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**Subcommittee on Multilateral International Development, Multilateral
Institutions, and International Economic, Energy,
and Environmental Policy**

**Hearing on A Multilateral and Strategic Response
to International Predatory Economic Practices**

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Good afternoon Chairman Young, Ranking Member Merkley, and members of the Committee; thank you for inviting me to share the views of the Information Technology and Innovation Foundation (ITIF) on the issue of how foreign predatory economic practices harm the U.S. economy and what the U.S. government should do in response.

The Information Technology and Innovation Foundation is a non-partisan think tank whose mission is to formulate and promote public policies to advance technological innovation and productivity internationally, in Washington, and in the states. Recognizing the vital role of technology in ensuring prosperity, ITIF focuses on innovation, productivity, and digital economy issues. ITF has long focused on the issue of U.S. global competitiveness, including how unfair foreign policies and practices negatively impact the U.S. economy, and what the federal government needs to do in response. I very much appreciate the opportunity to comment on these issues today, particularly in the context of discussion of proposed legislation to require a national economic security strategy.

The Nature and Extent of Foreign “Innovation Mercantilism”

Virtually no nation is indifferent to the state of its global economic competitiveness. Most policymakers understand that fielding a suite of industries and firms that are able to win, or at least hold their own, in global competition yields important economic benefits. But nations differ dramatically in how they go about competing. Many nations generally play by the rules and seek to win in “fair” ways, such as by having a competitive tax code and regulatory system, ensuring a highly skilled workforce and robust infrastructure, and investing in pre-competitive scientific and engineering research. But a significant and growing share of nations have taken a different approach to winning: “innovation mercantilism.” These nations employ a host of unfair domestic economic and trade policies and practices, including localization barriers to trade, subsidies, forced technology transfer, weak intellectual property (IP) systems, IP theft, currency manipulation, tariffs, discriminatory government procurement, government supported enterprises, limits on market access and investment by foreign firms, domestic technology standards, and restrictions on data flows. These are put in service of limiting domestic market access to foreign firms in advanced industries and expanding foreign market access for their firms.

When ITIF assessed these practices for 55 nations in its report “The Global Mercantilist Index,” we found that nations differed significantly on the extent to which they embraced these unfair and distorting policies.¹ To be sure, no nation is free from “mercantilist sin.” But some nations are unrepentant and regular “sinners,” where mercantilism is the *raison d’être* of their economic strategies. When ITIF assessed the practices of these nations on 16 measures (e.g., non-tariff trade barriers, IP protection, tariffs, forced localization), we found that nations fall into three categories. The first are nations that are generally committed to market-oriented trade determined by choices freely made by businesses. These include, of course, the United States, but also many Commonwealth nations (Ireland, New Zealand, UK) and most EU nations (Finland, Sweden, Denmark, Spain, France, Germany, Austria, Netherlands, etc.). Second are nations that generally play by the rules but engage in some mercantilist practices. These include nations like Japan, Mexico, South Africa, and South Korea. Finally, there is a set of nations whose core strategy is largely mercantilist in nature. Not surprising China ranks the worst, but nations like Argentina, Brazil, India, Indonesia, Malaysia, Russia, Thailand, Turkey, and Vietnam also rank high on mercantilist practices.

When companies in the United States want to sell their goods or services, either in the domestic marketplace or overseas, many face formidable challenges. For example, since 2013, ITIF has been publishing its annual “Worst Innovation Mercantilist Policies” of the year report which highlights the worst new policies each year.² Here are some examples:

- Indonesia: Introduced forced local data-storage requirements for Internet-based, over-the-top content providers. Introduced a patent law amendment that undermines pharmaceutical intellectual property and forces local production and technology transfers.
- Russia: Introduced forced local data-storage requirements and encryption-key disclosure as part of a new telecommunications data law. Introduced new government procurement rules that ban the purchase of foreign software. It also forced the local production of pharmaceuticals and medical devices.
- Turkey: Introduced a new data-protection law with stringent transfer requirements that acts as de facto forced local data storage.
- Vietnam: Introduced forced local data-storage requirements for Internet-based, over-the-top content providers. Introduced a new network-security law that forces companies to disclose encryption keys and source code to the government as a condition of market access. Establishing a national payments gateway that discriminates against foreign electronic payment services—favoring a new local firm called “NAPAS”—in direct contravention of its Trans-Pacific Partnership (TPP) commitment.
- India: Introduced local content requirements as part of its National Telecom Machine-to-Machine Roadmap and introduced local content requirements in solar power projects. Introduced new tariffs on telecommunications equipment and implemented. Its Preferential Market Access rules limit government procurement of ICT products to domestically produced products.

The Special Case of China

China is in its own league when it comes to fielding predatory economic and trade policies and practices. As ITIF has documented across a series of reports, China has deployed a vast panoply of innovation mercantilist practices that seek to unfairly advantage Chinese advanced-industry producers over foreign competitors.³ These practices have included forced technology transfer and forced local production as a condition of market access; theft of foreign intellectual property (IP); curtailment and even outright denial of access to Chinese markets in certain sectors; manipulation of technology standards; special benefits for state-owned enterprises; capricious cases to force foreign companies to license technology at a discount; massive subsidies, and government-subsidized acquisitions of or investments in foreign enterprises. U.S. and foreign enterprises across virtually every advanced technology sector—from aerospace and biotechnology to information and communications technology (ICT) products, Internet, clean energy, and digital media—have been harmed by China’s aggressive use of these types of innovation mercantilist policies.

In the last few years, though the focus of China’s efforts has shifted. In 2015, Chinese President Xi Jinping unabashedly trumpeted a goal of making China the “master of its own technologies.”⁴ China’s arrival at that point resulted from the evolution of Chinese economic policy over the past two decades. Up to the mid-

2000s, China's economic development strategy sought principally to induce foreign multinationals to shift production to China.⁵ It used an array of unfair tactics, including currency manipulation, massive subsidies, and limits on imports. That strategy changed in 2006 as China moved to a "China Inc." development model of "indigenous innovation" which focused on helping Chinese firms, especially those in advanced, innovation-based industries, often at the expense of foreign firms. Marking the shift was a seminal document called the "National Medium- and Long-term Program for Science and Technology Development (2006-2020)," the so-called "MLP," which called on China to master 402 core technologies, everything from intelligent automobiles to integrated circuits and high-performance computers.

The MLP essentially announced that modern Chinese economic strategy sought absolute advantage across virtually all advanced technology industries. It fundamentally rejected the notion of comparative advantage: which holds that nations should specialize in the production of products or services at which they are the most efficient and trade for the rest. Instead, China wishes to dominate in the production of a wide array of advanced technology products including jet airplanes, semiconductors, computers, machine tools, robots, electric vehicles, artificial intelligence software, and pharmaceuticals. Chinese policymakers wish to autarkically supply Chinese markets for advanced technology products with their own production while still benefitting from unfettered access to global markets for their technology exports and foreign direct investment.

