industries.\(^{84}\) As Usha and George Haley document in *Subsidies to Chinese Industry: State Capitalism, Business Strategy, and Trade Policy*, from 2000 to 2007, total energy subsidies to Chinese steel reached $27.1 billion. Meanwhile, China’s glass and glass-products industry received $30.3 billion in subsidies from 2004 to 2008, while the paper industry enjoyed $33.1 billion in government subsidies from 2002 to 2009, and the Chinese auto-parts industry received $27.5 billion in subsidies from 2001 to 2011.\(^{85}\) Moreover, since joining the WTO in 2001, China has yet to submit to the WTO a complete notification regarding the export or production subsidies maintained by China’s central and sub-central governments (as of 2015).\(^{86}\)

Furthermore, Chinese SOEs, many of which compete directly with foreign firms, receive significant benefits from all levels of Chinese government even if they are not profitable. For example, an in-depth 2011 study by the Unirule Institute, an independent Chinese think tank, found that in 2009 Chinese SOEs’ return on equity was about half the rate of non-state-owned enterprises, a substantial “subsidy” in and of itself. Moreover, without their government-granted advantages, including preferential financing from state banks and free land, Chinese SOEs would have operated at a 6.29 percent loss from 2001 to 2009.\(^ {87}\) The ability to consistently lose money is a considerable subsidy compared with private foreign firms that must charge
enough to make a reasonable profit. Another is the ability to get preferential government financing. As one study stated, “Our finding reinforces the widely held view that the Chinese financial system allocates resources towards poorly performing SOEs.” Such benefits for state-owned enterprises are a key reason why a 2013 survey by the American Chamber of Commerce in China found that 35 percent of firms stated that they were at a competitive disadvantage as a result of Chinese industrial policies that favored state-owned enterprises.

**Restrictive Market Access for Cloud Computing and Telecommunication Services**

China is contravening a number of WTO commitments in the telecommunications sector, including liberalizing foreign investment, agreeing to implement “pro-competitive regulatory principles,” and agreeing “to allow foreign suppliers to use any technology they choose to provide telecommunications services.” As USTR notes, however, “China’s restrictions on basic telecommunications services, such as informal bans on new entry, a requirement that foreign suppliers can only enter into joint ventures with state-owned enterprises, and exceedingly high capital requirements, have blocked foreign suppliers from accessing China’s basic [telecommunications] services market.”

New regulations regarding cloud-computing services in China confirm its persistence in erecting barriers between its tech sectors and digital economy and that of the rest of the world. In March 2016, China made significant changes to the licensing and regulatory regime of Chinese telecom and Internet services that essentially exclude U.S. technology firms involved in cloud computing, big data, and other information services from operating in China. These regulations, again, reinforced the requirement for forced local data storage. For the vast majority of leading U.S. cloud-service providers, these regulations have essentially closed access to the Chinese market.

China enacted regulatory changes to make it even harder than it already was for U.S. companies to establish and operate Internet-based information services in the country. First, China released regulations for several services it considers valued-added telecommunication services (VATS). By categorizing Internet-based services (e.g., cloud computing, big data, and other information services) as telecommunication services, and not as “computer and related services,” China has given itself much greater freedom to restrict market access to U.S. firms. This is because China made commitments as part of its accession to the World Trade Organization in 2001 to provide nondiscriminatory treatment and market access to foreign firms in “computer and related services.” This category of Internet-based computer services includes email, voicemail, online information and database retrieval, electronic data interchange, and enhanced facsimile services, code and protocol conversion, and online information and/or data processing. Essentially, China’s approach is a technical work-around to avoid its commitment to open its market for Internet-based computer services to foreign competition.

Second, China introduced a requirement for telecom and Internet Service Providers (ISPs) to apply for licenses for each subcategory of services, raising the potential for government agencies to discriminate against
foreign firms. For example, China’s new subcategory, “internet-based resources collaboration services,” means that providers of cloud computing application services, platform as a service, and software as a service would potentially have to apply for multiple licenses, given some firms and services cross over into multiple categories.

Third, China released new requirements that articulate the very small and restricted cloud-computing services space where foreign firms are allowed to operate. In October 2016, the Ministry of Industry and Information Technology released the “Notice on Regulating Business Behaviors in the Cloud Service Market,” which outlined how foreign cloud companies are forbidden from working via local partnerships in any capacity beyond “technical assistance.” It is not specified what is allowed under “technical assistance,” but based on current practice, it is likely to mean that foreign companies are only allowed to license their goods (software and hardware) to their (forced) local partners and show them how to use them. The notice further specifies several activities that cloud service providers cannot perform, such as sign contracts directly with end users.

