

*Legislative Assistant Sonja Schaefer participated in the [Sasakawa USA 2018-2019 In-Depth Alumni Research Trip](#) to Japan. In this paper, Schaefer outlines a brief historical background on the development of global steel excess capacity and analyzes two of the world's largest producers and consumers of steel, Japan and the United States, in an effort to assess how they can influence a global reduction in steel excess capacity.*

## **Combating Global Steel Excess Capacity: Policy Proposals for the United States, Japan, and the Global Community**

*Sonja Schaefer*

### **Executive Summary**

This policy paper proposes methods to combat global steel excess capacity and draws upon a synthesis of published material and approximately 20 first-person interviews with government officials, industry representatives, and academic experts in Tokyo, Japan, and Washington, D.C.

This policy paper provides a brief historical background on the development of global steel excess capacity and analyzes two of the world's largest producers and consumers of steel, Japan and the United States, in an effort to assess how two major players can influence a global reduction in steel excess capacity. This analysis illustrates governmental interventions in steel industries and depicts the current status of global steel excess capacity, which is largely caused by subsidized steel production in China. Further, this paper characterizes and critiques the Global Forum on Steel Excess Capacity (GFSEC) and presents multiple alternative policy proposals for the global community to address excess capacity. Finally, this paper argues for a specific policy prescription for the United States and Japan to combat global steel excess capacity through bilateral trade agreement language, as well as a renewed emphasis on multilateral engagement in the GFSEC and regional trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

### **Introduction to the Global Steel Industry**

Steel has been and remains essential in the global economy. The steel that goes into buildings, rail, bridges, oil and gas operations, machines, cars, armored tanks, and ships has been engineered to maximize strength with lightness, durability, and flexibility. With the aging infrastructure in the United States, Japan's energy and transit development, China's goals with the Asian Infrastructure Investment Bank and the 'Belt and Road Initiative,' and the need for infrastructure and mass transit for countless developing countries around the world, steel will continue to play an integral role in the global economy. Steel's use extends to computers, machinery, and other technology needed by all countries, and steel will continue to be foundational and essential as the global community continues its progressive and innovative course.

First, it is important to understand some key terms. Steel production is the amount of steel produced in a country. For the purposes of this paper, the type of steel production discussed is upstream steel production, such as steel slab, plate, sheet, coil, and bar, and does not include specialized steel products, such as tube, pipes, and automobile or machinery parts. Steelmaking capacity, or production capacity, is the mills, plants, and furnaces that exist in a country, and also depicts how much steel these facilities can produce if operating at a maximum. Capacity utilization is the percentage of steelmaking capacity that is being used for steel production in a country. It is difficult to explicitly delineate what is the optimal capacity utilization for a country because it depends on unpredictable demand, and some, but not necessarily all, of this steelmaking capacity that is not being utilized is excess capacity. It is important to note that excess capacity exists in a country because of market distorting measures that lead to buildup beyond market demand.

Second, it is important to note that there are challenges in eliminating excess capacity because steel in the global market can be viewed as a natural monopoly, steel production needs an economy of scale, and demand for steel is inelastic. A natural monopoly is defined as a market that has high barriers to entry due to high fixed costs or start-up costs at the outset (i.e. infrastructure to make or melt steel) and makes exiting the market (i.e. shutting down steelmaking capacity) difficult due to structural, political, and institutional factors. Often natural monopolies have few suppliers that control much of the market, have cost advantages, and make competition more restrictive. Natural monopolies involve economies of scale in the market, essentially meaning that production is most efficient when operating at a maximum. Economies of scale elicit incentives to keep producing regardless of demand. Economies of scale, if there is more than one producer in the market, also tend toward cartel incentives among the various producers to limit production and keep prices high. Finally, demand for steel is relatively inelastic, or not sensitive to price. This inelasticity means that if the price of steel drops, the market does not grow larger and instead the producers of this steel try to cut their prices further to take away business from other producers. In other words, the price of steel becomes a race to the bottom. For perspective, other examples of natural monopolies are the energy grid in a country, railways, and utilities like water or internet. This economic framework helps to understand why the global steel industry is monitored and discussed at a high governmental level and why steel excess capacity is such a chronic issue.

Finally, it is important to understand that excess capacity, the steelmaking capacity in a country that is in excess beyond market demands, is harmful to steel companies' operations and profit. This harm extends beyond just home country economies to open foreign market economies because steel production is globalized. Global steel excess capacity can flood global markets with an abundance of low-priced steel, and in turn, lower the price of steel to an unsustainable level and bring about the idling of established mills. This leads directly to worker layoffs and creates a risky business environment for steel companies. One method to counteract increased imports of low-priced steel (that is brought about by dumping or subsidizing its production) is to place an antidumping (AD) or countervailing (CVD) duty (i.e. tariffs) on the unfairly-priced and/or subsidized injurious imports to offset the level of unfair pricing or subsidies.

In the Office of the U.S. Trade Representative’s February 2019 report to Congress on China’s WTO Compliance, the U.S. Trade Representative noted, “China today is the primary cause of excess capacity in a number of key sectors of the global economy. For example, China’s large increases in steel capacity since it joined the WTO in 2001 have led to extraordinary increases in steel production. China’s steel capacity rose from 160 million metric tons (MT) in 2001 to 1,048 million MT in 2017. Correspondingly, China’s annual steel production rose from 151 million MT in 2001 to 832 million MT in 2017, by far the largest in the world. China’s steel industry now accounts for about 50 percent of global steelmaking capacity and global steel production.” In 2018, the top steel producing countries are China at 928.3 million MT, the European Union (EU-28) at 168.1 million MT, India at 106.5 million MT, Japan at 104.3 million MT, and the United States at 86.7 million MT. Of the world’s top ten producers of steel in tonnage, Chinese companies currently hold five of those spots.<sup>1</sup> Many Chinese steel companies are directly or indirectly owned by the Chinese government or under provincial management. The sheer mass of Chinese steel production growth has never before existed in the world, and since 2009, China’s steel production has far exceeded China’s domestic demand for steel.<sup>2</sup>

According to the Director General of the World Steel Association, Dr. Edwin Basson, the major challenges facing the global steel industry are: decreased demand for steel due to efficiency in product application, increased interest in reducing the carbon emissions of the industry, and increased development in technology, digitalization, and materials recycling that change the way steel is produced. However, recent headlines and articles about the steel industry indicate the majority of the conversation is centered around trade tensions, tariffs, and market uncertainty, particularly in the United States. It can be argued that all these different challenges are actually made more severe by the issue of steel excess capacity, and until excess capacity in the global steel industry is addressed, the world’s steel industries cannot head forward on a progressive and innovative course.