In recent years President Xi has doubled down on this approach, through new promulgations such as the "Made in China 2025" strategy, the 13th Five-Year Plan for Science and Technology," the "13th Five-Year Plan for National Informatization," and "The National Cybersecurity Strategy," among other policies. "Made in China 2025," for instance, calls for 70 percent local content in manufacturing components, while policies enumerated in documents such as the "13th Five-Year Plan for National Informatization and The National Cybersecurity Strategy" effectively deny access to U.S. enterprises seeking to compete in emerging ICT industries such as cloud computing in China. The "National Cybersecurity Strategy" further outlines a goal for China to become a strong cyber power by 2020, and that includes mastering core technologies, many of which the United States is currently the international leader in, such as operating systems, integrated circuits, big data, cloud computing, large scale software services, the Internet of Things, and 5G wireless systems, as the country increasingly pursues a strategy of shutting out foreign competitors in the interest of advantaging domestic industries. 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 numerically 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.⁶ An import substitution mindset clearly lies at the heart of China's "Made in China 2025" strategy.

So, what exactly is China's strategy? The core insight needed to understand the Chinese economic strategy is as follows.

- 1) China is seeking global competitive advantage in virtually all advanced manufacturing industries.
- 2) Attaining that requires significant "learning" as the production "recipes" to make a wide-body jet, a computer chip, a genomics sequencer, a robot, a biotech drug and other advanced technology product are incredibly complex and can't be obtained solely from scholarly journal articles or other widely available sources of technical knowledge. The United States has gained competencies and leadership in these and a host of other industries the hard way: trillions of dollars of investment in R&D, production testing, workforce training, and other areas. The Chinese government knows that if it proceeds in the fair and "natural" way that it will take it many decades or more to seriously close the gap with the global leaders. Most of their firms and universities are just too far behind to be able to catch up any time soon.
- 3) To obtain the technical knowledge it needs from foreign producers China has embraced a multifaceted set of unfair policies and programs, including theft of intellectual property, forced joint ventures and technology transfer as a condition of market access, and state-subsidized purchases of or investments in foreign advanced industry firms.
- 4) Once Chinese firms obtain this technology, by hook or by crook, China proceeds to lavish subsidies and other benefits on these "champions" so they can advance and scale up in the Chinese market.
- 5) Finally, once they are ready for "going out," these Chinese champions rely on extensive government export subsidies and other assistance to challenge foreign producers in foreign markets.

To acquire knowledge (step 2), China engages in a host of predatory practices. One key tool is forced technology transfer. Although China's World Trade Organization (WTO) accession agreement contains rules forbidding it from tying foreign direct investment or market access to requirements to transfer technology to the country, it remains commonplace that China requires firms to transfer technology in exchange for being granted the ability to invest, operate, or sell in China.⁷ 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, automotive, chemicals, renewable energy, and high-speed rail.⁸ To be sure, because such conditions contravene China's WTO commitments, officials are careful not to put such requirements in writing, usually resorting to oral communications to pressure foreign firms to transfer

technology.⁹ 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."¹⁰ Indeed, 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.¹¹ Put simply, technology transfer requirements as a condition of doing business in China are a key pillar of China's innovation mercantilist strategy. Moreover, over the last five years, China has ratcheted up its demands. Now for many foreign advanced industry companies, doing business in China requires transferring ever-more valuable technology to Chinese joint venture "partners."

China's anti-monopoly law has been designed so the government can use it to force foreign companies to license technology at favorable rates to Chinese firms. Article 55 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."¹² Yet, 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 foreign 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."¹³ And with Chinese courts largely rubber-stamping the government's dictates, foreign companies have little choice but to comply. 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, often after paying substantial fines to the government.¹⁴

Another way China acquires technology and intellectual property is to simply steal it. As a recent *MIT Sloan Management Review* article, "Protecting Intellectual Property in China," noted, "Intellectual property protection is the No. 1 challenge for multinational corporations operating in China."¹⁵ According to the U.S. International Trade Commission (ITC), in 2009, U.S. IP-intensive enterprises conducting business in China reported losses of approximately \$48.2 billion in sales, royalties, or license fees due to Chinese IPR infringement.¹⁶ That figure has continued to increase. Subsequently, The IP Commission Report on the Theft of U.S. Intellectual Property found that China accounted for nearly 80 percent of all IP thefts from U.S.-headquartered organizations in 2013, amounting to an estimated \$300 billion in lost business annually.¹⁷ 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 2013.¹⁸ 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.¹⁹

China relies on an array of vectors, including cyberspace and old-fashioned spying and espionage. For instance, in April 2017, a Chinese national pled guilty to trying to provide the Chinese government with

export-restricted high-grade carbon fiber, which is primarily used in aerospace and military applications.²⁰ Approximately a month later, four U.S. citizens were charged with conspiring to steal trade secrets from a U.S. business, on behalf of a Chinese company that was involved with manufacturing what the U.S. Department of Justice characterized as a “high-performance, naval-grade product” for military and civilian uses.²¹

An increasingly important way for Chinese firms to gain access to needed technology is to simply buy up U.S. technology companies or invest in high-tech startups. Indeed, until recently, a not-insignificant share of Chinese foreign direct investment (FDI) into the United States was in technology industries. According to the Commerce Department’s Select USA, the top four industrial categories in terms of numbers of Chinese FDI projects from 2003 to 2015 were electronics, industrial machinery, software and information technology services, and communications.²² The Rhodium Group reports that over the last 16 years there were roughly \$18 billion of Chinese FDI into information technology and communications (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.²³ Of the \$14.2 billion invested in ICT, 74 percent was made from 2014 to 2016, with more than 95 percent going to acquisitions.²⁴ These numbers would have been considerably larger if the federal government had not informally or formally blocked some deals through CFIUS.

Much Chinese FDI comes from state-owned enterprises that have different motives than simply maximizing profits. Rather, their investments are usually to serve 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.²⁵ 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. A Center for Strategic and International Studies report concludes 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 initiatives.”²⁶

The role of Chinese government money in U.S. investment 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.²⁷ This was evident for example in the attempted purchase of 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.”²⁸ Moreover, the Chinese government channels funds to supposedly private investment bodies, making it look as if these deals are commercial.

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 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 US market to upgrade its technology and other capabilities.”²⁹ Likewise, in the electronics and

electrical equipment sector, “Chinese investors are drawn to the US electronics and electrical equipment sector for building their brands, expanding their sales and distribution channels, and upgrading their innovative capacity and technology portfolios.”³⁰ Investments in pharmaceuticals and biotechnology are “often driven by upgrading technology (such as Wuxi’s acquisition of AppTec, a laboratory services firm).”³¹ 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.³² 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...”³³

And as the German Mercator Center for Chinese Studies notes: “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.”³⁴ 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.”³⁵

China has also ramped up its efforts to invest in early stage U.S. technology start-ups. A recent report from DOD’s Defense Innovation Unit Experimental (DIUx) finds that “Chinese participation in venture-backed startups is at a record level of 10-16% of all [U.S.] venture deals (2015-2017) and has grown quite rapidly in the past seven years.”³⁶ And much of this investment comes from venture firms that are backed by Chinese governments.

