

# The Big Squeeze: Japanese Supply Chains and Great Power Competition

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Japan led, and was transformed, by the global supply chain revolution. Facing growing protectionism in industrialized markets and reeling from sharp yen appreciation in the aftermath of the 1985 Plaza Accord, Japanese firms responded with a drastic increase in their overseas investment activities. In so doing, many of these companies spearheaded the movement towards the fragmentation of production across national boundaries that sought efficiency gains by pooling the competitive advantages of different locations. Japan's experience with the first supply chain revolution was transformative. It altered its export-led model with important implications for its foreign policy. Japanese investments in the United States helped abate trade frictions, integrated production was at the heart of the project to rebuild relations with China, and Japan's lead as foreign investor in Southeast Asia has been a pillar of its blueprint for regional integration.

The strains in the rules-based international trade order, however, have raised questions about the ability of global supply chains to continue to operate effectively. The U.S.-China geopolitical rivalry has manifested in a damaging trade war, and moves to restrict tech flows are creating decoupling pressures. The COVID-19 pandemic has exacerbated these trends with lockdowns that disrupt supply chains while export protectionism and calls to renationalize

production are on the rise. The intensified risk environment could lead to a second supply chain revolution with a greater emphasis on redundancy and diversification and bifurcation of productive chains. How will Japan respond to the challenges to international production, a central engine of its economic prosperity, and with what consequences for its relations with major powers?

To provide greater clarity on this overarching question, this paper is organized as follows.

Section 1 describes the central role of Japanese firms in the emergence and deepening of regional production networks. Although Japan's overall share of intra-regional trade has decreased in the 21<sup>st</sup> century -in tandem with China's rise as regional hub- Japanese firms have retained their central role in GVCs (Global Value Chains) through their advanced manufacturing capabilities. Section 2 offers a glimpse of past and recent supply chain shocks -China's embargo of rare earth metals, the Great Eastern Earthquake in Tohoku, and the Japan-Korea export control dispute- to illustrate both sources of vulnerability and resilience of Japanese GVCs. Section 3 provides an assessment of the systemic shift brought about by revived great power competition and it identifies some early adjustment responses from Japanese firms to a new normal of heightened geopolitical tension.

### **The Globalization of *Monozukuri* Japan**

Japan's economic rise was predicated on building a strong industrial base at home and capturing overseas markets through exports of finished products. As one Japanese industry after another (textiles, steel, consumer electronics, and automobiles) captured foreign markets, tensions with

industrialized trading partners increased. Trade friction with the United States was particularly acute as Japan racked up trade surpluses and American producers decried the absence of a level playing field. The imposition of an export restraint on Japanese automobiles triggered a wave of Japanese investment as all major auto firms eventually opened plants in the U.S. to preserve their access to American consumers.

A veritable explosion of Japanese overseas investment took place just a few years later when the yen appreciated sharply in the aftermath of the 1985 Plaza Accord. The strong yen sharply curtailed the competitiveness of Japanese exports, prompting many firms to venture into international production. Flows of Japanese outward investment multiplied from \$5.9 billion dollars in 1984 to \$14.5 billion dollars in 1986 and reached \$44.1 billion by 1990.<sup>1</sup> The exodus was not just of large assemblers, but also of scores of small and medium-sized part makers. For instance, Japanese electronic part makers established 168 foreign affiliates between 1971-1984, but that number jumped to 602 foreign affiliates established between 1985-1999.<sup>2</sup>

The inflection point for Japanese outward investment precipitated important changes down the road. For one, it shifted the geographical orientation of Japan towards Asia in its role as foreign investor. As can be seen in Table 1, the United States which had long been the central investment destination for corporate Japan saw its centrality diminish over time. Asia became a central hub of operations for Japanese multinationals. Investments to newly industrialized economies (South Korea, Taiwan, Singapore, and Hong Kong) accelerated, and Japanese capital played a central role in Southeast Asia, becoming the top investor in the region.<sup>3</sup> The opening of China to foreign direct investment saw a rush of Japanese investment eager to access its domestic market and tap

nits inexpensive labor force for assembly operations of export products to serve international markets. The gravity pull of East Asia, and China in particular, also comes through in an important indicator of supply chain activity: trade in parts and components. China's share of Japanese exports of intermediate goods increased from 8% in 1999 to 23% in 2009, while the United States' share decreased from 26% to 13% in that decade. And China's share of Japanese imports of intermediate products peaked in 2014 with close to a 30% share, while the United States' share hovered around 14%.<sup>4</sup>

**Table 1**

<i><b>Outward FDI stocks (international investment position)</b></i>			
(Selected years )	1996	2006	2019
<b>Total in billion USD</b>	258,653	449,680	1,858,300
<b>Asia</b>	30.6%	23.9%	27.8%
China	3.1%	6.7%	7.0%
NIES	11.0%	8.7%	9.8%
ASEAN	20.6%	11.1%	14.3%
India	0.3%	0.5%	1.5%
<b>North America</b>	37.8%	36.3%	29.8%
United States	36.5%	34.8%	28.7%
Canada	1.4%	1.5%	1.1%
<b>Latin America</b>	4.6%	8.7%	11.6%
<b>EU</b>	16.8%	26.4%	27.2%
<b>Africa</b>	0.2%	0.6%	0.3%
<b>Oceania</b>	4.1%	3.1%	4.4%

Note: The Ministry of Finance and the Bank of Japan implemented a major revision of balance of payments related statistics from January 2014 onward, so there is a break in continuity between data before and after 2014.

Sources: JETRO statistics prepared from Ministry of Finance and Bank of Japan "International investment position of Japan" and Bank of Japan "Foreign exchange rates."