These new restrictions on U.S. cloud service providers make an already restrictive situation that much worse. Strict entry requirements and (an already highly) discriminatory licensing process have largely kept foreign firms out of China’s market. To operate in China, foreign firms must set up a joint venture with a Chinese partner, which must be granted majority ownership (i.e., greater than 50 percent). A joint venture was a prerequisite for foreign firms to even apply for a license from Chinese authorities. Although there are over 20,000 local companies licensed to provide VATS in China, only 30 or so licenses have been issued to foreign companies, including five U.S. companies.96

A few U.S. firms have successfully run the gauntlet and decided to operate in China within the confines of these strict conditions by partnering with large Chinese firms—for example, Microsoft with 21Vianet (China’s largest private data center operator) and IBM with a group of local companies.97 As described, these firms are severely restricted in what they can do, often being constrained to arrangements whereby they license their products to their local partners, who set up and run the data centers and cloud services and manage relations with end users.

This mercantilist approach to cloud computing is consistent with China’s ongoing efforts to develop a local cloud-computing sector that uses indigenously developed technology. China’s ambitions in the sector started as part of the country’s “National Medium and Long-Term Plan (MLP) for Science and Technology Development.” Building on this in 2010, China identified cloud computing as one of 11 strategic emerging industries that would receive special attention and funding, all in pursuit of the goal of expanding access to cloud resources in China, developing indigenous cloud-computing technology, and creating an internationally competitive Chinese cloud-computing sector. More recently, the Ministry of Science and Technology’s “12th Five-Year Plan (2011-2015)” paid particular attention to cloud computing, where the aim became to develop a cloud-computing standard based on indigenously developed technology.98 These policies, taken together, show China’s efforts to use mercantilist policies at home to support the development
of “local champions,” who, ideally for China, will eventually become more innovative and competitive and able to compete in overseas markets—against the very tech firms that are unable not allowed to or impeded from competing in China.

Also worth noting is the Chinese government’s “De-IOE” campaign, which has unabashedly pressured Chinese companies to replace products from IBM, Oracle, and EMC with Chinese-made alternatives.99

**Domestic Content Requirements**

China uses other tactics as well to gain global market share in technology industries. The Chinese government enforces a wide array of domestic content requirements in advanced industry products as a way to favor domestic technology companies. For example, in the high-end equipment manufacturing sector, China maintains a program that conditions the receipt of a subsidy on an enterprise’s use of at least 60 percent Chinese-made components when producing intelligent manufacturing equipment.100 And despite the fact that China “clarified and underscored … that it agreed that enterprises are free to base technology transfer decisions on business and market considerations” at a December 2014 meeting of the United States-China Joint Commission on Commerce and Trade (JCCT), USTR notes that China has “announced two measures relating to [local procurement of] information technology equipment used in the banking services sector and in providing Internet- or telecommunications-based services more generally.”101

**Indigenous Technology Standards**

China has also made the development of indigenous technology standards, particularly for information and communications technology products, a core component of its industrial development and economic growth strategy. China has committed to developing unique national standards for dozens of high technology and ICT products—in many cases where international standards already exist—developing homegrown standards for everything from mobile telecommunications services and wireless local area networks to encryption technologies and the Internet of Things.102 In some cases, such as with WAPI (the Wireless Local Area Network Application and Privacy Infrastructure standard that China developed as an alternative to the WiFi standard), China attempted to require that all wireless networking products sold in China would have to be WAPI-compliant and use its encryption method, in contravention of its commitment to let foreign enterprises use desired technologies in the provision of telecommunication services.103 As USTR notes, “China has continued to pursue unique national standards in a number of high technology areas where international standards already exist, such as 3G and 4G telecommunications standards, Wi-Fi standards and information security standards.”104 More commonly, however, Chinese officials “pressure foreign companies seeking to participate in the standards-setting process to license their technology or intellectual property on unfavorable terms.”105 Clearly, China has not met its commitments in the telecommunications sector, either in terms of market access or in refraining from promulgating technology standards that allow companies “to use any technology they choose to provide telecommunications services.”106
CONSEQUENCES OF CHINESE INNOVATION MERCANTILISM FOR THE U.S. ECONOMY