Once Chinese firms gain access to needed foreign technology, the next step of China’s strategy is to ensure that firms have the capital needed to scale up. This often involves massive direct and indirect subsidies, coupled with protecting markets from foreign competition.

China lavishes domestic firms that have obtained foreign technology with massive subsidies. As George and Usha Haley document in their book, *Subsidies to Chinese Industry: State Capitalism, Business Strategy, and Trade Policy*, China’s game plan has long been to “aggressively subsidize targeted industries to dominate global markets.” As they document, in the 2000s, China provided almost \$100 billion in subsidies to just three industries alone: \$33 billion for paper, \$28 billion for auto parts, and \$27 billion for steel.³⁷ China’s share of global solar panel exports grew from just 5 percent in the mid-2000s to 67 percent today, with Chinese solar output turbocharged by at least \$42 billion of subsidies from 2010 to 2012 alone.³⁸ China now wants to replicate this strategy in other advanced-technology industries, such as semiconductors and electric batteries.³⁹ For instance, China’s National Integrated Circuit (IC) Strategy calls for at least \$160 billion in subsidies to create a completely closed-loop semiconductor industry in China, including explicit plans to halve Chinese imports of U.S.-manufactured semiconductors by 2025 and eliminate them entirely by 2035. The “Made in China 2025 Strategy” is supported by some 800 state-guided funds to the tune of more than \$350 billion, including advanced-battery manufacturing, wide-body aircraft, and robotics.

The Chinese government also works to limit foreign competition for its budding national champions. 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.⁴⁰ 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.”⁴¹

Once firms have the technology and scale to go global, the government often subsidizes global market expansion through subsidies, such as through the China Export-Import Bank (an entity that the World Bank has funded) and China's Export and Credit Insurance Corporation (Sinasure).⁴² And by leading to global overcapacity and selling below cost, China uses that overcapacity as a cudgel to disrupt the economics of innovation-based industries (i.e., their subsidized competition prevents foreign competitors from earning reasonable profits from one generation of innovation to reinvest in future generations of innovation) and thus weaken foreign competitors, enabling Chinese firms to gain even more capacity.

Given the extent of China's “Made in 2025” initiative, coupled with predatory policies from other nations, it is no exaggeration to suggest that, without aggressive action, the United States may face a world within two decades years where U.S. jobs in industries as diverse as semiconductors, computers, biopharmaceuticals, aerospace, Internet, digital media, and automobiles are significantly reduced due to foreign policies unabashedly targeting global market share in those industries.

The Chinese government defends these predatory practices on the grounds that as a sovereign nation it has the right to build its own advanced industries. The state-run *Global Times* newspaper wrote that it's “our sovereign right to develop high-tech industry and it is connected to the quality of rejuvenation of the Chinese nation. It will not be abandoned due to external pressure.”⁴³ To be sure, is China's sovereign right to support industrial development and technological advancement and as long as it plays by the rules. If they do, there is nothing the United States can or should do to slow them down. But what China does not have a right to do is to deploy unfair and predatory tactics to achieve that goal; as long as they remain members of the World Trade Organization. When China joined the WTO in order to get access to global markets and be protected from unilateral actions against its unfair trading practices it made a binding set of commitments to live by, at least in the spirit, if not the letter of the law. Its current practices are a flagrant violation of that commitment.⁴⁴ Because of that the United States and our allies have every right to insist on China abiding by global norms and rules. If China wants to insist on its right to practice predatory practices with impunity, it should at least withdraw from the WTO.

Why the China Challenge is Unique

It is important to understand how China differs from Asian mercantilist nations which used similar tools in the past. Japan and the four “Asian Tigers (Hong Kong, Singapore, South Korea and Taiwan) all

implemented mercantilist practices to leapfrog their industrialization process, including state subsidies, protected home markets and other policies. But China is different in three fundamental ways.

First, these nations, especially Korea, Japan and Taiwan, largely closed their markets to U.S. firms, preferring to develop their own domestic champions. This reduced the leverage they had over U.S. firms to transfer their technology as a condition of market access. Moreover, it led U.S. companies to protest much more against these unfair practices since the competition was between “our companies” and “their companies.” This explains why there was strong bipartisan support in Congress and the executive branch in the 1980s and early 1990s for tough action against these practices and for robust domestic competitiveness policies. U.S. businesses strongly supported such policies.

In contrast, China took a different tact, welcoming in (some might say seducing) U.S. companies, but holding out access to the largest market in the world in exchange for what China wanted and needed: advanced technology. Moreover, because so many U.S. firms are now ensconced in China and would be significantly hurt if they walked away, or if the Chinese government retaliated against them for U.S. government action, many have been less than full-throated supporters of either tough enforcement action against China or strong competitiveness and innovation policies at home.

Second, Japan and the tigers were largely rule of law nations. While the Japanese government, for example, could exercise considerable discretion through so-called “administrative guidance,” it did have a Constitution, a real legislature (the Diet), and laws that courts would enforce. This meant that not only were more of their egregious actions WTO-actionable but there was a limit on how capricious and unfair the government could be. China knows no such bounds. For example, the Chinese government is too savvy and understanding of WTO legal arcana to ever put its rules on forced technology transfer in writing. It knows that if it did, that this would be actionable under WTO rules. Rather, its rules on this are informal—known to all, but “hidden” behind face-to-face meetings and vague but ultimately clear informal messages. Moreover, when the Chinese government wants to send a message to a U.S. firm doing business in China—either to retaliate for some legitimate action the U.S. government has taken vis-à-vis China or simply to require a U.S. firm to toe the party line, it can pretty much do whatever it wants, including generating a trumped up anti-trust charge, denying permits, leading a propaganda campaign for consumers to boycott the company, or otherwise making life difficult for a U.S. company.

Finally, Japan and the tigers were not only allies of the United States, they benefited from and required the U.S. security umbrella. Without U.S. protection, these nations would have to cope with military and other security challenges from China, North Korea, and Russia on their own. As such, that gave the U.S. government some leverage to challenge their more egregious policies and practices, even if the U.S. government was loathe to use that leverage. Moreover, the technological rise of these nations never posed a military and national security threat to the United States. In fact, an increase in their economic and technological strength helped U.S. national security. The exact opposite is the case with China, which is working with determination and vigor to upgrade its military capabilities to be on par with, if not ahead of, the United States.