Available at: <https://www.jetro.go.jp/en/reports/statistics.html>

Japanese companies were active participants in the supply chain revolution that transformed patterns of international trade and investment and rewired economic integration in Asia. This new stage of globalization, described by Richard Baldwin as the "second unbundling,"<sup>5</sup> was

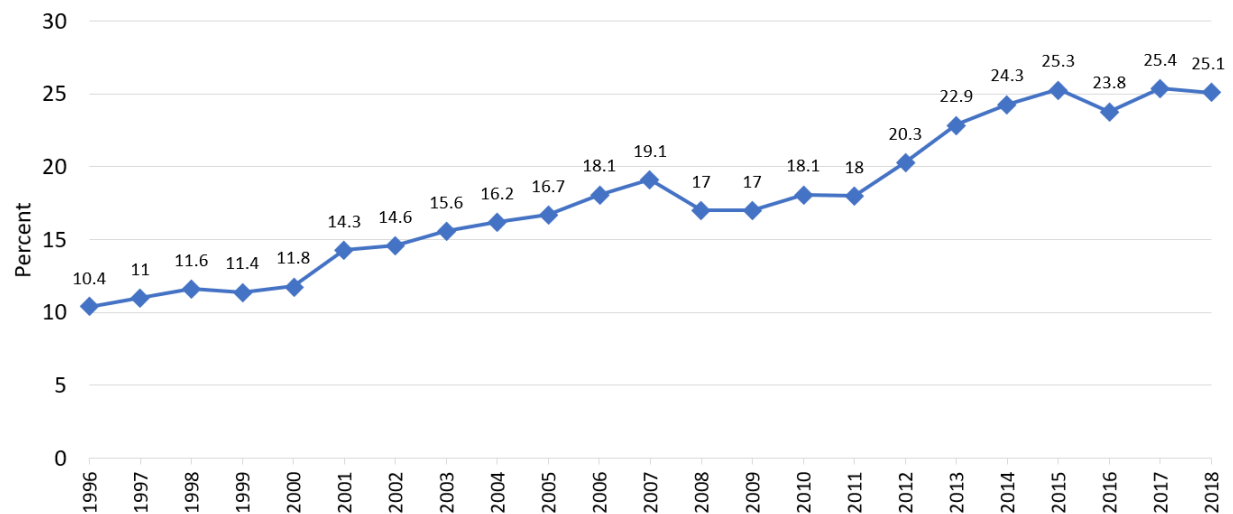
enabled by improvements in communications technology that permitted coordination of complex production operations across national borders. As Baldwin emphasizes, the supply chain revolution is not merely about trade in intermediates, but the transfer of technological and managerial know-how and the fusion of investment and trade activities. Regional production networks in Asia thrived thanks to a steep reduction in transportation costs and barriers to international trade. Governments in the region sought to attract investment-for-export operations, and Asia was well placed to benefit from the fragmentation of operations in the information technology sector, starting with semiconductor assembly.<sup>6</sup> Bottom-up regionalization in Asia stitched by crisscrossing supply chains laid the groundwork for top-down regionalism in the form of preferential trade agreements. A powerful motivation for the Japanese government to negotiate deep trade agreements with behind-the-border disciplines was to create a more hospitable environment for the complex production sharing networks.<sup>7</sup> Japan has crafted an extensive network of 21 trade agreements (in force or signed) that cover 79% of the country's total trade.

Supply chains transformed Japan as well. For starters, economic activity became more closely integrated with overseas production. The foreign production ratio for Japanese industry nearly doubled from 10.4% in 1996 to 19.1% in 2007; it dipped due to the 2008 Global Financial Crisis (GFC), but the weight of overseas production recovered and increased further to reach 25.1% of all Japanese manufacture in 2018 (see Figure 1). For some industrial sectors, the share of foreign to domestic manufacture is very high. Table 2 shows this is the case for transportation equipment (47%), general purpose machinery (29%), and information and communication electronic equipment (28%). Over time, and facing growing competition from East Asian producers,

Japanese firms moved up in the value-added ladder. As Ulrike Schaede points out, Japanese firms developed core competencies in advanced materials, high tech inputs, and sophisticated machinery, thereby becoming a technological pivot of the Asian supply chain. According to a survey of the Ministry of International Trade and Economy, cited by Schaede,<sup>8</sup> Japanese companies captured between 50% and a 100% of market share in more than half of the 931 high tech products surveyed in 2017.

**Figure 1**

**Overseas production ratio (manufacturing industries)**



Source: Ministry of Economy, Trade and Industry, "Summary of the 49th Basic Survey on Overseas Business Activities (conducted in July 2019)," *Survey on Overseas Business Activities*, <https://www.meti.go.jp/english/statistics/tyo/kaigaizi/pdf/h2c412je.pdf>.

**Table 2**

<b><i>Overseas production ratio Ranking by sector (2018)</i></b>	
<b>Manufacturing industries</b>	<b>% of foreign production</b>
<b>Transportation equipment</b>	46.9%
<b>General-purpose machinery</b>	29.2%
<b>Information &amp; communication electronics equipment</b>	27.8%
<b>Non-ferrous metals</b>	21.5%
<b>Iron and steel</b>	20.8%
<b>Chemicals</b>	19.8%
<b>Ceramic, stone, and clay products</b>	19.5%
<b>Business oriented machinery</b>	17.5%
<b>Petroleum and coal</b>	17.4%
<b>Electrical machinery</b>	15.3%
<b>Production machinery</b>	14.7%
<b>Textiles</b>	14.2%
<b>Miscellaneous manufacturing industries</b>	13.4%
<b>Food</b>	10.7%
<b>Lumber, wood, paper, and pulp</b>	10.3%
<b>Metal products</b>	7.2%

Source: Ministry of Economy, Trade and Industry, “Summary of the 49th Basic Survey on Overseas Business Activities (conducted in July 2019),” Survey on Overseas Business Activities, <https://www.meti.go.jp/english/statistics/tyo/kaigaizi/pdf/h2c412je.pdf>.

Contrary to the experience of other countries which saw their degree of participation in global value chains stall after the 2008 Global Financial Crisis,<sup>9</sup> Japan has intensified its GVC participation. Table 3 looks at the GVC participation index of the three largest economies in the world.<sup>10</sup> It shows a different pattern from the United States and China in that the intensity of Japan’s GVC participation -both forward and backward links- augmented throughout this period.

**Table 3**

<i>Global Value Chain Participation Index</i>						
	Forward GVC Participation (% of GDP)			Backward GVC Participation (% of final goods production)		
	2000	2010	2017	2000	2010	2017
<b>China</b>	8.2%	10.6%	8.1%	11.3%	13.7%	9.1%
<b>Japan</b>	5.5%	7.6%	8.3%	4.9%	7.5%	9.1%
<b>United States</b>	5.0%	6.0%	5.6%	5.7%	6.4%	6.1%

Source: ADB Inter-Country Input-Output Database, 2017 ed.

Index calculations generously supplied by Xin Li and co-authors (2019).