### **Brief Background on Excess Capacity in the Global Steel Industry**

Steel industrial planning policies by governments around the world and various governmental interventions that often accompany natural monopoly markets have propelled excess investment in steelmaking capacity and have led to excess capacity. These industrial planning policies and governmental interventions have been employed by many countries. In general, steel excess capacity has existed in Japan, the European Community, and the United States in the 1960s and 1970s, in industrializing countries like Brazil, South Korea, and the Soviet Union (Russia and Ukraine) in the 1980s, and finally, in China beginning in the late 2000s.

During World War II, the United States was the world’s largest steel producer and the U.S. government encouraged steel companies to ramp up production to fuel defense needs during the war. In 1952, President Harry Truman tried and failed to nationalize the steel industry, but

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<sup>1</sup> “World Steel in Figures 2018,” World Steel Association.

<sup>2</sup> “Directorate for Science, Technology, and Innovation Steel Committee: Steel Market Developments Q2,” OECD, Dec. 20, 2018, p. 9.

was able to set production quotas, price and wage controls, and other interventions. Many say that the United States' status as top steel producer in the world led to economic boom and the development of a large middle class.

The first oil crisis in 1974 caused a global recession and hamstrung steel demand in developed countries like Europe, Japan, and the United States. During this time, 25 U.S. producers went bankrupt. In Japan, however, before and during this global recession, the Japanese government intervened to build up their domestic steel industry through their Ministry of International Trade and Industry, or MITI (in 2001, MITI would become Ministry of Economy, Trade, and Industry or METI). MITI channeled low-interest loans to domestic producers, established tax benefits for equipment acquisition, implemented export-promoting tax measures, coordinated certain mergers and import penetration controls through distributor networks, and informally guided cartel arrangements with respect to investment and production. Between the years of 1960 and 1975, Japanese capacity grew from 28 to 140 million metric tons (twice the level of capacity needed to satisfy their peak domestic demand, and the largest expansion in such a time frame in world steel industry history at that time).<sup>3</sup>

Steel excess capacity in the European Community, Japan, and the United States in 1981 was estimated to be 50 million metric tons, 30 million metric tons, and 28 million metric tons, respectively.<sup>4</sup> In the western world, excess capacity was about 200 million metric tons in 1985.<sup>5</sup> This level is large, but is much less severe than the recent 2016 record of 737 million metric tons of global steel excess capacity cited by the GFSEC in its 2017 report.<sup>6</sup> Through Japan's rapid expansion in the 1970s, MITI also coordinated strong export regimes to send their excess steel elsewhere. During the 1970s and 1980s, the European Community implemented the Davignon Plan, a system of output and price controls that resembled a cartel administered by the European Commission with the goal of restructuring the European steel industry and closing mills that contributed to excess capacity. In addition, the European Community established a comprehensive system of import restrictions based on voluntary restraint arrangements with its principal suppliers, which consistently held import penetration level under 12 percent, while they sent their steel exports elsewhere.<sup>7</sup>

Largely due to excess capacity and the buildup of steel product beyond market demand, companies in Japan and the European Community needed to find other markets to sell their products. In response to surging imports in 1984, much of it from Japan and the European Community, U.S. steel producers filed over 100 AD and CVD cases at the U.S. Department of Commerce and the U.S. International Trade Commission, the U.S. government agencies that

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<sup>3</sup> Howell, Thomas R. et al, *Steel and the state: government intervention and steel's structural crisis*, Westview Press, Inc., 1988, p. 207-222, 193.

<sup>4</sup> Ibid, p. 82, 192, 496.

<sup>5</sup> Ibid, p.42.

<sup>6</sup> Report, Global Forum on Steel Excess Capacity, G20 Germany 2017, Federal Ministry for Economic Affairs and Energy, Nov. 30, 2017.

<sup>7</sup> Howell, Thomas R. et al, *Steel and the state: government intervention and steel's structural crisis*, Westview Press, Inc., 1988, p. 8.

rule on material injury to U.S. industries due to imports. Shortly thereafter, in 1984, President Ronald Reagan instituted the Voluntary Import Restraint Agreements (VRA). Essentially, this VRA program was designed to limit the import penetration of finished steel into the U.S. market to 18.5 percent.<sup>8</sup> The VRA program was really a steel quantitative restraint, or quota system, that sought to shield the U.S. industry from the massive amounts of imported steel. The VRA program was originally set to expire in 1989, but was extended by President George H.W. Bush for two and a half years with slightly loosened import restraints. Parallel to the extended VRAs, President H.W. Bush, with the support of the U.S. domestic industry and labor organizations, began negotiating bilateral consensus agreements which required VRA exporting countries to eliminate certain subsidies in the steel sector. These countries also agreed to enter into negotiations for a 'Multilateral Steel Agreement' (MSA) to attempt to discipline subsidies and reduce excess capacity in the steel industry globally, but this yielded no tangible success.<sup>9</sup>

In the late 1990s, as a result of the fall of the Soviet Union and the Asian Financial Crisis, new volumes of steel from Russia, Ukraine, and Asia began to make their way onto global markets. The U.S. industry again faced increased steel imports and mill closures, job losses and bankruptcies ensued. Between 2001 and 2003 alone, 28 U.S. steel companies filed for bankruptcy.<sup>10</sup>

On March 5, 2002, after a safeguards investigation by the U.S. International Trade Commission that found injury to the U.S. industry by reason of increased imports, President George W. Bush placed tariffs on steel under Section 201 of the Trade Act of 1974. In his statement, President W. Bush said:

These safeguards are expressly sanctioned by the rules of the World Trade Organization, which recognizes that sometimes imports can cause such serious harm to domestic industries that temporary restraints are warranted. This is one of those times. I take this action to give our domestic steel industry an opportunity to adjust to surges in foreign imports, recognizing the harm from 50 years of foreign government intervention in the global steel market, which has resulted in bankruptcies, serious dislocation, and job loss. We also must continue to urge our trading partners to eliminate global inefficient excess capacity and market-distorting practices, such as subsidies.<sup>11</sup>

The Bush steel safeguards were specific to certain products identified by the U.S. International Trade Commission as being imported into the United States from abroad and took the form of both tariff rate quotas and direct tariffs to be in place for three years. Several countries challenged these safeguards, and the World Trade Organization (WTO) found them to be in

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<sup>8</sup> Ibid, p. 12-13.