The Impact of Unfair and Predatory Foreign Economic and Trade Practices on the U.S. Economy

So, have these practices hurt the U.S. economy? To listen to many experts, one would think they have not. But what passes for conventional wisdom among economists and trade scholars about the impact of unfair foreign trade practices on the U.S. economy is largely wrong. This community advances two key notions: both of which are wrong.

The first is that the U.S. trade deficit is our fault: America doesn't save enough. Indeed, the story told by most conventional economists is that the trade deficit is a simple accounting function: low U.S. savings requires overseas borrowing, which by definition requires running a trade deficit (we buy our goods and services from foreign economies and they recycle the money into the U.S. economy to finance our debt). The Council on Competitiveness sums up the conventional view when it writes: "These threats [e.g., the trade deficit] stem from global financial imbalances rather than from the inability of American companies or American workers to compete in global marketplaces."⁵⁸

But as American University economist Robert Blecker states, "This identity does not prove causality, and is consistent with other causal stories about the trade deficit."⁵⁹ What the conventional story fails to recognize is that low savings does not cause the trade deficit; it is a function of low national competitiveness. If, for example, foreign nations significantly reduced their predatory practices, the U.S. trade deficit would fall and foreign governments, including the Chinese, would recycle less money into our economy. The result would be a rise in net U.S. exports, investment and interest rates. And this would spur more savings. Higher interest rates would lead to more savings. More exports (and relatively fewer imports) would boost corporate savings. And more jobs and higher wages through exports (exporting firms pay 9.1 percent more than jobs in firms that export less)⁶⁰ would boost individual savings and reduce the government budget deficit. Moreover, low U.S. competitiveness from foreign predatory practices can affect the economy through two channels: an increased trade deficit but also a weaker currency. Both hurt U.S. living standards.

But the second and perhaps more egregious mistake the economics and trade establishment makes is to claim that the catastrophic loss of over one-third of U.S. manufacturing jobs from 2000 to 2011 was largely unrelated to competitiveness factors and almost totally a cause of superior U.S. manufacturing productivity. The Congressional Research Service has reflected that view in its reports to Congress. For example, the CRS report "U.S. Manufacturing in International Perspective," denies that American manufacturing has lost competitive position globally, and that most jobs were lost to automation. However, as ITIF has shown U.S. manufacturing employment has decreased at rates that cannot be explained by productivity gains, real value-added output has been stagnant, and the foreign direct investment and R&D statistics cited by the CRS are both inflated and poor indicators of manufacturing success.⁴⁵

Moreover, a number of studies that look carefully at the real data behind this come to different and troubling conclusions. The Economic Policy Institute estimates that approximately half the U.S. manufacturing job losses were due to loss of U.S. competitiveness, with much of that coming from foreign predatory trade practices.⁴⁶ Justin Pierce of the Federal Reserve Board of Governors and Peter Schott of the Yale School of Management link permanent normal trade relations (PNTR) with China in 2000 with "the sharp decline in U.S. manufacturing employment beginning in 2001."⁴⁷ MIT economists David Autor, David Dorn, and

Gordon Hanson estimate that the United States lost 982,000 manufacturing jobs between 2000 and 2007 because of Chinese import competition.⁴⁸ The Information Technology and Innovation Foundation has found that when U.S. manufacturing output growth is accurately measured, it becomes clear that the growing overall U.S. trade deficit was responsible for almost two-thirds of jobs lost in the 2000s (e.g., approximately 3.8 million jobs), with a significant share of this the result of unbalanced trade with China.⁴⁹

One reason why so many economists get this wrong is that Department of Commerce measurement of output in the computer and electronic-products sector is vastly overstated, because when a company such as Apple or Dell comes out with a computer that is twice as fast every 24 months or so, the government measures that as a doubling of output, even if the actual number of computers being produced is the same.⁵⁰ This leads to a vast over-estimation of total U.S. manufacturing output, leading most economists to assume that all is well, and that any job loss had to come from productivity growth. But if the overstated output of the computer sector (a sector that accounted for 11 percent of measured manufacturing output in 2007), is omitted it becomes clear that the rest of U.S. manufacturing output declined by 6.4 percent from 2007 to 2016. Machinery, chemicals, fabricated metals, electrical equipment and appliances, and other industries all produced less in 2016 than in 2007, even as GDP has grown.⁵¹

To be sure, global integration by definition leads to economic restructuring. The way that process is supposed to work, however, for a high-wage, advanced economy like the United States is that we shed lower-wage, lower value-added production, but make up for those losses with more higher-value added production. In this sense, it should not be a surprise that the industries with the steepest loss of output and employment in the 2000s were apparel and leather, textiles, furniture and related products, fabricated metal products, nonmetallic mineral products and plastics and rubber products. These industries are either lower-skilled and lower value-added (e.g., furniture), or commodity industries (e.g., glass bottles). We would expect the United States to lose global market share in these industries from global trade. But we should also expect to see compensating gains in other more advanced, high value-added industries. To some extent we have seen that with some modest gains in services trade balance, but that has in no way compensated for the increase in the manufacturing trade deficit. In the 2000s for example, output in machinery, primary metals, electrical equipment and appliances all declined, while chemical products increased only modestly. In fact, the U.S. trade balance in goods with advanced technology products has gone from a surplus in 2001 to a deficit in 2017 of a \$110 billion, and it is on track to significantly exceed that for 2018.⁵² If global trade was working as it should, with vastly less innovation mercantilism, the United States should have been running a surplus in advanced technology products over at least over \$200 billion a year.

It is in this context that we should view what China in particular is doing. There is a global market for advanced technology industries (semiconductors, jet aircraft, lasers, robots, AI systems, etc.) that is fixed in size, at least in the short term. This means not only that one firm's gain in market share is another's loss, but that one nation's gain is another's loss. Despite what conventional economists will say about nations not competing and how the United States can benefit from China's innovation success, that is true only if one believes that all industries are equal in economic impact. If that is true, then if China takes market share from the United States in semiconductors, aircraft an AI, it doesn't matter because the United States can gain share in other industries, like waste paper exports. Of course, this ignores three key facts. First, the average wage in

advanced industries is approximately 75 percent higher than average U.S. wages, so losing global market share in the former means lower wages.⁵³ The second is that an advanced economy is based on the ability of firms and other organizations to master complex product and production “recipes.” Attaining or maintaining capabilities in one area or technology make it easier to master capabilities in other areas. Conversely losing global market share in advanced industries, reduces our ability to lead in others. Finally, U.S. defense superiority is based in large part on technological superiority. Our service men and women go into any conflict with the advantage of fielding technologically superior weapons systems. But maintaining that advantage depends on the U.S. economy maintaining global technological superiority, not just in defense-specific technologies but in a wide array of dual-use technologies. All of this means that if China wins in advanced industries, particularly through using predatory means that hurt U.S. industries directly (e.g., imposing trumped up fines over purported anti-trust violations), the United States loses. Moreover, the challenge to America’s leadership in technology-based industries is much different than the process of losing more commodity-based, low-skilled industries to China in the 2000s. If, for example, the value of the dollar was to fall significantly related to the yuan (and other currencies), it is possible that America could regain a not-insignificant share of the production lost to China in industries like textiles and apparel, furniture, metal parts, and other similar low- and medium-value added products. Companies could simply buy machines, set up factories, and restart production in the United States in a cost-effective way. But if America’s technology companies were put out business, no currency decline alone could bring them back because competitiveness in technology industries is based less on cost and more on a complex array of competencies at the firm and ecosystem level. For example, a firm could not simply buy some semiconductor equipment and start producing chips. To do that would require not just machines but deep and complex tacit knowledge embedded in the firm and its workers (from the shop floor to scientists to managers) coupled with a related innovation ecosystem (universities training the right talent, a network of suppliers, etc.). Once those capabilities are lost, they are essentially gone, and are very difficult to resurrect.