The tale of Japan's dethronement as leader in the manufacture of consumer electronics and semiconductor chips is well known, but examples abound of the critical role that Japanese advanced inputs and machinery play in strategic supply chains in the Asia-Pacific. In the field of smartphones, an examination of sourcing for Huawei and Apple's smartphones shows that parts supplied by Japanese firms for the Huawei P30 pro model represented 23% of the total value, above the contribution from American (16.3%), Taiwanese (7.9%) and South Korean (7.7%) producers. In the case of Apple iPhone XS Max, the value added by Japanese producers (13.7%) came third, after South Korean (32.9%) and American firms (30.7%).<sup>11</sup> In semiconductor manufacturing, Japan is the dominant supplier of three high value-added chemicals essential to semiconductor manufacture. Japanese firms supply 90% of fluorinated polyimide, 70% of etching gas, and 90% of photoresist.<sup>12</sup> And some Japanese firms have remained very competitive in manufacturing equipment for semiconductor production. Japan was the largest exporter of semiconductor manufacturing equipment between 2014 and 2018 with 30% of world exports.<sup>13</sup>

The globalization of Japan's *monozukuri* (fine craftsmanship) has been essential to the transformation of Japan's economy, has helped spur a new regional division of labor with more



closely knit economic interdependencies, and has provided impetus for the construction of a regional architecture geared towards supply chain trade. However, economic interdependence also carries risk and the spread of production networks has accentuated at times the costs of supply shocks in instances of inter-state friction or natural disaster.

### **Supply chain shocks: vulnerability and resilience**

#### *China's rare earths*

China's embargo of rare earth shipments to Japan in September 2010 was a wakeup call for Japanese corporations and the government on the risks of asymmetric interdependence. In the years prior, China had made a concerted effort to become the dominant supplier of rare earth metals, which are of critical importance for high-tech supply chains. Starting in the late 1980s, China began to impose increasingly strict export restrictions both to direct earth metal supply to domestic production and to encourage foreign processors to relocate to China in order to capture the higher value-added segments of the industry. With the closure of other rare earth mines in the United States and Australia, China controlled the earth rare metal market for all practical purposes. In the case of Japan, imports from China amounted to 90% of the supply of rare earth metals.<sup>14</sup>

The dictum of “hot economics, cold politics” that had characterized Sino-Japanese relations since their normalization in the 1970s was turned on its head when China used a supply shock on

a strategic commodity to impose costs on Japan for its handling of the territorial dispute in the Senkaku/Diaoyu islands. The crisis erupted on September 7, 2010, when a Chinese boat rammed a Japanese Coast Guard vessel in Japan's territorial waters. The Japanese government arrested the boat's captain and announced its intention to prosecute him under Japanese law. The Chinese government strongly protested and mounted a pressure campaign to secure the release of the captain, which included a non-official ban on rare earth metals exports to Japan. The supply restrictions would last two months.

Although China did win an immediate victory when the Japanese government released the Chinese captain on September 24, it unleashed larger forces that eventually limited its hold over the global rare earth market. The Japanese private sector and government sprang into action to reduce a vulnerability that Chinese actions had exposed bare. The multi-pronged effort involved reducing consumption of rare earth metals through redesign and recycling efforts, the diversification of supply by financing rare earth mining and processing elsewhere, and the litigation of Chinese export restrictions at the WTO.

Japan's Ministry of Economy and Trade (METI) adopted a subsidy program to reduce Japanese corporations' dependence on rare earth from China. METI awarded \$513 million in subsidies to 160 projects that reduced consumption of rare earths, recycled the materials, or diversified suppliers.<sup>15</sup> Japanese companies on their own or in collaboration with the Japan Oil, Gas, and Metals National Corporation (JOGMEC) invested actively in mining and processing facilities for rare earths in Central, South, and Southeast Asia, Australia, and the United States. A case in point is Sojitz and JOGMEC's support for Lynas Corporation to reopen its rare earth mines in

Australia. At the same time that Japan opened new sources of supply, it challenged Chinese export restrictions, invoking multilateral trade rules. Japan secured a favorable ruling from the WTO on March 2014 which was sustained by the Appellate Body. China proceeded to eliminate its export quota system in 2015.<sup>16</sup>

These efforts visibly reduced Japan's dependence on Chinese supply. By 2018, China's share of Japanese imports of rare earths hovered around 58%. In fact, Japan was the country that had most success in reducing its reliance on Chinese rare earth metals. Chinese imports of rare earth metals still represent 98.5% of the total for the EU., 95.2% for the U.S., and 90.9% for South Korea.<sup>17</sup> Japan's diversification efforts have not ceased either. With the goal of reducing the share of rare metal imports coming from China to less than 50% by 2025, the Japanese government has teamed up with the United States and Australia to open a processing facility in Texas and will fund similar ventures in Africa.<sup>18</sup>

### *3/11 Natural Disaster*

Not long after the original spat with China, Japanese supply chains were once more sorely tested, this time by a major natural disaster. On March 11, 2011 Japan was jolted by a 9.0 earthquake that triggered an enormous tsunami and a nuclear crisis in Fukushima. Casualties from 3/11 surpassed 16,000 people, and tens of thousands of people were displaced. The nuclear accident underscored the regulatory failures of the "nuclear village" and brought about a drastic reorientation of Japan's energy policy with only a few nuclear reactors currently active. The disaster hit the Tohoku region the hardest, and it disrupted important manufacturing networks in

automobiles and electronics. For instance, the company Renesas -which produced 40% of the world's microcontrollers for automobiles- saw major damage to its Naka plant.<sup>19</sup> Shin-Etsu's - one of two Japanese producers supplying 60% of all silicon wafers used for computer chip production- had to close its Shirawaka plant due to earthquake damage. The disruptions in supply chains affected downstream producers both inside and outside Japan. For example, Toyota had to suspend operations in Japan and only resumed full production a month after the quake, and GM's Louisiana plant also temporarily halted production.<sup>20</sup>

The Great Eastern Earthquake exposed both the centrality of Japanese advanced component manufacture for scores of industries in Japan and abroad; as well as the risks of a sudden stoppage to the supply of those components when a natural disaster hit. Carvalho and his co-authors documented serious damage upstream and downstream the supply chain.<sup>21</sup> Firms outside of the affected region that had clients or suppliers in Tohoku reported negative sales or procurement disruptions. However, as Todo and Inoue show,<sup>22</sup> supply chains also provide a buffer to weather a natural disaster. Affected firms in the region were able to tap on their supply chain networks for assistance. The results were impressive. For example, user and supplier firms of microcontrollers (both foreign and domestic) teamed up to speed up the recovery -from the original projection of one year- to just three months.<sup>23</sup>