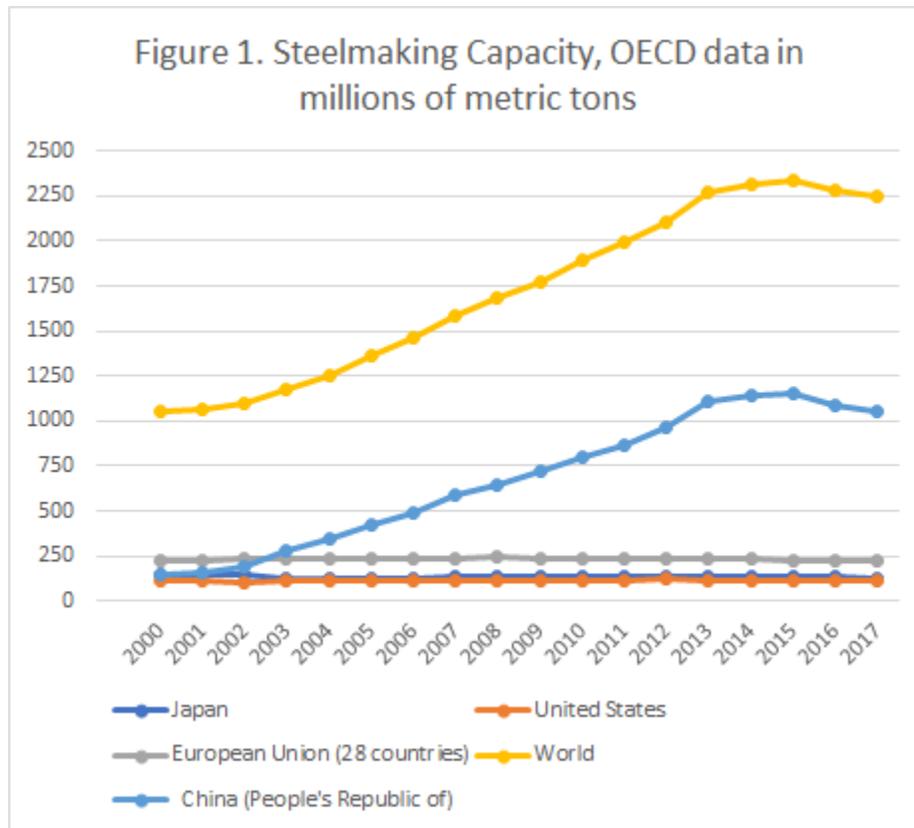
<sup>9</sup> Moore, Michael O. "The Rise and Fall of Big Steel's Influence on U.S. Trade Policy," *The Political Economy of Trade Protection*, University of Chicago Press, 1996, p. 26-28.

<sup>10</sup> Steel Companies Filing for Bankruptcy, United Steelworkers of America, Oct. 30, 2003.

<sup>11</sup> President Announces Temporary Safeguards for Steel Industry, Mar. 5, 2002, [georgewbush-whitehouse.archives.gov](http://georgewbush-whitehouse.archives.gov)

violation of the WTO commitments. The Bush administration cited changes in steel conditions and rising demand and removed the measures after 22 months.<sup>12</sup>

When China joined the WTO it was a relatively small producer and a large net importer of steel, but it rapidly increased its production capacity after joining the WTO in 2001. According to the most recent Organisation for Economic Co-operation and Development (OECD) statistics available, China comprises nearly half of the world’s steelmaking capacity [see Figure 1].<sup>13</sup>



As noted earlier, global steel excess capacity hit its record peak in 2016, at over 737 million metric tons. In 2000, China comprised 15 percent of overall steel production in the world, and in 2017, China’s share is 50 percent.<sup>14</sup>

In sum, steel excess capacity has existed in the European Community, Japan, and the United States in the past, and various U.S. administrations have intervened on behalf of the domestic steel industry to try to protect the industry and steelworkers. Now excess capacity exists largely in China, and its magnitude is much larger. That excess capacity might shift elsewhere as another country aims to ramp up its development, but China’s massive population and its one-

<sup>12</sup> Doug Palmer, “Why the steel tariffs failed when Bush was president,” Politico, Mar. 7, 2018.

<sup>13</sup> “Recent Developments in Steelmaking Capacity,” September 2018, OECD.

<sup>14</sup> “World Steel in Figures 2010” and “World Steel in Figures 2018,” World Steel Association.

party system makes it unique in its development trajectory. The issue of excess capacity in the steel sector is familiar yet remains persistent.

### **Current Steel-Related Policy in the United States**

The U.S. government has continued to grapple with the question of how to combat global steel excess capacity. After the Reagan VRAs in the 1980s and insubstantial multilateral efforts in the 1990s, the Bush administration implemented the short-lived Section 201 tariffs on steel. The OECD Steel Committee (first formed in the 1970s) began closely tracking data on global steel capacity developments, including developments in non-OECD members such as China. Although China is not a member of the OECD, China is invited to the meetings and has generally participated in capacity data collection of the Committee. The OECD Steel Committee also engages in government-to-government discussions of steel market developments, global excess capacity, environmental and trade policies, and industry competitiveness. Similarly, the North American Steel Trade Committee (NASTC) is a forum comprised of the governments of the United States, Canada, and Mexico, developed to discuss and coordinate positions, where possible, on steel issues in the OECD Steel Committee meetings, WTO disputes, and WTO negotiations. Within the mandate of the NASTC, the three countries' governments have been tracking developments in steel producing countries to identify and combat distortions in the global steel market. They have also submitted joint comments to the Chinese government on China's proposed changes to distortive steel-related industrial policies, such as subsidies, raw material export restraints, and discriminatory investment policies.

More recently, Congress enacted certain updates to trade laws that combat the dumping and subsidizing of all products, including steel. For example, the Trade Preferences Extension Act of 2015 improved the process through which the U.S. International Trade Commission investigates trade cases and judicially determines if a domestic industry is harmed by the trade practices of a foreign country. The Trade Facilitation and Trade Enforcement Act of 2015 gave more detailed direction to Customs and Border Protection to ensure unfair trade tariffs are collected at ports of entry. To illustrate the severity of the current dumping and subsidizing practices of foreign countries in relation to steel, as of February 1, 2019, 240 out of 467 AD and CVD cases or 51 percent of all duties in place are steel-related.<sup>15</sup> However, this domestic legal remedy for U.S. industry is only reactionary and cannot root out a major component of the injurious imports problem: global steel excess capacity.

On December 12, 2017, a Joint Statement released by the U.S. Trade Representative; the Minister of Economy, Trade, and Industry for Japan; and the European Commissioner of Trade stated that excess capacity, exacerbated by government financing, state-owned enterprises, and market-distorting subsidies, are harming international trade, innovation, and economic growth. They jointly indicated, "We, to address this critical concern, agreed to enhance trilateral cooperation in the WTO and in other forums, as appropriate, to eliminate these and other unfair market distorting and protectionist practices by third countries." To date, an

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<sup>15</sup> AD/CVD Orders in Place, U.S. International Trade Commission, Feb. 1, 2019.

enforceable trilateral agreement has not yet been reached, although talks continue.