There is an additional reason why losing advanced tech industries is problematic. Most technology-based industries have high barriers to entry. In contrast to the t-shirt industry where entry largely requires just capital to buy sewing machines, entry into innovation-based industries requires not both physical and intellectual capital. In an industry like semiconductors, for example, firms spend hundreds of millions, if not billions of dollars, developing technical capabilities to enable production. Producing the first chip of a particular generation is incredibly expensive because of the amount of R&D and tooling involved. Producing the second is vastly cheaper because only the energy, material, labor and depreciation costs are involved. Fixed costs are extremely high, but marginal costs are low. In these innovation industries losing market share to unfairly competing firms supported by their innovation mercantilist governments means two things. First, sales fall. This is true because global sales are largely fixed (there is only so much demand for semiconductors, jet airplanes, and other similar advanced products), and if a mercantilist-supported competitor gains market share, the market-based competitor loses share. Second, because profits decline more than sales, it is now more difficult for the market-based innovator to reinvest revenues in the next generation of products or services, meaning that the mercantilist-supported entrant has an advantage in the next generation of products. This can lead to a death spiral whereby the market-based leader loses complete market share.

So, to the extent the United States continues to lose technological capabilities to China, U.S. technological advantage in defense over China will diminish, if not evaporate, as U.S. capabilities whither and Chinese ones strengthen. It is certainly a highly risky proposition to assume that the United States can continue its weapons systems superiority over the Chinese if: 1) the Chinese continue to advance, largely through unfair, predatory practices at their current pace; and 2) the United States loses a moderate to significant share of its advanced technology innovation and production capabilities. As ITIF wrote in 2014, “The United States defense system is still the most innovative in the world, but that leadership is not assured and is in danger of failing. This decline is not only impacting defense innovation and capabilities, but also overall commercial innovation and U.S. competitiveness.”⁵⁴

The Impact on Our Allies

Unfair and predatory foreign economic and trade practices, whether from China or other nations, have hurt not just U.S. firms and the U.S. economy but our allies’ firms and economies. Over 20 percent of the loss of Canadian manufacturing jobs from 2001 to 2011 was estimated to be due to Chinese competition.⁵⁵ Germany recently passed new regulations restricting foreign investment in Germany, allowing the government to investigate and potentially block takeovers in key industries, particularly from China. This was spurred by a recent takeover of Kuka, a leading German robot maker, by a Chinese firm, backed by the Chinese government.⁵⁶ Korean economic officials are deeply worried that Korea will be squeezed out of its historical role as a “fast follower” in innovation-based industries by China, which has lower costs and deep pockets to subsidize innovation. EU government and business officials have expressed growing concern over the impact of unfair Chinese practices on the EU economy. Carl Hayward, General Manager of the European Union Chamber of Commerce in Beijing states that “poor enforcement of intellectual property rights and requirements for forced technology transfers in exchange for near-term market access constitute major investment barriers.”⁵⁷ The European Commission and the High Representative of the Union for Foreign Affairs and Security Policy published a joint communication to the European Parliament and the European Council calling for a new EU strategy on China, which discussed the problems of market access and IP theft.⁵⁸ As discussed below, these and other countries should be natural allies for the United States in its efforts to roll back Chinese innovation mercantilism.

What the U.S. Federal Government Should Do Unilaterally

As discussed below, any effective campaign to roll back Chinese innovation mercantilism will require a concerted joint campaign with our allies. However, the U.S. government can and should take steps on its own. There are a host of steps Congress can take to make that easier. The first relates to boosting the institutional capacity of the White House to better understand and address these issues.

Congress should require the establishment of a National Industrial Intelligence Unit within the National Intelligence Council. The federal government largely continues to consider specific instances of foreign innovation mercantilism—such as the challenge of Chinese acquisition of U.S. technology enterprises—on an ad hoc, case-by-case basis. There is no entity in government charged with considering the challenge from a holistic, strategic perspective across agencies to analyze, understand, anticipate, and respond. In particular, no entity analyzes China’s, Russia’s and other nations’ capacity to absorb knowledge, to understand its determination to do something with it, or to understand the sources of its technology.

To remedy this deficiency, Congress should direct the president to establish and staff a new National Industrial Intelligence Unit (which could be housed within the existing National Intelligence Council) charged with developing a better process and structure to understand the specifics and long-term implications of other nations' economic development strategies, particularly China's, so that the United States can respond more effectively.⁵⁹ In particular, this group would develop a better process and structure to understand the long-term implications of mercantilist nations' economic development strategies on U.S. competitiveness. It would also develop approaches to better leverage intelligence assets to boost the competitiveness of U.S. companies. This would not constitute industrial espionage, but rather sharing knowledge about the competitiveness strategies of Chinese enterprises and industries as well as developing better intelligence on the true source of Chinese government involvement in and financing of Chinese companies and the front organizations they set up in the United States. And as part of the Council's mission, it should be charged with sharing commercial intelligence on China with our allies, particularly those in Europe, as they have much less developed capabilities vis-à-vis China.

Create a sub-directorate at the NSC responsible for combatting innovation mercantilism. There are no special assistants to the president (SAP) or senior directors in the International Economics Directorate of the National Security Council (NSC), who are clearly charged with the development of strategy or execution of tactics related to combatting foreign countries' innovation-mercantilist practices. Competitiveness issues have historically tended to fall through the cracks at the NSC. Indeed, competitiveness has long been a second-order priority in U.S. policy compared with diplomacy and national security considerations.⁶⁰ Yet America's national security increasingly depends on its technological leadership. To address this, Congress should call on the Administration to create within the NSC a sub-directorate consisting of a senior director or SAP, supported by two to three directors, which can be the liaison to the highest levels of the executive branch in conceiving and executing a whole-of-government approach to combatting foreign innovation mercantilism. Congress should also authorize and appropriate funds to adequately staff both the sub-directorate and industrial intelligence council unit.