Given the severity of the production disruptions after 3/11, Japanese companies resorted to several measures to increase their resilience: greater use of standardized products, some increase in inventories, and diversification of suppliers.<sup>24</sup> But these measures did not amount to the end of 'just-time-delivery' system or the dependence on highly specialized parts. As Fujimoto

explains,<sup>25</sup> Japanese producers had to weigh in the tradeoffs between robustness and competitiveness as they factored in the risks of a future low-probability event like the Tohoku earthquake/Fukushima nuclear accident. The shift to greater use of standardized parts, the duplication of procurement channels, or the accumulation of inventory would increase resilience to supply shocks but would come at a cost in terms of efficiency, quality, and streamlined operations for industries that face international cut-throat competition.

#### *Japan-Korea export control row*

On July 4, 2019 the Japanese government tightened export controls for shipments to South Korea of three chemicals that are essential to semiconductor and smartphone manufacture. Altogether, these chemical imports represented 12.6% of South Korea's global imports, but more importantly, Japanese companies were the dominant suppliers for Korea in these advanced materials: 94% of fluorinated polyimide, 92% of photoresist, and 44% of hydrogen fluoride.<sup>26</sup> The Japanese government cited concerns with lax Korean export control protocols that could result in the transfer of sensitive dual-use materials to countries like North Korea to justify the move. However, the timing of the decision as Japan-South Korea relations sharply deteriorated over the Korean Supreme Court's decision to award damages for individual cases of forced labor during WWII, created concerns over the politicization of Japanese export control policy.<sup>27</sup>

The dispute escalated rapidly. Japan delisted South Korea from its White List for expedited export controls and South Korea retaliated in kind. The South Korean government took the dispute to the World Trade Organization and threatened to terminate the bilateral agreement on

information sharing of military intelligence. A Korean boycott of Japanese goods and travel to Japan further strained ties. Bilateral relations have reached their lowest point as the government of Japan deems that the court rulings undermine the 1965 normalization of relations treaty, and the government of South Korea views the export control restrictions as the weaponization of economic interdependence. Repairing this rift will be a tall order.

The revamped export controls now mandate a license for individual shipments of these chemicals (a process that can take up to three months), complicating the procurement strategies of Korean firms. The Japanese government approved licenses for some shipments and on December 2019 it eased restrictions, allowing companies to receive a three-year license to cover all shipments of photoresist. Nevertheless, the uncertainty about stable supply of critical materials had immediate and long-term effects. Japan's exports to Korea between August and December of 2019 fell by \$2.9 billion dollars, and there were almost no shipments of hydrogen fluoride in October-November of that year.<sup>28</sup>

Both the Korean government and semiconductor firms have responded with strategies to diminish a strategic vulnerability. The government announced a \$1.9 billion fund to promote domestic manufacture and diversification, and Korean firms have responded by increasing inventories, switching to domestic producers when possible, and diversifying suppliers. There have been ripple effects in the supply chain affecting Japanese companies. Chemical firms in Japan have reported a 30% drop in etching gas sales to South Korea since the enactment of the export controls.<sup>29</sup> The business press in Japan reports some Japanese companies are shifting

production to South Korea or using a joint venture in Belgium to sell products in order to avoid losing the market.<sup>30</sup>

As this brief overview has made clear, Japanese supply chains have endured significant strain at times of bilateral political friction or in cases of natural disaster. The production disruptions have propagated more broadly due to the vertical integration at the heart of GVCs that links national economies more closely. But supply chains have also proved resilient and have helped firms hedge against production disruptions in one location. Common responses to supply shocks have included diversification of supply, localization, redesign and inventory efforts, and resort to multilateral trading rules.

These are important lessons to keep in mind as global value chains are and will continue to experience deeper and sustained stress. Strategic competition among the two largest powers in the world, an upsurge of protectionism with a weakened WTO, and the pandemic crisis announce a new normal to the world order. A world economy of greater barriers to integrated production due to the securitization of economic relations is on the horizon.

### **New normal? U.S.-China strategic competition and the revival of economic nationalism**

*“Economic security is national security”*

To the extent that the dictum “economic security is national security” gains traction in guiding state behavior, GVCs will be operating in a markedly different terrain. A main driver for this era

of reasserted state intervention in international economic exchange is the strategic rivalry between the United States and China. China experienced dramatic change during the reform era when it opened the door to foreign investment and greater trade, and eventually accepted new disciplines as a condition for WTO membership. But the market reform spirit appears largely depleted with a more interventionist industrial policy and a higher degree of ambition in morphing from low-cost labor assembly hub towards becoming a techno power.

The market distorting policies (such as industrial subsidies, preferences to state-owned enterprises, IP theft, joint venture limits, and forced technology transfer) that have been long-standing irritants for trading partners have acquired new significance. China's authoritarian tilt under Xi Jinping, its ability to use its economic prowess as a tool of global influence, and the strategic repercussions of new technologies in the fields of 5G, AI, quantum computing, and semiconductors have raised the stakes. Robert Williams notes these technologies are characterized by the "omni problem:"<sup>31</sup> they have myriad applications for advance military weaponry and also provide the crucial platform for the industries and economic activities of the future. The supply chains that have been built about globally integrated sectors such as telecommunications and semiconductors, therefore, are in the cross-hairs of this intensifying tech rivalry.

The Trump administration's opening move in the shift to strategic competition with China was the imposition in June 2018 of tariffs on \$50 billion worth of imports from China following the findings of a 301 investigation on Chinese unfair IP and technology practices. China swiftly retaliated and the tit-for-tat tariff war soon covered a sizable share of bilateral trade. The United



States applied retaliatory tariffs on \$360 billion dollars of products coming from China, and China's tariffs applied to \$110 billion dollars of imports from the U.S. Both countries reached a truce in the tariff war with a phase one trade deal in early 2020. However, the agreement delivered more on managed trade than structural reform. China agreed to purchasing commitments worth \$200 billion, but there were no commitments on industrial subsidies, disciplines on state owned enterprises, or far-reaching IP protections.