However, in March 2018, after an investigation by the Department of Commerce, the Trump administration took action on its own under Section 232 of the Trade Expansion Act of 1962 to secure U.S. national security through tariffs on steel imports. In the Section 232 investigation report, Secretary of Commerce Wilbur Ross found that, “the present quantities of steel articles imports and the circumstances of global excess capacity for producing steel are weakening our internal economy, resulting in the persistent threat of further closures of domestic steel production facilities and the shrinking [of our] ability to meet national security production requirements in a national emergency.” In the report, Secretary Ross referenced the world’s 2016 level of excess capacity of 737 million metric tons and iterated the intent of tariffs to ensure U.S. capacity utilization could reach 80 percent.<sup>16</sup> For context, in the post-Great Recession period, U.S. capacity utilization had reached its lowest level at 65 percent in October 2016.<sup>17</sup> As authorized through Section 232, President Donald Trump imposed 25 percent tariffs on all imported steel, exempting Canada, Mexico, Australia, South Korea, Argentina, and Brazil, as these countries have agreed to alternative trade arrangements.

In a joint press conference with President Trump and Japan’s Prime Minister Shinzo Abe on April 18, 2018, both glazed over the fact that Japan, a strong U.S. ally, is not exempt from the Section 232 national security tariffs. Prime Minister Abe maintained that Japanese steel does not exert any negative influence on U.S. national security, and President Trump acknowledged that exemption from the tariffs is a bargaining chip to bring foreign countries to the negotiating table for bilateral trade agreements. Prime Minister Abe was initially reluctant to broach the subject of a bilateral trade agreement; however, on September 26, 2018, President Trump and Prime Minister Abe announced they would begin negotiations on a U.S.-Japan Trade Agreement on Goods. The Office of the U.S. Trade Representative has released a summary of their trade agreement objectives, and negotiations remain ongoing.

## **An Overview of the Modern Japanese Steel Industry**

Drawing upon first-person interviews, this section will compare the Japanese and U.S. steel industries in order to understand how Japan and the United States can better collaborate through policy to address excess capacity.

The Japanese steel industry is currently the fourth largest in the world, highly specialized, and is export-driven. It is important to note that import penetration of foreign steel coming into Japan is and has remained fairly steady; for the years 2012-2016, the import penetration rate was

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<sup>16</sup> “The Effect of Imports of Steel on the National Security,” Department of Commerce, Jan. 11, 2018, p. 5.

<sup>17</sup> Board of Governors of the Federal Reserve System (US), Capacity Utilization: Durable Manufacturing: Iron and steel products [CAPUTLG3311A2S], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CAPUTLG3311A2S>, May 15, 2019.

between 7 and 8 percent.<sup>18</sup> In comparison, for the same years, the U.S. import penetration rate has hovered around 31 percent.<sup>19</sup> This is surprising at a glance, but upon close inspection, much differs between the Japanese and U.S. steel industries.

Japan has one company, Nippon Steel Corporation (formerly, Nippon Steel & Sumitomo Metal Corporation), which controls 45 percent of all steel production in Japan. In comparison, the biggest company in the United States is Nucor Corporation and its production share is approximately 29 percent of the U.S. steel production.<sup>20</sup> It could be argued that a larger production share means there is less fierce competition.

Japan has not often used AD and CVD duties to remedy unfair pricing or subsidizing from foreign nations. As of December 31, 2018, Japan has only nine AD measures in place in total and has only two AD duties in place on steel or steel-related products. These are on carbon steel butt-weld fittings from China, as well as South Korea.<sup>21</sup> Meanwhile in the United States, of the 240 AD and CVD orders in place on steel-related products as of February 1, 2019, 15 of them are on Japanese steel products.<sup>22</sup> The disparity between the two countries on the number of AD and CVD orders in place on steel-related products is largely due to the fact Japan has been highly export-oriented, was historically heavily subject to AD and CVD remedies. Japan has devoted much time to challenging AD and CVD cases at the WTO. In fact, the Japanese government historically was so opposed to using AD remedies that some companies did not even know how to request such trade remedy relief until recently. Many interview partners stated that Japan fears that if they use duties, other countries will reciprocate. However, according to the government officials, this is beginning to change; Japan will consider using them more frequently, assuredly in a WTO-consistent manner.

In addition, Japan has a highly specialized steel industry. Japan has instituted non-tariff barriers, such as customs requirements and licensing, and different consumer preferences, such as preferences for smaller cars, which make foreign products less competitive in Japan. They also have strong domestic supply chains. Interviewees emphasized that many steel companies have very close and almost personal relationships with downstream companies, both in Japan and abroad, that source their products. They work through “distributors” and their operations are always timely and meet exacting specifications and customizations. The Japanese industry’s focus and sustained dominance in the global steel market is especially evident in the way they conduct dialogue and cooperation with foreign countries regarding business and trade. Investigating how these business practices intersect with the differing standards of antitrust laws around the world would require additional study.

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<sup>18</sup> Global Steel Trade Monitor: Steel Imports Report for Japan, International Trade Administration, Feb. 2017.

<sup>19</sup> Global Steel Trade Monitor: Steel Imports Report for U.S., International Trade Administration, Sep. 2018.

<sup>20</sup> “World Steel in Figures 2018,” World Steel Association.

<sup>21</sup> Semi-annual Report of Anti-Dumping Actions for the Period 1 July-31 December 2018: Japan, World Trade Organization, Feb 4, 2019.

<sup>22</sup> AD/CVD Orders in Place, U.S. International Trade Commission, Feb. 1, 2019.

When steel companies were asked if they were worried about China ‘catching up,’ or being able to match Japan’s high value-added products, many companies said that their relationship with customers was so strong that they were not worried. They stated that China may be making the standard steel products, such as slabs, flat-rolled steel, or steel coils, but they were not yet making specialized products. According to them, if steel companies want to remain competitive, specialization and differentiation of the products is a stronger strategy and can be used to shift production and avoid the issue of excess capacity. In other words, Japan is not expressly worried about the threat of a surge in basic steel imports because of excess capacity itself (as is the fear in the United States) but is more worried about governmental interventions in foreign countries that may threaten their specialized export streams going forward. Japan developed their specialized steel industry, in part, as a result of upstream steel production moving to other countries. As emphasized by interlocutors in Japan, the root cause of excess capacity in the world is unfair government subsidies for the steel industry, and this should be dealt with in a rules-based manner.