Related to this, **Congress should pass the National Economic Security Strategy Act of 2018.** By requiring the administration to develop a national economic strategy to support the national security strategy, the legislation will not only help the administration make stronger connections between economic security and national security, it will help identify challenges and policy needs. By focusing attention not only on the strengths and weaknesses within American industry related to national security broadly defined, but also on the threats from other nations, policymakers will be better prepared to take the decisive steps that are required.

Congress should mandate that USTR produce an annual Global Mercantilist Index (GMI) that comprehensively documents and ranks the unfair economic and trade policies imposed by America's trading partners. USTR's Special 301 Report provides an annual review of countries that maintain inadequate intellectual-property protections and enforcement mechanisms and its National Trade Estimate Report on Foreign Trade Barriers (NTE) provides an effective inventory of significant foreign barriers to U.S. exports and investment. But the government lacks a report that comprehensively identifies all of the

innovation-mercantilist policies of America’s trading partners and ranks the worst offenders.⁶¹ Producing such a report would allow the government to identify and rank the nations whose predatory practices represent the largest threat to the U.S. and global economies.

Congress should require federal agencies to use USTR’s GMI results when making decisions about foreign aid and preferences. There need to be real consequences for nations that are ranked as the most mercantilist. As the table below shows, there are now virtually no consequences for nations engaged in systemic mercantilism. U.S. agencies and programs, such as the Agency for International Development, the Millennium Challenge Corporation, and the Overseas Private Investment Corporation continue to make loans or grants for projects in these nations. Congress should instruct government to no longer provide aid to the lowest ranking nations until they reform their practices. Money saved should be used to increase support for nations that play by the international trading rules.

Table 1: Mercantilist Countries Assisted by U.S. and Multilateral Agencies and Policies

| | Agency for International Development ⁶² | General Systems of Preferences ⁶³ | Millennium Challenge Corporation ⁶⁴ | World Bank ⁶⁵ | Overseas Private Investment Corporation ⁶⁶ |
|-----------|--|--|--|--------------------------|---|
| Thailand | x | x | | x | |
| China | x | | | x | |
| India | x | x | x | x | x |
| Argentina | | | | x | x |
| Russia | x | | | x | |
| Vietnam | x | | x | x | |
| Indonesia | x | x | x | x | |
| Malaysia | | | | x | |
| Brazil | | x | | x | x |

Moreover, the U.S. government provides Generalized System of Preferences (GSP) benefits to many of these nations. Instituted in 1976, GSP aims to promote economic growth in the developing world by providing preferential, duty-free treatment for up to 5,000 products when imported from GSP-eligible nations. However, it sends a very clear signal to nations like Brazil, India, Indonesia and Thailand that they get special access to U.S. markets even as they continue to put in place mercantilist policies that harm the U.S. economy and U.S. jobs. **Congress should make it clear that if a nation is listed as a worst offender on the GMI that it is no longer GSP-eligible.**

In addition, **Congress should require the U.S. government, ideally working with our allies, to pressure international organizations such as the World Bank’s International Bank for Reconstruction and Development (IBRD) to no longer support countries fielding egregious mercantilist practices.** The World Bank in particular refuses to make distinctions between mercantilist and non-mercantilist nations when deciding on aid. For example, World Bank funding commitments to China were the highest in 2017 of

any year since 2014, over \$2.4 billion.⁶⁷ It is beyond ironic that the World Bank is providing funding to a nation that has accumulated over \$3.1 trillion in foreign reserves due to its unwillingness to import more foreign goods and services. The World Bank has turned a blind eye to China's predatory practices. In its statement describing China's progress, it makes no mention of the growth of state-owned enterprises, the increase in industrial subsidies, forced technology transfer and China's overall retreat from the path toward market liberalization:

Since initiating market reforms in 1978, China has shifted from a centrally-planned to a market-based economy and has experienced rapid economic and social development. With a population of 1.3 billion, China is the second largest economy and is increasingly playing an important and influential role in development and in the global economy. China has been the largest contributor to world growth since the global financial crisis of 2008. Significant policy adjustments are required in order for China's growth to be sustainable. Experience shows that transitioning from middle-income to high-income status can be more difficult than moving up from low to middle income. China's 12th Five-Year Plan (2011-2015) and the newly approved 13th Five-Year Plan (2016-2020) forcefully address these issues. They highlight the development of services and measures to address environmental and social imbalances, setting targets to reduce pollution, to increase energy efficiency, to improve access to education and healthcare, and to expand social protection.⁶⁸

Congress needs to press the administration to in turn press the World Bank to stop being an enabler of mercantilism. To do this, the World Bank should commit to cut off support for countries that continue to make mercantilism the centerpiece of their growth policies.

There are several other steps Congress could take to modify laws to make it easier to fight foreign mercantilism.

Prevent foreign governments from abusing America's "foreign sovereign compulsion" defense for mercantilist ends. China and other countries in recent years have abused the doctrine of "foreign sovereign compulsion" to justify anticompetitive behavior that has harmed U.S. interests even though it has passed muster in U.S. courts. For instance, the U.S. Second Court of Federal Appeals in 2016 threw out a case against Chinese vitamin C makers alleged to have conspired to fix prices and limit supplies in international markets, including in the United States, on grounds that the behavior was directed by the Chinese government and thus wasn't actionable under U.S. antitrust law because deference must be given to the official policies of foreign governments (i.e., the foreign sovereign compulsion defense). It's time for Congress to curb foreign governments' ability to abuse the foreign sovereign compulsion defense for these kinds of mercantilist ends. One way to do so would be to require courts to give consideration to the implications for U.S. industries' global competitiveness in cases involving the foreign sovereign compulsion defense.⁶⁹

Enable the ITC to create Trade Enforcement Advisory Opinions. Congress should empower the U.S. International Trade Commission to investigate and issue reports on allegations of trade violations that U.S. companies claim are happening with trading partners, such as China.⁷⁰ Such ITC reports, in the form of a "Trade Enforcement Advisory Opinion," would provide a valuable middle option along the spectrum—with

bilateral talks at one end and WTO dispute cases at the other, thus shedding light on whether U.S. trade partners are violating trade rules and whether such a case is credible and worthy of a potential case at the WTO (e.g., for China) or under bilateral free trade agreements (for trading partners). Congress could establish this process by expanding Section 332 of the Tariff Act of 1930, which allows Congress to ask the ITC to conduct general fact-finding investigations with respect to U.S. trade and competitiveness issues. Through this process, a U.S. company could file a detailed petition with the Senate Finance Committee and the House Ways and Means Committee requesting the ITC investigate whether a country is violating trade rules in a specific way and assess whether such violation does or could generate a material economic effect (in terms of jobs, investment, and exports, etc.) on a company. If the committee leaders agreed, the ITC could review the claim, including by inviting the foreign government and other stakeholders (e.g., other companies in the sector) to comment. ITC would issue a determination within 120 days. The process would be transparent. The final report would only be an advisory opinion, and therefore would not obligate the administration to initiate a trade dispute case.