The United States had limited success in exacting more meaningful commitments from China in part because its trade unilateralism undermined the possibility of a coordinated effort with like-minded countries. The withdrawal from the TPP, the imposition of dubious 'national security' tariffs on steel and aluminum that largely impacted American allies, and the threat to impose 'national security' tariffs on automobiles to obtain trade concessions from countries like Japan undermined collective efforts. At a time when trade frictions have markedly grown, the WTO's mechanism to adjudicate disputes among states stalled due to the suspension of Appellate Body operations.

Advanced technology is at the heart U.S.-China strategic competition. Concerned with the cybersecurity risks that Huawei represents (both because of the ability of the Chinese government to request confidential data and design vulnerabilities to hacking attacks), the American government banned the Chinese telecom firm from its 5G networks in 2019 and encouraged partner and allied nations to do the same. Australia, the UK, Sweden, Taiwan and Japan have followed suit. Another important line of effort has been to prevent Huawei and other Chinese tech companies from having access to the most advanced semiconductors. To that

effect, in 2019 the Commerce Department placed Huawei and several Chinese firms on its entity list mandating a license (with the assumption of denial) for any sale to take place. A year later, the export controls were applied extra-territorially by prohibiting foreign companies using American equipment and software to sell chips to Chinese firms on the entity list. China has responded by tightening its own export controls and drafting a list of unreliable suppliers. Further American restrictions may be forthcoming as the Biden administration has ordered a review of supply chain vulnerabilities in four sectors: semiconductors, large capacity batteries, pharmaceuticals, and critical minerals.

As the American and Chinese governments spar with tech curbs, the adjustment costs for American and foreign companies in the semiconductor supply chain could be vast. American semiconductor firms have raised concerns that the export controls deprive them of profitable markets, and they could be designed out from the next generation of products.<sup>32</sup> A decoupling scenario looks more likely in the semiconductor sector: “with global chip suppliers increasingly under pressure to choose between “blue” (U.S.) and “red” (China) supply chains.”<sup>33</sup>

The COVID-19 pandemic that has ravaged the world with vast loss of life and economic hardship has also clouded the future of GVCs. As countries imposed lockdowns to contain the virus, economic activity sharply declined and critical supply chains were disrupted. Many governments responded to the scarcity of personal protection equipment and medicines with self-defeating export restrictions that will hinder the response to the health crisis. As export protectionism grew, so did calls to renationalize production in order to eliminate the risks of supply from abroad.<sup>34</sup> However, broad re-shoring of production is neither feasible nor a panacea.

Localization of supply chains would make countries across the board economically smaller and more vulnerable to domestic production shocks that could not be cushioned through the trade channel -according to an OECD (2020) simulation.<sup>35</sup> While governments can attempt to change the incentive structure with sticks (mandatory export approvals) and carrots (subsidies), it will be private companies who will decide the if, how, and when of revamping their cross-border production networks.

#### *A test of resilience for Japanese supply chains*

The rise of trade protectionism has been keenly felt by internationalized Japanese corporations. Table 4 presents results from a December 2019 JETRO survey of selected Japanese manufacturing sectors. A number of findings stand out. One, there has been a wide-ranging set of protectionist/restrictive policies that influence the operation of Japanese firms beyond the U.S.-China trade conflict: “national security” tariffs on metals and possibly autos and retaliatory responses from U.S. trade partners, in addition to tighter export controls and investment screening mechanisms. Two, Japanese firms are particularly susceptible to the U.S.-China trade war with a large share of companies in sectors such as chemicals, IT equipment, electronic products and parts, metals, and general machinery reporting an impact. Three, just the threat of a 25% “national security” tariff on automobiles (which did not materialize) was felt strongly by Japanese auto producers. Finally, even though the survey was carried out before the U.S. expanded its export controls on semiconductors to foreign companies, Japanese firms in IT equipment, electronic parts, and devices already felt the effects of the growing restrictions.

Table 4

<i>The impact of protectionism on selected manufacturing sectors</i> (%, multiple answers accepted)								
	No. of firms	U.S. tariffs on Chinese products	Chinese tariffs on U.S. products	U.S. export controls and FDI screening	U.S. national security tariffs on steel and aluminum	U.S. national security investigation tariffs on automobiles	Retaliatory tariffs against U.S. steel / aluminum tariffs	Other
Chemicals	35	<b>62.9%</b>	<b>37.1%</b>	8.6%	2.9%	14.3%	2.9%	2.9%
Medical products & cosmetics	13	30.8%	15.4%	15.4%	7.7%	0.0%	7.7%	15.4%
Coal & petroleum products/plastics/rubber products	27	<b>44.4%</b>	22.2%	18.5%	7.4%	11.1%	3.7%	3.7%
Iron & steel/non-ferrous metals/metal products	83	<b>45.8%</b>	<b>26.5%</b>	19.3%	<b>27.7%</b>	18.1%	19.3%	6.0%
General machinery	64	<b>42.2%</b>	14.1%	17.2%	15.6%	9.4%	6.3%	3.1%
Electrical equipment	32	<b>56.3%</b>	<b>40.6%</b>	18.8%	15.6%	12.5%	15.6%	0.0%
IT equipment/electronic parts & devices	19	<b>57.9%</b>	<b>26.3%</b>	<b>26.3%</b>	5.3%	21.1%	5.3%	0.0%
Cars/car parts/other transportation machinery	52	<b>36.5%</b>	21.2%	11.5%	21.2%	<b>28.8%</b>	17.3%	3.8%
Precision equipment	30	<b>26.7%</b>	10.0%	13.3%	10.0%	3.3%	6.7%	0.0%

Note: This survey was conducted November 5-December 23, 2019 with 3,563 respondents (firms headquartered in Japan with interest in overseas business). The table reflects responses from 355 manufacturing firms from selected sectors that responded they had been impacted by trade protectionism.