China’s innovation mercantilist practices have inflicted serious harm on the U.S. economy, U.S. employment, and U.S. competitiveness, increasingly with regard to that of its advanced-technology industries. The U.S. trade deficit with China in 2016 was negative $310 billion and, since 2002, the year after China entered the WTO, the United States has accumulated a goods trade deficit with China of over $3.5 trillion. 107 As MIT economists David Autor, David Dorn, and Gordon Hanson write about the effect of China’s trade surpluses on U.S. labor markets, “Amplifying China’s potential impact on the U.S. labor market are sizable current account imbalances in the two countries. In the 2000s, China’s average current-account surplus was 5 percent of GDP, a figure equal to the contemporaneous average U.S. current-account deficit.” 108 The authors estimate that the United States lost 982,000 manufacturing jobs between 2000 and 2007 because of Chinese import competition. 109 In particular, they find that the U.S. regions most exposed to China tended not only to lose more manufacturing jobs, but also to see overall employment decline. 110 Further, they calculate that the cost to the economy from increased government payments (e.g., unemployment compensation, worker retraining, etc.) amounts to one- to two-thirds of the consumer-welfare gains from trade with China. 111

Similarly, ITIF has found that a growing trade deficit was responsible for almost two-thirds of U.S. manufacturing jobs lost in the 2000s, with a significant share of this the result of unbalanced trade with China. 112 Elsewhere, Robert Scott of the Economic Policy Institute has estimated that the growing U.S. trade deficit with China cost 3.4 million American workers their jobs between 2001 and 2015, with nearly three-fourths, or 2.6 million, of those jobs lost in the manufacturing sector. 113

And while some have dismissed China’s economy by asserting either that China can’t innovate or that its overt industrial policies will inevitably end in failure, the reality is that China is becoming increasingly competitive across a range of high-technology sectors. China has already notched some considerable successes, particular in solar, LED lighting, and computer displays. For instance, China is now home to two-thirds of the world’s solar production capacity. 114 Massive Chinese subsidies for its solar enterprises have enabled Chinese solar panel makers to flood the world’s markets with dumped solar panels, with disastrous consequences for U.S. and other foreign solar panel manufacturers such as Suniva and SolarWorld. As SolarWorld’s Ben Santarris has stated, “Pervasive and all-encompassing Chinese subsidies are decimating our industry.” 115 As Scientific American explains, “Expanding renewable energy became one of seven categories of business that receive special attention including loans and tax incentives under China’s five-year plans. The result was that in building up the world’s largest solar manufacturing industry, one that became the price leader in most aspects of the world’s market—beginning with cheaper solar panels—China had helped create a worldwide glut. There were roughly two panels being made for every one being ordered by an overseas customer.” 116 Put simply, what China achieved in the global solar marketplace—flooding global markets and knocking out (or at least seriously weakening) often more-innovative foreign competitors—represents a template for what’s to come in other sectors, such as semiconductors and robotics, if China’s objectives as articulated in documents such as the Made in China 2025 Strategy succeed.
But that’s an example from just one sector. More broadly, China’s share of global output of high-tech manufacturing industries has increased from 8 percent in 2003 to 27 percent today, just 2 percent off the U.S. share, at 29 percent.\textsuperscript{117} China’s share of global manufacturing value added increased from being negligible in 1970 to 25 percent in 2015. Even since 1990, it has grown fivefold, from less than 5 percent to 25 percent.\textsuperscript{118} (The U.S. share of global manufacturing value added fell 10 percentage points, from 27 percent to 17 percent, from 1994 to 2015). Over this time, China has become the world’s largest exporter of high-technology products and has a substantial surplus in its trade balance in these sectors.\textsuperscript{119} And it’s not just low-value-added goods: a new University of Sussex study finds that the average value China adds to its exports is 76 percent (the European Union’s is 87 percent, by comparison).\textsuperscript{120} China has also become the largest global producer in ICT manufacturing industries, with a 40 percent share, and is the largest producer of pharmaceuticals.\textsuperscript{121} China’s capacity for innovation is increasing rapidly and needs to be taken rather seriously.

To be sure, neither all these trends, nor all U.S. job loss due to trade with China since 2001 has been the result of Chinese mercantilist trade practices—some is reflective of low-cost, labor-intensive industries, such as commodity apparel, where the United States and its workers are no longer cost competitive—and where that type of work sensibly has been performed in low-wage nations, such as China. However, that dynamic does not explain China’s increasing prowess in advanced-technology industries. Again, to be sure some of this is reflective of China’s embrace of constructive innovation policies—for instance, China already out-invests the United States in later-stage applied R&D and by 2018 China will invest up to twice as much as the United States or $658 billion, by 2018 on this critical late-stage research.\textsuperscript{122} Those caveats aside, China’s aggressive embrace of innovation mercantilism and unbalanced trade practices also deserves a significant share of the credit for these trends.