A Trade Advisory Opinion would prove a useful tool for several reasons. First, while USTR has consistently pressed other countries over alleged trade violations, and brought a number of cases before the WTO, the sheer number of trade agreements and alleged trade violations makes it too overwhelming for USTR to respond to each allegation. ITC has the expertise to manage such investigations, and its reports could help USTR determine which allegations to pursue at the WTO or elsewhere. Second, it would provide U.S. companies with an avenue to obtain a timely and thorough assessment of their claim. This may be particularly valuable when there is internal disagreement within a sector about whether a country is violating trade rules—those in favor would not be held back by others and could see whether they have a credible case. Third, USTR is in the awkward position of being responsible for both deciding whether a company's claim of a trade violation is credible and then prosecuting the claim. Fourth, it would provide Congress with an enhanced, but appropriately limited, role in trade enforcement. The ITC is an independent agency that would conduct its investigation in a transparent manner, thus testing whether the U.S. company was right in asking for an investigation. Finally, an ITC review that found that there was a "reasonable basis" for a trade violation would clear a potential threshold for credibility, thus pressuring USTR to take action. Even if the ITC found that there was no reasonable basis, it would still be useful, as it would help USTR identify what information gaps it would need to fill if it did wish to initiate a case in the future. Either way, the information discovery, debate, and transparency process would be useful to politicians and policymakers in assessing whether China and others are living up to their trade commitments.

Pass legislation that allows firms to ask the Department of Justice for an exemption to coordinate actions regarding technology transfer to and investment in to other nations. One of the key levers China has is that it's a monopsonist: its market is so large the government can essentially compel foreign companies to hand over technology in order to sell their products in China. But if companies in a similar industry can agree that none of them will transfer technology to China in order to gain market access, then the Chinese government will have less leverage over them. The same would be true if companies agreed that they would not invest in China until China improved its IP protections. Such an amendment to antitrust law would be similar to the 1984 Cooperative R&D Act, which allowed firms to apply to form pre-competitive R&D consortia.

Pass legislation requiring the administration to establish an interagency hub to consolidate existing commercial counterintelligence outreach programs. The threat to the United States from commercial spying is perhaps at its highest level ever. Yet, the FBI and other agencies do not prioritize commercial counterintelligence, in part due to limited funding, and have not formed a strong partnership with U.S. industry.⁷¹ A new hub should not simply be an aggregation of programs, but, like the National Endowment for Democracy, an entity that focuses resources on achieving a strategic outcome—preservation of U.S. commercial ingenuity. This hub should be structured as a public-private partnership that incorporates industry, which is increasingly the front line of defense against foreign intelligence activities, as a contributing partner, rather than simply a recipient of government services. It should work to connect specific companies that have encountered foreign threats with the appropriate national security agencies that are best suited to disrupting these threats. Counterintelligence agencies should use this hub as an honest broker between the national security community and the private sector, which is an increasingly significant contributor to elements of U.S. national power. It must be capable of translating the community’s concerns into publicly releasable explanations of sector-specific threats.

This new partnership would not engage in clandestine activities but would, instead, function as an honest broker between industry and government. One of its primary functions would be to translate sensitive concerns identified by the U.S. Intelligence Community and other collectors, into publicly distributable products and assistance. It should align these outreach efforts with industry sectors, identifying the implications of broad national security concerns for distinct subsets of customers. To provide assistance, the partnership should incorporate, deconflict, and streamline existing outreach programs (and should receive the personnel and other resources associated with those programs). Although outreach to specific commercial entities could provide an unfair advantage, the partnership should be able to connect an entity facing a specific threat with the appropriate investigative agencies. The partnership should also serve as a forum for security dialogue through which companies at risk can identify and enlist the services of private-sector cyber and other security firms, since private-sector responses have proven to be more efficient, for industry clients, than the U.S. government.

Ensure reciprocity in technology and intellectual property licensing. The United States needs a new regime to contest China’s strict technology-licensing laws. Under Chinese contract law and technology import-export regulations (or TIER), a foreign licensor into China is obligated to offer an indemnity against third-party infringement to the Chinese licensee.⁷² 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.

To address this discrimination, Congress should enact a regime whereby if Chinese entities seek licenses in the United States, then the Chinese enterprise must license on the same terms by which foreigners are required to license into China. Such legislation would specifically require the Chinese licensor to offer an indemnity against infringement by the U.S. licensee and to stipulate that the U.S. licensees are entitled to own the improvements they make and receive a reasonable market allocation under the licenses. Another possible approach would be for Congress to pass legislation requiring that the U.S. company whose original technology was improved by the Chinese entity receives an automatic exclusive license to use that improved technology [in the United States], such that the full potential of the original technology owned by the U.S. companies is not encumbered by improvements owned by the Chinese entity. Although technology-licensing law is usually a matter of state contract law, the legislation would be enacted pursuant to Congress's power to legislate international commerce.

Update CFIUS to reflect the nature of Chinese government influence. A core component of liberalized trade is liberalized foreign direct investment, yet it is clear that U.S. FDI into China faces significantly different conditions than Chinese FDI faces in the United States. In many cases, U.S. firms seeking market access in China, particularly ones with sophisticated technology, must engage in a joint venture with a Chinese firm. Chinese investment in the United States faces vastly fewer restrictions. Because of this steep divergence, Congress should insist on a level playing field, and mutual access should be a core principle. In other words, as long as China restricts U.S. investment in China, largely to take technology, the federal

government should feel few constraints to use stricter investment review as a tool to insist upon better behavior from the Chinese government.

Moreover, Chinese efforts to intentionally target U.S. advanced-industry enterprises across a range of high-value-added sectors only continues to intensify, meaning that CFIUS procedures need to be strengthened to ensure that Chinese entities, particularly those guided or backed by Chinese-government influence or funding, are not able to acquire U.S. companies or technology that could damage America's economic or national security. According to the Foreign Investment and National Security Act (FINSA) of 2007 (P.L. 110-149), CFIUS may conduct an investigation on the effect of an investment transaction on national security if the covered transaction is a foreign government-controlled transaction (in addition to if the transaction threatens to impair national security, or results in the control of a critical piece of U.S. infrastructure by a foreign person). CFIUS has worked fairly effectively in some technology areas, especially semiconductors, as attempted acquisitions of Fairchild, Micron, GCS, Lumileds, Western Digital, and Aixtron have been stopped either formally or informally.⁷³ However, it has not prevented all acquisitions. For example, a Chinese investor group bought Silicon Valley semiconductor firm ISSI in 2015.⁷⁴ Moreover, Chinese firms are getting more sophisticated about attempted acquisitions, including hiring the best U.S. legal, financial, and public relations talent to advocate for their U.S. technology acquisitions, and obscuring their involvement in U.S. shell companies, as they did with the attempted acquisition of Lattice Semiconductor.⁷⁵

As such, Congress should update the charter of CFIUS to address the realities of modern-age state capitalism.⁷⁶ The charter 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. They have arguably done this with semiconductors, but they should expand that scope. CFIUS also needs greater capacity to review attempted acquisitions by Chinese firms of small and young U.S. technology firms that might reflect promising future technology capabilities for the nation.