Source: Japan External Trade Organization (JETRO), February 27, 2020,  
[https://www.jetro.go.jp/ext\\_images/en/reports/survey/pdf/jafirms2019-rev.pdf](https://www.jetro.go.jp/ext_images/en/reports/survey/pdf/jafirms2019-rev.pdf)

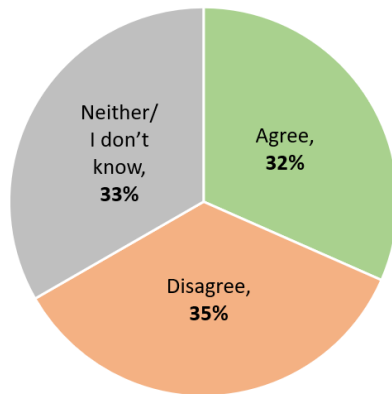
The survey findings are consistent with the regression analysis of Sun and his co-authors on the impact of the U.S.-China tariff war on Japanese multinationals.<sup>36</sup> They point out that Japan is likely the country experiencing the largest third country impacts due to the size of its economy and the large share of trade both with China and the United States. In particular, they are able to track the largest negative effects to Japanese affiliates in China with a high exposure to trade

with North America. The negative effects are felt not just in drop in sales but also stock market valuations.

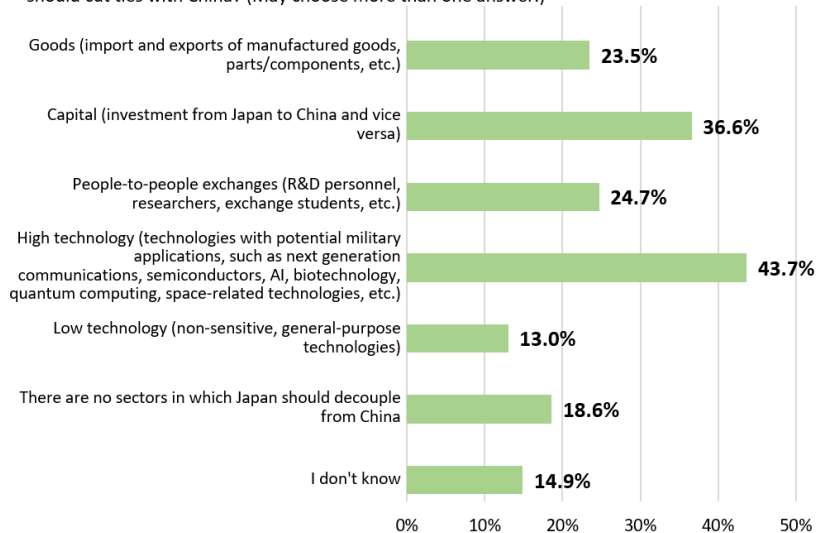
Due to the large foreign factor content in Chinese exports (the supply chain effect), the U.S.-China economic conflict is not bilateral, it has ripple effects across third parties. Consequently, questions about decoupling of the two largest economies in the world loom large for Japan. Wholesale decoupling has not been an attractive alternative -due both to the prohibitive costs for the private sector and recent diplomatic efforts to stabilize relations with China- but targeted segmentation in sensitive sectors may be in the offing. These views are captured in a July 2020 JCER-Nikkei survey of 3000 employees in corporate Japan. Figure 2 shows there are mixed views on the merits of the government of Japan opting to decouple from China at the U.S.'s behest. In Japan, like elsewhere in Asia, the "don't make us choose" sentiment is palpable. But there is also a very clear sense that if some decoupling were to take place it would center on the emerging technologies (telecom, quantum computing, AI, etc.) and capital flows.

## Figure 2 Decoupling from China?

**Question:** If the U.S. Government wanted the Government of Japan to decouple from China, do you think Japan should cut off the flow of goods, capital, human resources, and technology with China?



**Question:** If Japan decouples from China, it is believed that such decoupling would be handled on a sector-by-sector basis. In which of the following sectors do you think Japan should cut ties with China? (May choose more than one answer.)



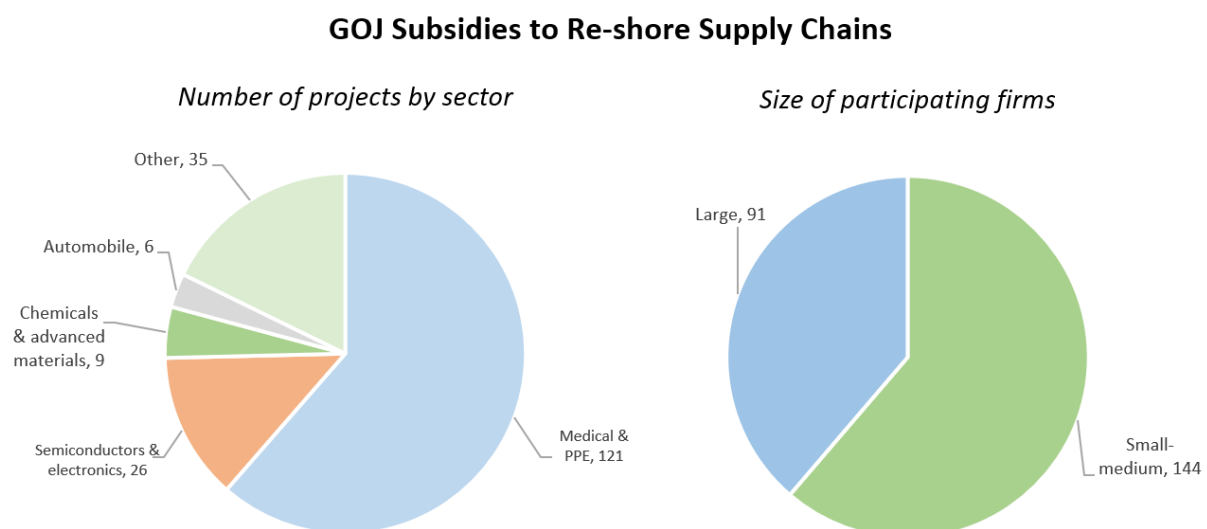
**Note:** This survey was conducted on July 14-16, 2020, and respondents included 3,000 full time employees over 20 years of age from publicly listed Japanese companies located in Japan.

**Source:** Japan Center for Economic Research (JCER) and Nikkei, September 2020, [https://www.jcer.or.jp/jcer\\_download\\_log.php?f=eyJwb3N0X2lkIjo2ODQyMSwiZmlsZV9wb3N0X2lkIjojNjg0MjlfQ==&post\\_id=68421&file\\_post\\_id=68422](https://www.jcer.or.jp/jcer_download_log.php?f=eyJwb3N0X2lkIjo2ODQyMSwiZmlsZV9wb3N0X2lkIjojNjg0MjlfQ==&post_id=68421&file_post_id=68422).