**POLICY RECOMMENDATIONS**

ITIF commends the administration’s thorough investigation of China’s acts, policies, and practices related to technology transfer, intellectual property, and innovation. A comprehensive understanding of the extent, intent, and effect of these policies should be the starting point for the administration’s development of a coherent, strategic policy to counteract them. The central goal should be to prevail upon China to abide by the commitments it made in joining the World Trade Organization and to be a responsible actor in the global economy. This means conducting trade and investment unequivocally in accordance with the foundational principles of the WTO: reciprocity, non-discrimination, and national treatment, meaning that countries treat their own enterprises no more favorably than they treat foreign ones.

At the end of the day, what the United States should want is a win-win trade and economic relationship with China grounded in rules-based, market-determined, enterprise-led activity. Open and unfettered trade between the United States and China remains in the best interests of both U.S. and Chinese enterprises—and it is the foundation of a healthy global economy. In practice, this should mean the United States adopts a results-oriented trade policy that holds China to specific goals, such as significantly reducing its global current
account surplus and reducing its forced technology transfer and IP theft, as well as procedural goals, such as securing results demonstrating a shift from predominantly export-led growth to growth generated chiefly by raising productivity in the country’s non-traded (e.g., non-export) sectors. This should include concrete statements with clear timelines for completion as well as specific accountability mechanisms.

ITIF offers a comprehensive policy agenda in its March 2017 report “Stopping China's Mercantilism: A Doctrine of Constructive, Alliance-Backed Confrontation,” so will briefly summarize here some of that report’s key recommendations. The administration’s first step should be to use the results of its Section 301 investigation to build an ironclad prosecutor’s case that lays out the “bill of particulars”—in other words, enumerating the vast extent of Chinese innovation-mercantilist policies—in great detail. This is not about recycling the China chapter from the annual USTR National Trade Estimate report. It’s about comprehensively detailing the array of unfair, mercantilist practices China engages in and concretely demonstrating how those practices harm the United States and the entire world economy, rich and poor nations alike.

Where the investigation reveals clear instances of China violating its WTO commitments, the administration should build on previous administrations’ use of WTO dispute-settlement mechanisms to bring more trade cases. In particular, USTR should be more aggressive in initiating trade disputes, or using the threat of disputes, to change China’s behavior. The administration could also launch more cases related to notifications and transparency. For example, China fails to adequately and timely notify its subsidies, and China also regularly fails to publish measures in English, French, or Spanish before it implements them.

The administration should actively work with Congress to update the Committee on Foreign Investment in the United States (CFIUS) to reflect the realities of modern state-led capitalism and if necessary require separate investment reviews for investment from state-directed economies. We should insist on reciprocally equivalent access and treatment regarding foreign direct investment. The charter of CFIUS needs to be updated to allow reviewers to move beyond case-by-case examinations to assess and gauge systemic threats and examine covered transactions in a broader context. Further, the United States should consider mandatory CFIUS screening for acquisition of any U.S. technology company by any Chinese state-owned company or Chinese company receiving state subsidies for the acquisition, or in any circumstances where China has articulated a clear, specific industrial policy to develop a technology. If the acquiring company is state-funded or state-directed, and the target company would help China meet its stated industrial policy goals, then the transaction should receive mandatory CFIUS screening. Further, for any sector in which forced technology transfers are the de facto practice (such as with electric vehicles, servers, semiconductors, etc.), the United States should place a temporary ban on all technology transfers to any Chinese state-owned, state-controlled, or substantially state-funded company if the technology is part of a stated Chinese industrial policy goal. The federal government could use existing statutory authority under the International Emergency Economic Powers Act within the Defense Production Act to enact this. Another way to protect and retain U.S. comparative advantage in advanced-technology industries would be by passing legislation requiring
notification to the U.S. government on a confidential basis of technology licenses to China and of transactions in China in which the Chinese government or Chinese government-affiliated entities are involved.