Additionally, many U.S. companies (many of them subsidiaries of Japanese multinational companies) who import Japanese steel have secured exclusions from the Section 232 tariffs. These exclusions are granted or denied by the Department of Commerce’s Bureau of Industry and Security (BIS) based on whether the steel product is available in the United States in a sufficient quantity or satisfactory quality. Due to BIS findings that the particular product is not available domestically, these companies no longer pay the tariffs and can keep importing from Japan. While Japanese companies are not extremely worried about the Section 232 tariffs on steel, they are very concerned about other countries taking safeguard actions in response to the Section 232 tariffs, which could severely impact their global supply chains.

On the governmental side, METI supplies some subsidies and assistance to small and medium sized companies, some of which are steel companies. However, to prevent corruption and the risk that officials would start to favor certain companies for subsidies, METI employees rotate through various departments within the Ministry. The highest-ranking officials in the departments move around approximately every three years, so that they get a more comprehensive picture of various industries in Japan and do not become too focused on any one industry.

Given this background on the development of global steel excess capacity, the modern U.S. steel industry, and the modern Japanese steel industry, the remainder of this policy paper will explain what efforts are currently being taken, and how policy might be better crafted to effectively combat global steel excess capacity and leave the global industry more competitive and sustainable.

### **Current Multilateral Effort to Address Global Steel Excess Capacity**

The GFSEC is the only global forum that is specifically designed to address steel excess capacity. The GFSEC includes 33 members that together make up approximately 90 percent of global

steel production. It is an offshoot of the G20 and focuses solely on verifying OECD data on steelmaking capacity changes by country and discussing ways to reduce excess capacity going forward. The GFSEC was formulated at a G20 meeting in September 2016 and first convened at the official-level in December 2016. There have been two minister-level meetings: the first in November 2017 and the second in September 2018. The ‘ministerial reports’ that come out of these minister-level meetings contain plans for reducing excess capacity, and these plans include removing government subsidies, minimizing export credits, encouraging governments to set capacity reduction targets, enhancing transparency of production and capacity trends, and restructuring industry through market mechanisms and enhanced competition while assisting displaced workers. At this time, there has been no formalized or enacted agreements or enforcement mechanisms stemming from the GFSEC.

### **What is working in the GFSEC**

In 2016, the GFSEC was the first multilateral steel-related forum that was successfully launched with China as a member. According to industry experts in Japan, the GFSEC has been successful in that it has engaged China through a political commitment and is not a legally binding commitment.

The GFSEC has published findings that China has actually reduced their steelmaking capacity. In their 13th Five-Year Plan (2016-2020), China stated that they would reform and modernize their steel sector and set a target of reducing excess capacity by 100-150 million metric tons. In 2017, China closed many of its outdated steel producing facilities, termed ‘induction furnaces.’ With closure of induction furnaces and some capacity closures in mainstream steel companies, the GFSEC report shows a net decrease in capacity in 2017.<sup>23</sup> Many Japanese experts believe China followed through on this target largely due to political pressure from the GFSEC. The GFSEC can exert pressure because it is a multilateral commitment and it is successful in getting high-ranking government officials to sign on to the agreement. This high-level political commitment at the GFSEC is usually not subject to scrutiny or change in China because it is a top-down decision. In other words, high-level political pressure is exactly what is needed to enact change in China, and the change was in China’s best interest because their capacity utilization increased. Further, experts in Japan said that the global market price of steel has stabilized, largely because China has decreased their exports of steel. Without GFSEC pressure, these positive market developments would likely not have occurred.

Contrary to many beliefs about Chinese data, the Japanese government, associations, and companies trust the steel-related data in the GFSEC reports. Member countries have sent their data to the OECD Steel Committee and the GFSEC, and the GFSEC has mechanisms for verifying this data, including reviews and opportunities to point out inconsistencies. This is a key success of the GFSEC and could be a good mechanism to be applied to investigating and verifying each country’s subsidies, support measures, or other non-tariff barriers exacerbating excess capacity in the global steel market.

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<sup>23</sup> Short Range Outlook April 2018, World Steel Association.

## **What is not working in the GFSEC**

The GFSEC is nonbinding, so progress is slow, and impatience quickly festers. U.S. Trade Representative Robert Lighthizer has expressed frustration with the GFSEC because “some countries are not committed to providing timely information to the proper functioning of the Forum’s work.”<sup>24</sup> This issue is also noted in the September 2018 GFSEC Ministerial report in which it states the limitations of information sharing and how these limitations detract from achieving excess capacity reducing objectives.<sup>25</sup>

Moreover, it is difficult to pinpoint every distortive practice, as subsidies and non-tariff barriers that constrain competition are often hidden. As was described above, Japan has intricate producer-distributor-consumer networks, and these can constrain free competition. Similarly, the United States’ extensive use of long-enduring AD and CVD duties can constrain restructuring in the steel industry. The GFSEC ministerial reports have begun to list other potentially distortive practices, such as export credits, government procurement regulations, grants for research and development or training, and tax exemptions or credits, but there is not much progress on addressing or limiting those practices.<sup>26</sup>

Some Japanese companies said that since global excess capacity is a commercial issue, it should be addressed with the involvement of companies or industry associations. For example, the Japanese Iron and Steel Federation (JISF), which is the primary industry association for Japanese steel producers, could speak to an equivalent association in China with government oversight. This government-industry collaboration may be gaining traction as evidenced by the March 2019 GFSEC public-private open session.

## **Path Forward for the GFSEC**

First, Japan’s priority seems to be to extend the GFSEC beyond its December 2019 expiration. Japan is the Chair of the G20 as a whole, and therefore, also Chair of the GFSEC. Given the skepticism about multilateral efforts in this U.S. administration, it is clear that if the GFSEC were to be extended, it would need to be the initiative of another country, and Japan would be in the prime position to promote such an extension.

Second, Japan seeks to ensure the continued participation of India and Indonesia and to bring Vietnam into the GFSEC. India has increased their steel production and steelmaking capacity in recent years, and also announced four new plant openings that are expected to be in operation by the end of 2019. Further, in their “National Steel Policy 2017,” India’s Ministry of Steel projected a need for increased steelmaking capacity by 2030, if growing steel demand in India

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<sup>24</sup> American Metal Market, Press release, Sep. 21, 2018.

<sup>25</sup> G20 GFSEC Ministerial Report, Paris, France, Sep. 20, 2018, p. 2.

<sup>26</sup> G20 GFSEC Ministerial Report, Paris, France, Sep. 20, 2018, p. 59-64.

were to be satisfied by domestic steel production.<sup>27</sup> These kinds of large investments should be monitored closely, as any country developing their steelmaking capacity could, in time, contribute to excess capacity if overestimating market demand.