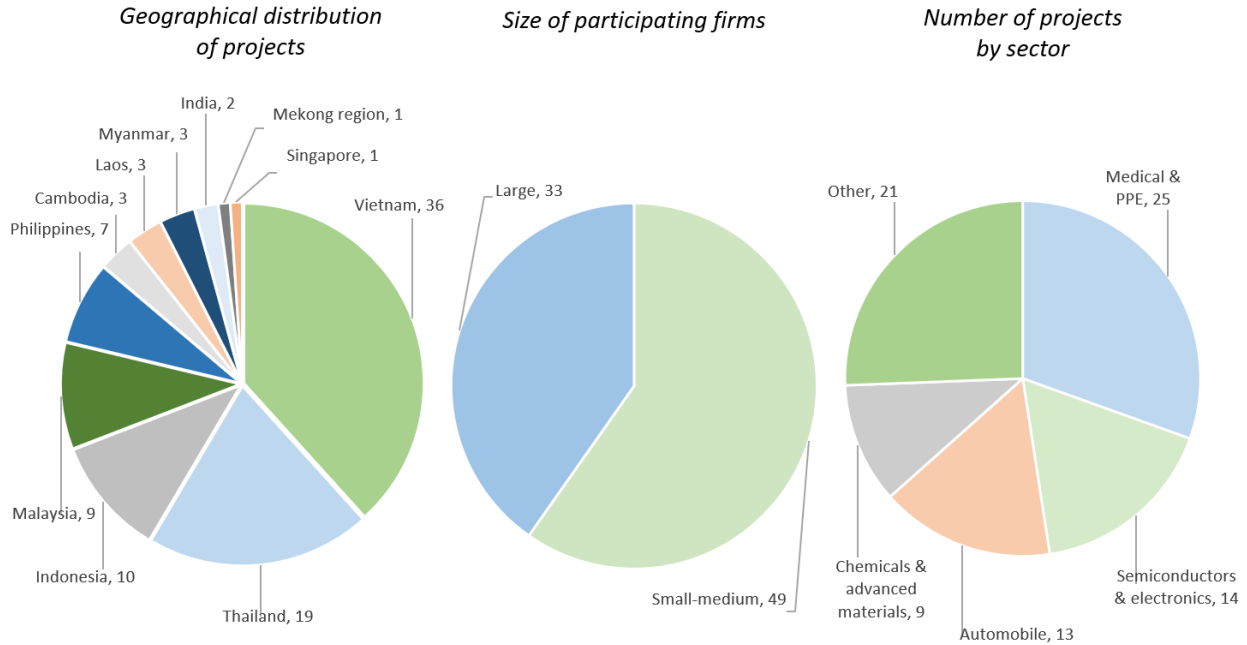
In the early stages of the pandemic Japanese supply chains were hit hard, especially their affiliates in China and ASEAN.<sup>37</sup> The lockdown in Wuhan, a Chinese manufacturing hub, created scarcities of components and resulted in production shutdowns in some Japanese auto plants in Japan. Coupled with concerns over sufficient availability of personal protective equipment and medical supplies, the Abe government launched in the spring of 2020 a subsidy program to re-shore or relocate production where there is overdependence from a single source (aka China). Subsidies to strengthen supply chains have been awarded to more than 200 companies for a total of \$3.1 billion dollars, and the Suga administration is expected to award further subsidies in this year's annual budget.

Figure 3 offers a closer look at the supply chain adjustment subsidies. The bulk of the money (\$2.9 billion) has been awarded to relocation while diversification into Southeast Asia projects have been allotted \$221 million. While most recipients are small and medium-sized enterprises, there are a fair number of large firms enrolled in the subsidy program. The sectoral breakdown reveals that personal protective equipment and medical supplies are a priority (especially in the on-shoring track), but so are high tech sectors in the crux of the China-U.S. row. Advanced materials (chemicals, rare earths) and semiconductors and electronics are frequent subsidy recipients. In terms of diversification into Southeast Asia, Vietnam has been the most common destination followed by Thailand, Indonesia, and Malaysia.

**Figure 3**  
**Subsidizing Supply Chain Adjustment**



## GOJ Subsidies to Diversify Supply Chains



Sources: Ministry of Economy, Trade and Industry (METI), “サプライチェーン対策のための国内投資促進事業費補助金の採択事業が決定されました,” [Successful Applicants Selected for the Program for Promoting Investment in Japan to Strengthen Supply Chains], November 20, 2020, <https://www.meti.go.jp/press/2020/11/20201120005/20201120005.html>.

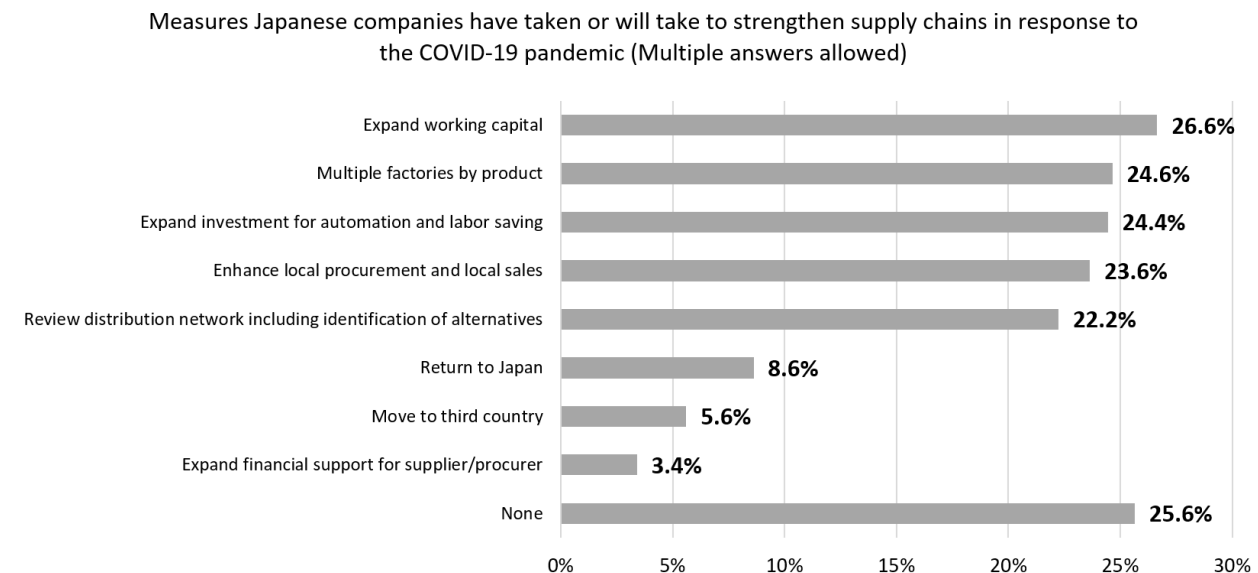
Ministry of Economy, Trade and Industry (METI), “サプライチェーン対策のための国内投資促進事業費補助金の先行審査分採択事業が決定されました,” [Successful Applicants Selected for the Program for Promoting Investment in Japan to Strengthen Supply Chains], July 17, 2020, <https://www.meti.go.jp/press/2020/07/20200717005/20200717005.html>.