Moreover, CFIUS reviewers often do not have adequate time to complete a serious analysis, having only 30 calendar days to approve transactions or move them to a second-stage investigation (although there is an ability to extend an investigation for 45 days on top of the original 30). Therefore, Congress should increase the time period permitted for the initial CFIUS review and also better equip CFIUS with additional personnel and financial resources to support more thorough reviews. Congress should also require mandatory notification for deals involving state-owned or state-financed entities by countries of concern such as China and Russia. Attempted acquisitions made by Chinese state-owned enterprises should be blocked outright, as recommended by the U.S.-China Economic and Security Review Commission.⁷⁷ It's also important that as CFIUS committees consider whether the entity in question will come under "foreign control" that they consider "nontraditional" forms of control, such as joint ventures or novel licensing transactions that seek to achieve the same effect as the outright acquisition of a U.S. company. For instance, Chinese acquirers may be exploiting a loophole in CFIUS by designing licensing transactions that, when combined with the associated follow-on agreements that utilize U.S.-based assets to operationalize the licensed intellectual property, are substantively the same outcome as if the Chinese company had simply purchased the U.S. business that holds

the intellectual property. CFIUS reform should make clear that these types of deals are “covered transactions” that could be investigated.

Boost competitiveness-related investments. While policies and actions to roll back foreign mercantilist actions are critical, they will not be enough to assure continued U.S. technological leadership. One reason is that other nations have done more. At least 26 other nations field a more generous R&D tax incentive, 21 other nations fund more university-based R&D and many more nations invest more in industrially-relevant R&D.⁷⁸ And the harsh reality is that as long as China employs unfair and predatory practices, it is likely that America will ultimately lose the global technology race unless it adopts a much more focused and serious strategy to win. Relying solely on “American ingenuity” and free markets, as powerful as they are, is not likely to be enough in a world with competitors backed by states engaged in systemic mercantilism.

As such Congress needs to do much more to boost U.S. competitiveness at home. Congress should take a variety of steps including expanding lending authority for the Export-Import Bank;⁷⁹ increasing funding for pre-competitive research, including for the Manufacturing USA program; increasing efforts to develop STEM talent; and instituting a more generous R&D tax credit and a new “innovation box” that would tax domestic profits from innovation-based activities at a lower rate.

Perhaps most importantly, **Congress should pass legislation establishing America’s own “Made in USA 2030” program, which would call on the administration to identify the core technologies most important to U.S. national and economic security and appropriate at least an additional \$25 billion annually to support their development, in part through funding with industry of pre-competitive research.** The United States took a similar bold step after the Soviet launch of Sputnik signaled the nation was in an existential arms race with the Soviets. Funding for federal R&D increased from 0.67 percent of R&D in 1956 to 1.9 percent in 1967, with much of that going to development of advanced technologies and systems. Today, we face a threat of even greater magnitude. When considering the relative threats to America’s future—losing the technology race to an increasing assertive China versus a growing national debt—ITIF believes that the former vastly outweighs the latter. We can always pay off the debt later, but if we lose our technology leadership it will be difficult if not impossible to ever regain it, and with it the national security benefits it brings. As such, significant increases in funding (both direct investment and tax incentives) to ensure that America wins the coming technology race are essential.

Alliance-Based Actions

While tougher action on the part of the U.S. government will be needed, the time when U.S. unilateral action alone could suffice has passed. The last time that was possible was perhaps during the first term of the Obama administration when the United States possessed enough leverage to press China on its own. But after at least two decades of aggressive mercantilist policies, China is no longer as dependent on the United States economically and has considerably more degrees of freedom. As such, any action toward China on trade needs to be through a strong and unified coalition, particularly with nations and regions like Australia, Canada, Germany, Japan, South Korea, the United Kingdom and the European Union. All of these economies have been hurt by Chinese mercantilism and are even more likely to be hurt going forward as China doubles down on “Made in China 2025.”

President Trump has made it clear that he doesn't want U.S. allies to free ride on U.S. military strength. Yet, when it comes to the battle against a rising mercantilism, the United States is now bearing most of the burden, including the economic costs that would come with any tariffs. The president should make it clear that this is not acceptable and strongly urge our allies join us in concertedly and collectively contesting unfair Chinese trade practices that hurt the whole global trading system. The administration should line up allies in an effort to develop a coordinated response to Chinese mercantilism. This could even include orchestrating a G19 meeting that excludes China—for the meeting's express purpose would be to discuss how the 18 nations (and the European Union) should respond to Chinese innovation mercantilism. The U.S. government should cooperate with our allies to share information on which Chinese entities (often government-backed) are truly behind Chinese FDI-acquisition activity, coordinating on bringing potential cases before the WTO, and collectively pushing back against Chinese unfair trade practices. Such coordination efforts have borne fruit before, as when U.S. and European stakeholders successfully exerted joint pressure to push back on China's indigenous innovation product catalogue scheme. 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 game 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.

Only the United States can lead this coalition of the willing, for it is uniquely placed to provide the political leadership necessary to save the global trading system, given its economic size, historical role, and enduring commitment to the underlying principles of global trade liberalization. Moreover, there is some precedent for this, as President Reagan showed when he orchestrated the Plaza Accord agreement in 1985. At the same time, **Congress should step up efforts to coordinate with members of the European Parliament and the legislatures of major trading partners, including France, Germany, Japan, and the United Kingdom, to discuss common concerns and legislative solutions that could help to roll back Chinese mercantilism.**

As noted above, given the fundamental degrees of freedom have to violate the spirit if not the letter of global trade rules, it is time for the United States and our allies to insist on immediate and major reforms within the World Trade Organization. GATT and later the WTO were established to deal with rule-of-law nations who were its original members. Because of that, coupled with the political need to “balance decisions” among developed and developing nations, using the WTO for its originally intended purpose— disciplining the worst tendencies of nations to “cheat” for self-advantage at the cost of global trade and growth— has become increasingly difficult. As Harvard Law Professor Mark Wu writes, “At the heart of this challenge is the fact that China's economic structure is sui generis, having evolved in a manner largely unforeseen by those negotiating WTO treaty law.”⁸⁰ This means that if effective WTO reforms are not forthcoming, the United States and its allies should establish an alternative organization that can and will do the job of ensuring reasonable free and market-based trade around the world. Nations that refuse to commit to that regime would be on their own.

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