Third, the GFSEC system for reporting and verifying steelmaking capacity data submitted to the OECD, data on both investments and closures, could be applied and made more robust regarding subsidies and non-tariff barriers. This kind of reporting process is essential for ensuring data is trusted and enabling productive conversations about how to make the global industry more competitive.

Finally, there could be more discussion about bringing the major steel associations and companies into direct involvement with the GFSEC, and this government-industry cooperation could be given more influence.

### **Additional Paths Forward to Combat Global Steel Excess Capacity**

Below are several alternative policy options for combating excess capacity in the global steel industry:

1. Solution within the WTO.
  - a. First, one possible way to protect countries from harm caused by artificially low prices or unfair subsidies would be to classify offending countries, like China, as a non-market economy (NME) through formal rules in the WTO. This would be a way to address the issue in a rules-based manner. By doing this, an import-receiving country can quantify an exporting country's trade and pricing according to a different set of standards, namely by comparing their export pricing with the pricing of countries with similar development status. Currently, the United States and the EU classify China as an NME and conduct AD cases according to NME methodology. China opposes this and initiated a dispute settlement case at the WTO arguing the United States and the EU have violated the Chinese WTO accession protocol by continuing to classify them as a NME.<sup>28 29</sup> An enforcement framework could be to reform the WTO to contain language on how to calculate fair prices for products produced in NME countries. Enacting this clarification would be difficult given the United States blocking the appointment of WTO judges,<sup>30</sup> not to mention the fact the any change to the WTO requires unanimous support among 164 members. China, a WTO member, would hardly agree to such NME definitions and pricing calculations that unduly harm them.

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<sup>27</sup> "Recent Developments in Steelmaking Capacity," September 2018, OECD.

<sup>28</sup> DS515: United States-Measures Related to Price Comparison Methodologies, [https://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds515\\_e.htm](https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds515_e.htm)

<sup>29</sup> DS516: European Union- Measures Related to Price Comparison Methodologies, [https://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds516\\_e.htm](https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds516_e.htm)

<sup>30</sup> "U.S. blocks WTO judge reappointment as dispute settlement crisis looms," Reuters, Aug. 27, 2018.

- b. A second form of WTO reform could be to clarify the definition of State-Owned Enterprises (SOEs) or public bodies. A public body could be defined as any company with greater than 50 percent of the voting rights belonging to the government. Clarifying the definition of SOEs would generate a debate on how much equity stake a government can have in a company. The difficulty of enacting WTO changes noted above also applies here.
2. Government/Authorities Meeting on Semiconductors (GAMS)-like Forum. Another potential path forward would be to move multilateral action beyond just the government-to-government sphere; it could be discussed in some sort of government-corporate context. An example of this sort of amalgamation is the GAMS. The GAMS was created by the governments of United States, Japan, South Korea, and the European Union to promote the growth of the global semiconductor market through improved understanding between industries and governments and cooperative efforts to respond to challenges facing the semiconductor industry.<sup>31</sup> The GAMS includes semiconductor industry associations in their meetings and the creation of their policy proposals. In 2016, China and Taiwan signed onto the GAMS report. The drawbacks of this approach would be that the meetings are held annually, and this may not be frequent enough to exert continuous pressure that is necessary in an industry such as the steel industry. Further, the agenda may be too broad, and the policy plans may lack enforcement mechanisms.
3. Regional Trade Agreements.
  - a. One multilateral effort that could combat excess capacity is the CPTPP, formerly the Trans-Pacific Partnership (TPP). In 2015, the TPP was riding on fast-track trade legislation that would have pushed it through the U.S. Congress on a simple majority vote. However, as the contest for the 2016 U.S. Presidential primary intensified, the TPP legislation was sidelined. This didn't stop opponents such as the United Steelworkers Union and other unions from lobbying hard to make sure the U.S. Congress did not ratify the TPP due to fears that the agreement would shift jobs overseas. After the United States backed out of the TPP at the beginning of the Trump administration, Japanese Prime Minister Abe took the leading role in crafting the modified CPTPP. It has been argued that the CPTPP is an inclusive arrangement that could be used as a tool to leverage China to meet certain market-based business, labor, and environmental standards. The CPTPP includes a chapter on SOEs. If China wanted to join the CPTPP, they would need to agree to the rules in the chapter on SOEs that impose disciplines on distortive practices by SOEs. Further, the CPTPP includes 11 countries that can form a block of "fair" trading countries whose zero-tariff standard would likely keep out imports from "unfair" traders. In other words, this type of multilateral agreement could keep the imports caused by excess capacity from threatening

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<sup>31</sup> World Semiconductor Council, <http://www.semiconductorcouncil.org/about-wsc/organization/>

steelworkers' jobs. This would require significant investment in trade agreement enforcement, including international staffing, investigators, and other enforcement mechanisms.

- b. U.S.-Japan-EU Trilateral Meetings have begun under the Trump administration. While these meetings only happen periodically throughout the year and do not address steel specifically, one of the main tenets is to rein in government subsidies to industries. In their joint statement after their January 2019 meeting, the Ministers instructed their staff to craft language that would effectively eliminate industrial subsidies. If this language can be ratified, it can lead to a baseline that other countries must adhere to should they wish to secure equal treatment in any forthcoming formal agreement.
  - c. Bilateral Agreements could also lead to a gradual development of a baseline for fair trade. From the Japanese perspective, the U.S.-Japan Trade Agreement on Goods likely will not include steel because the tariff-rate on steel products imported into the United States and Japan is currently zero (this does not include tariffs from AD and CVD cases in the United States). Potential settlement of the Section 232 steel tariffs might be discussed, but the Japanese, in general, are more concerned about the threat of the Section 232 tariffs on automobiles and auto parts, another Section 232 investigation wherein the Trump administration recently delayed its decision regarding the implementation of tariffs until November 2019. The U.S.-Japan Trade Agreement on Goods would likely discuss market access, particularly in agriculture. Experts stated the Agreement could include language on prohibiting subsidies in general and could be modeled off agreements like the Japan-EU agreement, which entered into force in February 2019 and prohibits subsidies for insolvent or "zombie" companies. There is a similar provision in the EU-Vietnam agreement. This perspective is consistent with the U.S. Trade Representative's negotiation objectives, which includes defining disciplinary action beyond the WTO Agreement on Subsidies and Countervailing Measures.<sup>32</sup> These bilateral agreements can create a global baseline, especially when agreed to by major economies like Japan and the United States.
4. Market Mechanisms.
- a. The global community could let market forces take their course and not protect the steel industry from harmful trading practices. However, this would leave companies and workers to suffer and likely lead to political uprisings. Even if the global community emphasized the use of AD and CVD remedies while letting market forces take their course, the remedy does remain reactionary and delayed; meanwhile, companies are significantly harmed, and workers displaced. Only if all countries abide by strict AD and CVD remedy enforcement (so that there was not a possibility of transshipment of unfairly traded goods) would the

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<sup>32</sup> "Summary of U.S.-Japan Negotiating Objectives," Office of the U.S. Trade Representative, Dec. 21, 2018.

offending country then feel pressure to make structural changes, because their imports would have no place to go. Given countries potential hesitancy to use AD and CVD measures, like Japan was in the past, and typical delays in AD and CVD remedy implementation, this policy proposal seems least plausible.