The supply chain adjustment program is not the first instance the Japanese government has extended subsidies to alleviate over-dependence on China (rare earths), nor is it the first time Japanese firms have sought to ease their reliance on manufacturing in China by expanding their presence in Southeast Asia (China + 1 strategy). The subsidies are not conceived as a jobs program (there are no employment requirements), nor are they meant to bring wholesale reshoring or decoupling. The subsidies are small compared to Japanese FDI stock in China (\$130 billion), they do not mandate exit from China (some recipients have both invested in Southeast Asia and expanded operations in China),<sup>38</sup> nor do they finance the most common strategies



employed by Japanese MNCs to deal with the COVID-19 crisis (a point underscored by a JBIC survey on the adjustment responses of Japanese supply chains to the pandemic, see Figure 4). Hence, the subsidy program is better understood as an attempt to assist Japanese companies to streamline some of their operations by hedging against immediate (COVID-19) and longer-term risk (great power competition).

**Figure 4**  
**Supply Chain Responses to COVID-19**



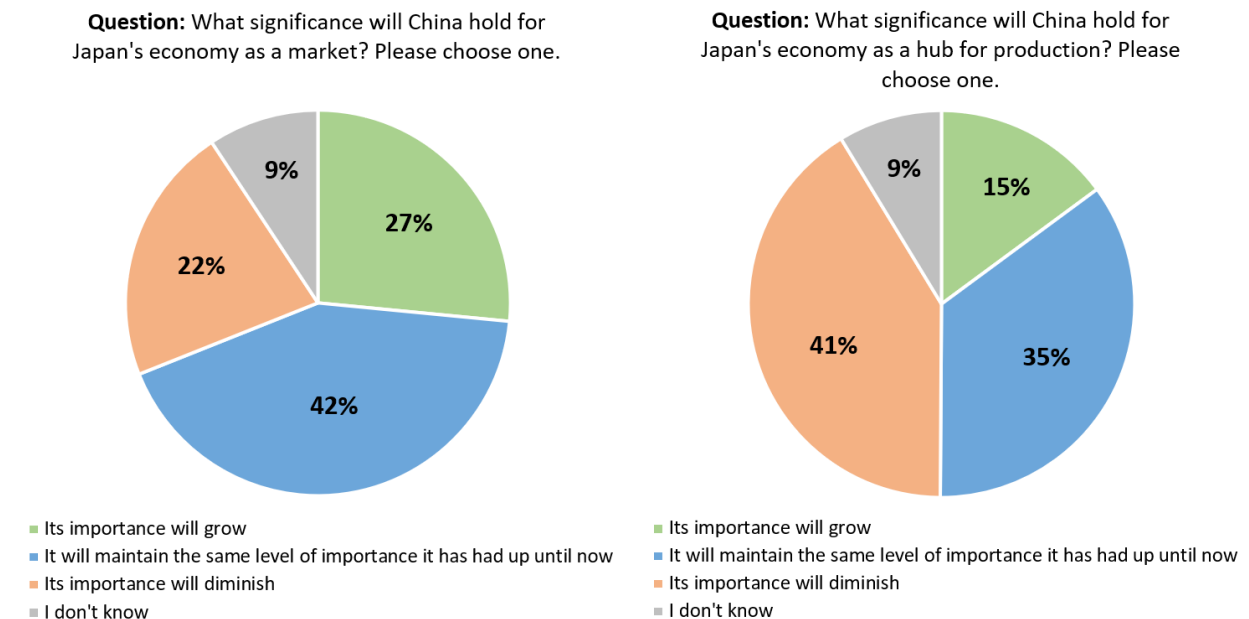
Note: This survey was conducted August 21-September 30, 2020 with 530 respondents (Japanese companies which have three or more overseas affiliates, including at least one production base). The response rate for this particular question was 94.15%.

Source: Japan Bank for International Cooperation, January 2021, [https://www.jbic.go.jp/en/information/press/press-2020/pdf/0115-014188\\_1.pdf](https://www.jbic.go.jp/en/information/press/press-2020/pdf/0115-014188_1.pdf).

Corporate Japan is certainly not quitting the Chinese market. Examples of Japanese companies expanding their investments in China abound (for example Honda and Toyota).<sup>39</sup> The size of the internal market and China's ability to grow in the midst of a worldwide recession are powerful motivators. But the risk environment has also shifted with the new geopolitics. The JCER-Nikkei poll on views about future dependence on China is instructive (Figure 5). When asked about

China's importance as a market, 27% of respondents expect it to grow. However, only 15% of respondents expect China's importance as a production hub to increase and 42% anticipated it will decrease. A bifurcation of Japanese supply chains -to serve the Chinese and American markets in the wake of proliferating national security controls- would represent vast change for lean supply chains built in the era of U.S.-China engagement.

**Figure 5**  
**Future Dependence on China**



**Note:** This survey was conducted on July 14-16, 2020, and respondents included 3,000 full time employees over 20 years of age from publicly listed Japanese companies located in Japan.

**Source:** Japan Center for Economic Research (JCER) and Nikkei, September 2020,  
[https://www.jcer.or.jp/jcer\\_download\\_log.php?f=eyJwb3N0X2lkIjo2ODQyMSwiZmlsZV9wb3N0X2lkIjojNjg0MjIifQ==&post\\_id=68421&file\\_post\\_id=68422](https://www.jcer.or.jp/jcer_download_log.php?f=eyJwb3N0X2lkIjo2ODQyMSwiZmlsZV9wb3N0X2lkIjojNjg0MjIifQ==&post_id=68421&file_post_id=68422).

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