Finally, it’s imperative that any U.S. response be pursued not as “economic nationalism” but for the purposes of upholding the standards and the integrity of the global trading system predicted on free and fair market-based trade. The administration needs to make crystal clear that any such strategy is based not on punishing China nor seeking to hold it down. The administration also needs to make clear that the strategy is not based on making America great again or putting America first, but rather that it is based on saving the global trading system by restoring it to a rules-based one. Further, the time when unilateral U.S. action alone would suffice has gone. As such, any action toward China needs to be effected through a strong and unified coalition, particularly with nations such as Australia, Canada, Germany, Japan, South Korea, the United Kingdom, and the European Union. All of these economies have been harmed by Chinese mercantilism and are even more likely to be hurt going forward as China ramps up its strategy of innovation mercantilism to obtain global technology leadership. This also matters because the more the United States and its allies are able to hold firm and push back with a coordinated response, the more this diminishes China’s ability to employ its “divide and conquer” strategy of playing companies off one another to get them to make the best offer (e.g., coerced transfers of technology or IP) to be granted access to Chinese markets that should already be open anyway. In short, the administration needs to develop a sophisticated response to China’s innovation mercantilism, but be certain to collaborate with key allies in its implementation. The United States also needs to take a more assertive lead in defending, promoting, and building upon the open and rules-based global trading system, including by reanimating Transatlantic Trade and Investment Partnership (T-TIP) and Transpacific Partnership (TPP) negotiations. Further, in the bilateral or trilateral free trade agreements it negotiates, it should be certain to include the highest-standard rules and norms for the protection of intellectual property (i.e., source code and trade secrets protections), trade in digital industries (i.e., prohibitions on data localization policies), and opening of services markets.

CONCLUSION

While, as noted, China is actively and laudably pursuing a number of constructive steps to bolster its innovation economy, such as making significant investments in research and development, digital and physical infrastructure, education and skills, and bolstering its legal infrastructure for IP rights issuance and enforcement, all too often these positive practices are counterbalanced by the innovation mercantilist practices enumerated here. The reality is that China’s embrace of innovation mercantilist practices has only grown in recent years and will not abate until it’s made clear that these practices have consequences and will no longer be tolerated by nations genuinely committed to the fundamental tenets of rules-based, market-determined, private enterprise-led trade conducted in adherence with the principles of national treatment, non-discrimination, reciprocity, and transparency. China’s innovation mercantilist policies are putting America’s (and other foreign) advanced-technology industries under direct threat, a concerted response to push back against these policies is vital to preserving their long-term livelihood.


19. Ibid.

20. Ibid.


26. Ibid.

27. Ibid.


33. Ibid., 103.

34. Ibid., 110.

35. Ibid., 111.

37. Ibid.

38. Ibid., 51.


40. Ibid., 10.


71. Ibid.


74. In 2007, the MLPS for information security was formally launched by the Ministry of Public Security (MPS), National Administration for Protection of State Secrets (NAPSS), and the Office of State Cipher Code Administration (OSCCA), led by the State Council.

75. This MLPS classifies information networks in China according to their relative impact on national security, social order, and economic interests if the system is damaged or attacked. The classification levels range from
one to five, one being the least critical and five being the most critical. A level five ranking indicates extremely significant networks, such as for military and defense. According to MLPS regulations, systems classified at level three or above must procure IT security products containing only domestic IP. “China – Information and Communications Technology Equipment and Software” (Washington, DC: International Trade Administration, May 31, 2016), https://www.export.gov/article?id=China-Information-Communication-Technology.

76. The definition of what is involved is being considered by China’s National Information Security Standards Technical Committee (also known as Technical Committee 260) under the Cyberspace Administration of China, which is the cybersecurity standards maker, as part of its efforts to craft technical specifications for the new cybersecurity law. Eva Dou, “Microsoft, Intel, IBM Push Back on China Cybersecurity Rules,” The Wall Street Journal, December 1, 2016, http://www.wsj.com/articles/microsoft-intel-ibm-push-back-on-china-cybersecurity-rules-1480587542.


79. The comments were made in a discussion log made public by Technical Committee 260, the national cybersecurity standards maker, as it released technical parameters of its omnibus cybersecurity law adopted on November 7. Ibid.

80. Ibid.

81. Ibid.

82. Article 40 of the TRIPS Agreement (as an effort to control abusive licensing practices) holds that Members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology.


100. USTR, 2014 Report to Congress on China’s WTO Compliance, 12.


103. Ibid., 17.


105. Ibid., 75.

106. Panitchpakdi and Clifford, China and the WTO, 225.


111. Ibid.


119. NSB, Science and Engineering Indicators 2016, 6-53.


121. NSB, Science and Engineering Indicators 2016, “Figure 6-15: HT Manufacturing Industries of Selected Regions/Countries/Economies: 2014.”


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