- b. Opposition to steel industry carbon emissions and pollution could spur restructuring through consumer demand. If citizens in a country become increasingly inclined to reduce carbon emissions, this could create another pressure to shutter outdated or highly-polluting steelmaking facilities. Such pollution pressures have already been driving government decisions to reduce steelmaking capacity in China.<sup>33</sup>
5. Mergers and acquisitions or coordinated steelmaking capacity dismantling.
- a. Japan and the European Community have, in the past, sanctioned mergers in part to ease excess capacity concerns. In the 1980s, Nippon Steel was making more reductions in capacity than its competitors. Through four consecutive “rationalization plans” Nippon Steel cut steelmaking capacity from 47 million MT per year in 1980 to 24 million MT in 1987. This process was eased because of a cartel-like, cooperative restructuring process for which MITI published “non-binding” guidelines. There was also a strong Japanese government-funded initiative to ease job loss for steelworkers during this time period.<sup>34</sup> However, the actual reduction of capacity during this time was only slight. Likewise, the European Community issued an Order on Capacity Reduction in 1983, which designated strict targets for strict capacity reductions to be completed by each country; however, in 1985, they acknowledged more coordinated dismantling was needed.<sup>35</sup> It is clear that mergers could facilitate capacity reduction because closing facilities is now a private business decision, and governments are no longer directly accountable for the political backlash of job loss. Further, mergers enable companies to maintain or increase market share and therefore likely their profits, without building new facilities and increasing excess capacity, “Thus large dominant firms can employ a merger and acquisition strategy and reconcile simultaneously the desire to grow market share and rationalize capacity.”<sup>36</sup> In the modern era, mergers could be promulgated by easing antitrust constraints with respect to multinational steel companies. A bigger company has an easier time deciding which mills to shut down and where workers can be laid off and is less susceptible to political pressure because it is a private business decision. However, this could invoke antitrust concerns regarding pricing, pit governments

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<sup>33</sup><https://www.nasdaq.com/article/chinas-hebei-province-to-cut-steel-capacity-in-bid-to-boost-air-quality-party-official-20190307-00054>.

<sup>34</sup> Howell, Thomas R. et al, *Steel and the state: government intervention and steel's structural crisis*, Westview Press, Inc., 1988, p. 234-242.

<sup>35</sup> Howell, Thomas R. et al, *Steel and the state: government intervention and steel's structural crisis*, Westview Press, Inc., 1988, p. 86-93.

<sup>36</sup> Wood, Andrew, “Capacity Rationalization and Exit Strategies,” *Strategic Management Journal*, vol. 30, no. 1, 2009, pp. 26, [www.jstor.org/stable/40060245](http://www.jstor.org/stable/40060245).

against each other, and degrade the reputation of the company. This also leads to additional monopoly power in a global industry that is already a natural monopoly.

- b. Finally, there could be a globally-agreed-to dismantling of excess capacity. A capacity reduction agreement between private competitors is not viable since its purpose is to reduce supply to the market, a dynamic that is inconsistent with antitrust laws and can lead to price increases. Therefore, an agreement to reduce capacity globally through reductions in each country would have to be initiated and sanctioned by governments. This strategy would probably require legislation to exempt steel producers from antitrust and competition law exposure. This agreement could resemble a globally administered agreement like the Paris Climate Agreement, but instead of cutting carbon emissions, cut steelmaking capacity. This seems the least feasible option because it would require hardline, enforceable capacity reductions, which would be difficult to negotiate because it could mean making significant capacity cuts in already developed steel industries such as the United States, Japan, and the EU, that have already been through major restructuring and closures in recent history. Doing so would negatively impact China more than other countries, due to the massive size of their steelmaking capacity currently. Further, limiting capacity growth would prove unfair to developing countries.

### **Ongoing Policy Challenges in Addressing Global Steel Excess Capacity**

Steel is a major driving force for developing countries; it is vital to infrastructure, technology, economic development, and defense. Given the strategic importance of steel and its impact on workers and downstream consumers, steelmaking capacity is challenging to dismantle. Cutting capacity outright will have political ramifications, such as leaving governments unpopular because of laid off workers. If the global community prohibits governmental intervention in building up a new or growing steel industry, we are unfairly harming developing countries while developed countries avoid being held accountable for their past governmental interventions. Similar to addressing climate change and recognizing developing countries' rights, a win-win solution for this global challenge is complex.

Any dismantling of capacity would need to include a social safety net, such as significant investments in trade adjustment assistance for unemployed workers, and new opportunities for companies to invest in alternative ventures. Sweden in the 1980s is a prime example of the kind of massive restructuring and investment in trade adjustment for workers that is needed when mills idle and capacity goes offline. Sweden had very little social upheaval because their social welfare, including severance arrangements, worker assistance, and regional aid measures, was so extensive.<sup>37</sup> Such massive investment in a social safety net would be difficult to pass legislatively, nonetheless pay for.

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<sup>37</sup> Howell, Thomas R. et al, *Steel and the state: government intervention and steel's structural crisis*, Westview Press, Inc., 1988, p. 93.

With countries like India, Vietnam, and Iran expanding steel production and demand, steel excess capacity growth in those countries remains a threat. According to experts and major players in Japan, there needs to be a system in place, whether it be the GFSEC, the OECD Steel Committee, or some alternative, so that there can be an avenue for addressing changes in the global industry, tracking capacity, production, and trade developments, and providing opportunities for dialogue to address future distortions.

Additionally, as has been seen from steel excess capacity in the European Community, Japan, and the United States in the past, it is essential to understand and have full transparency about all distortions in the global steel market, which could include subsidies, export credits, government procurement laws and practices, grants for research and development or training, and tax exemptions or credits. It is important to question Japan's low import penetration, grants for steel research and development, and distributor networks that enable it to remain at the top of global steel supply chains. It is also important to objectively demarcate how the United States' current use of tariffs to deal with the threat posed by imports and the trade deficit, as well as the United States' extensive use of AD and CVD remedies, support the domestic industry and impact global markets. We must question the objectivity of U.S. institutions such as the Department of Commerce, the Office of the U.S. Trade Representative, and the U.S. International Trade Commission, as many high-ranking government officials of these institutions had prior involvement in steel goods trade. For example, U.S. Trade Representative Lighthizer was a former lawyer for U.S. Steel; Ambassador Lighthizer's general counsel Stephen Vaughn lobbied for U.S. Steel; and Commerce Secretary Wilbur Ross was formerly on the board of ArcelorMittal, the world's largest steel company.<sup>38</sup> Objective examination of how relationships between the steel industry and governments around the world operate may be necessary to effectively address excess capacity, and more study is needed to address the challenge.

Further, as mentioned as a primary concern of the World Steel Association's Dr. Basson, growing concern regarding climate change and opposition to carbon emissions and pollution as resulting from steelmaking could lead to large restructuring in the global industry. Steel will still be necessary for global development, but it will also need to be more green, efficient, and sustainable. Governments may tax carbon or charge fees to major polluters, leading to restructuring. On its own, steel's recyclability can be honed, and this could lead to more efficient mills and the closing of inefficient mills regardless of governmental interventions or policymaking.

To harken back to terminology, it is difficult to determine the efficient level of steelmaking capacity. Crafting hardline targets and knowing what is an appropriate and stable capacity is challenging because it depends on unpredictable demand. This challenge was emphasized by many interlocutors in Japan. We can quite accurately forecast where development and infrastructure investment will grow, such as Africa and Asia, but it is impossible to foresee all

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<sup>38</sup> William Mauldin, "Big Steel Lobbies Hard for Tariffs," The Washington Post, Feb. 13, 2019.

market downturns or all changes in demand. For example, many in Japan believe that, while China comprises much of the current demand, this demand could peak sometime in the coming years.

Finally, President Trump, who has nicknamed himself the “Tariff Man,” has completely changed the international trading atmosphere. In Japan, there is much concern that the Section 232 tariffs in the United States will not be effective in combating steel excess capacity or the dumping and subsidizing of steel because the tariffs are uprooting global supply chains instead of targeting the major offenders. The Japanese government seems strongly opposed to the safeguard measures that countries around the world have put in place. This is because these safeguards impact the export streams that Japanese companies have so carefully developed in their strong producer-distributor-consumer networks. Any trade distortions, including across-the-board tariffs, harms these networks, and injects a new level of uncertainty in the global trading system.

Changes to the international trading system, such as various protectionist measures, mean that combating governmental interventions through multilateral forums has to be restarted to see progress. Essentially, protectionist measures and uncertainty push countries to shield their industries, pushing progress in eliminating governmental intervention back to ground zero. Japan believes that the United States has a powerful voice and strong influence over other countries and hopes that the United States will communicate patiently and consistently, participate in multilateral forums, and be a leader in establishing international trade mechanisms grounded in free trade.

### **U.S.-Japan Policy Prescription and Conclusion**

As seen in the history of the global steel industry and in current developments, governments around the world will continue to monitor and intervene in steel industries and steel markets. During this U.S. administration under President Trump, negotiating separate bilateral agreements seem to be the most plausible path forward for combating governmental interventions that fuel the growth and prevent the dismantling of steel excess capacity. If these agreements contain a chapter on decreasing or eliminating SOEs or subsidies, as we have seen in the Japan-EU agreement, the CPTPP, the proposed U.S.-Mexico-Canada Trade Agreement, and the U.S.-Japan-EU Trilateral Meetings, we will have provisions limiting governmental involvement in bolstering steelmaking capacity growth around the world. However, approving this kind of bilateral agreement between the United States and Japan would require them to evaluate the kind of government support mechanisms that they have in place for their industries (e.g. steel, agriculture, and beyond). The support mechanisms could prove to be political sticking points for domestic industry and labor lobbies.

Reducing excess capacity is clearly a gradual process because the problem of excess capacity is so long-standing and incessant. China has rapidly developed their steelmaking capacity and is beginning to respond to international pressure, climate change concerns, and market mechanisms. Japan has built strong export networks and specialized their industry to meet

changing market conditions. The United States should encourage industry efficiency and specialization and change its current course of protecting its industry through more governmental involvement with across-the-board tariffs before the global supply chains are shifted, rerouted, and become increasingly complex and difficult to undo, only intensifying the problem of transshipment. The United States should prioritize the continuation of multilateral forums like the GFSEC. The GFSEC is important because, while it has no binding agreements thus far, it is an exchange of reliable statistics and forecasts output, capacity, and demand. These forecasts can be early warning signals of production surpluses and enable policy responses before damage is done in the global steel market.

Additionally, Japan should step up and take the lead on countering global steel excess capacity, especially as the United States backs away and creates a vacuum in the multilateral sphere. While excess capacity may not be Japan's foremost concern because of their strong networks and highly specialized steel industry, we have already seen them exemplify leadership through their role in the reformed CPTPP, their opposition to tariffs and safeguard measures, and their prioritization of bilateral and trilateral agreements with strong anti-subsidy language. Prime Minister Abe also prioritized a visit to China for the first time in seven years to meet with President Xi Jinping and discuss deepening economic and trade cooperation.<sup>39</sup> The United States might not take the lead in addressing global trade issues like excess capacity in multilateral forums, but they likely will remain at the table. The United States should rethink their long-term trade strategy and begin engaging again with the reformed CPTPP.

Global steel excess capacity is a persistent issue and could shift to other countries in the future. To address global steel excess capacity and leave the global steel industry more competitive, sustainable, and ready to weather new challenges, we must preserve the progress made thus far in the GFSEC and work to actualize and enforce trade agreements.

## **Author's Note**

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*The research for this paper is my synthesis and analysis of a series of 20 interviews both in Tokyo and in Washington, D.C. In Japan, these included meetings with experts and officials in government (Embassy of Japan in Washington, D.C., Ministry of Economy, Trade, and Industry, Ministry of Foreign Affairs, the Japanese External Trade Organization), in industry (Japan Iron and Steel Federation, Nippon Steel and Sumitomo Metal, JFE Steel, Hitachi Metals, SANYO Special Steel), and independent experts (Nishimura & Asahi, NLI Research Institute, Sasakawa Peace Foundation). The names and affiliations of sources are not identified in this paper due to*

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<sup>39</sup> "Abe and Xi agree to promote new economic cooperation amid U.S. trade war fears," *Japan Times*, Oct. 26, 2018.

*the fact that the conclusions reached are my own and that my assessment reflects responses from numerous sources, as well as out of respect for the confidential nature of the interviews.*

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