

Chapter 7

Japan

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Chapter 7

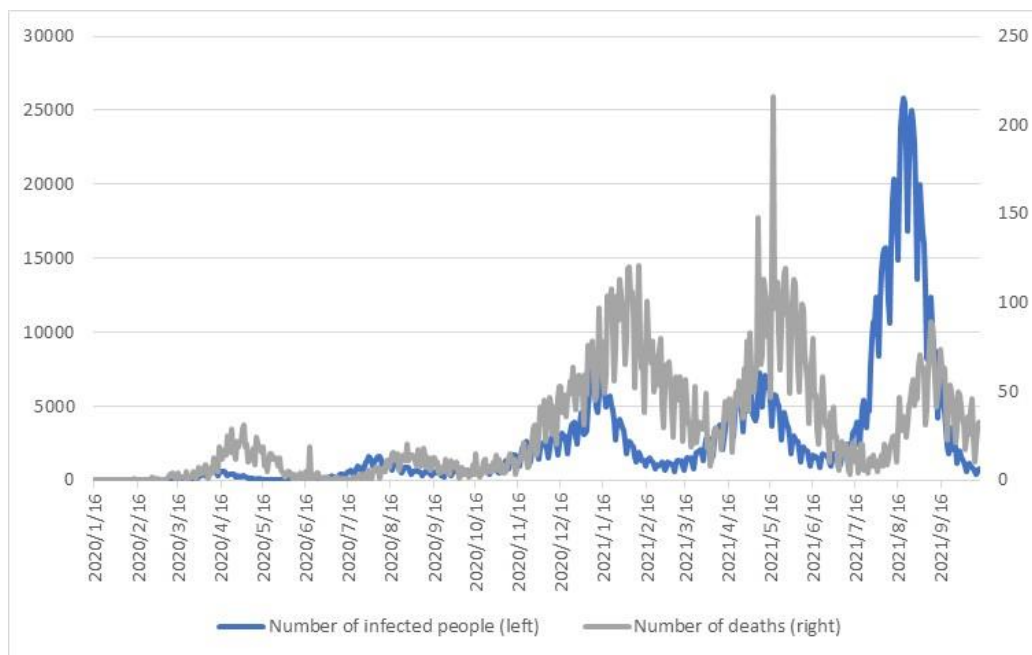
Japan

Hidekazu Itoh

7.1. COVID-19 in Japan

Since 15 January 2020, when the first case of COVID-19 was confirmed in Japan, the numbers of infected people and deaths have been increasing, especially in the first quarter of 2021, along with the occurrence of mutated strains (Figure 7.1). The total numbers of infected people and deaths exceeded 1.7 million and 17,000, respectively, as of the end of September 2021. The vaccination programme that began in March 2021 has progressed, with more than 80 million people receiving the second dose of vaccine as of the end of September 2021, which means that about 65% of the domestic population has been vaccinated.¹⁸

Figure 7.1: COVID-19 in Japan, 2020



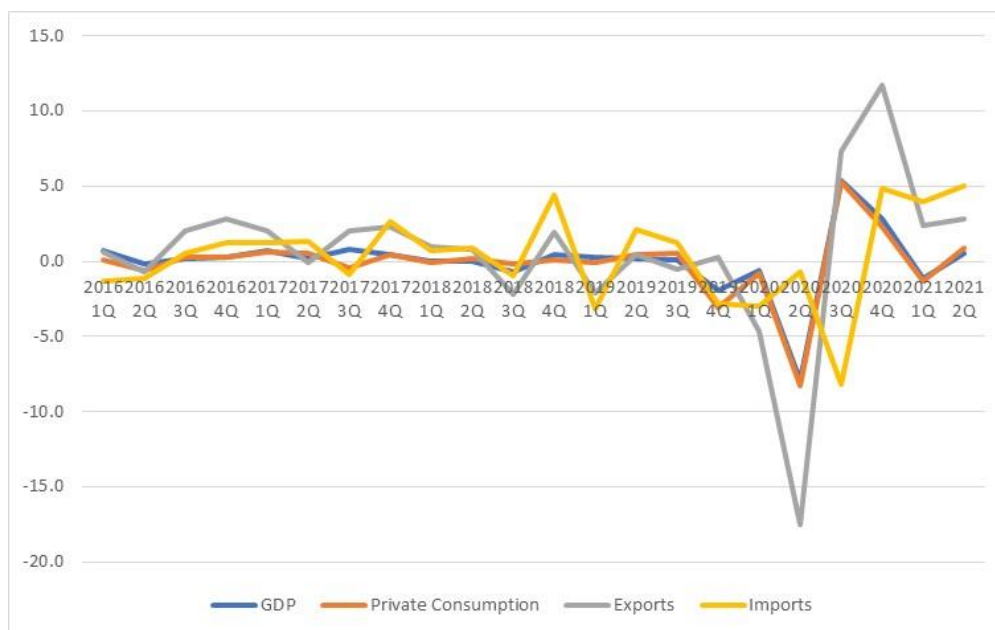
Source: NHK, New Coronavirus, <https://www3.nhk.or.jp/news/special/coronavirus/>

¹⁸ Prime Minister of Japan and His Cabinet, COVID-19 Vaccines, Ongoing Topics, <https://japan.kantei.go.jp/ongoingtopics/vaccine.html>

The fifth wave, which caused more than 25,000 new infections per day in mid-August 2021, is now coming under control, and all emergency declarations, which were mainly issued for urban areas, were lifted at the end of September 2021. In particular, the number of new infections increased sharply in August 2021, probably due to the effect of vaccination, but the percentage of deaths declined rapidly compared to the fourth wave during the second quarter of 2021.¹⁹ It is expected that the situation will gradually return to normal, although some restaurants and other businesses will continue to be asked to shorten their opening hours.²⁰

The spread of the disease in Japan began in mid-March 2020, and the first emergency declaration was issued on 7 April 2020, just after the start of the new fiscal year. The GDP growth rate for fiscal year 2020 (FY2020) was -4.4% in real terms, with private final consumption, exports, and imports at -5.8% , -10.4% , and -6.8% , respectively.²¹ In terms of quarterly data, the GDP declined sharply by -7.9% in the second quarter of 2020 when the first emergency declaration was issued but has been recovering slowly since then (except for the first quarter of 2021) (Figure 7.2). Although there are some differences, the economic situation in Japan has been improving since the second quarter of 2020, when the first voluntary curfew was implemented. Current economic levels have recovered to about 98% of pre-pandemic levels.

Figure 7.2: Economic Condition Changes in Japan, 2016–2021



GDP = gross domestic product.

Source: Economic and Social Research Institute, National Accounts (GDP Statistics), <https://www.esri.cao.go.jp/jp/sna/menu.html>

¹⁹ Government of Japan, Ministry of Health, Labour and Welfare, Coronavirus (COVID-19), https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000164708_00079.html

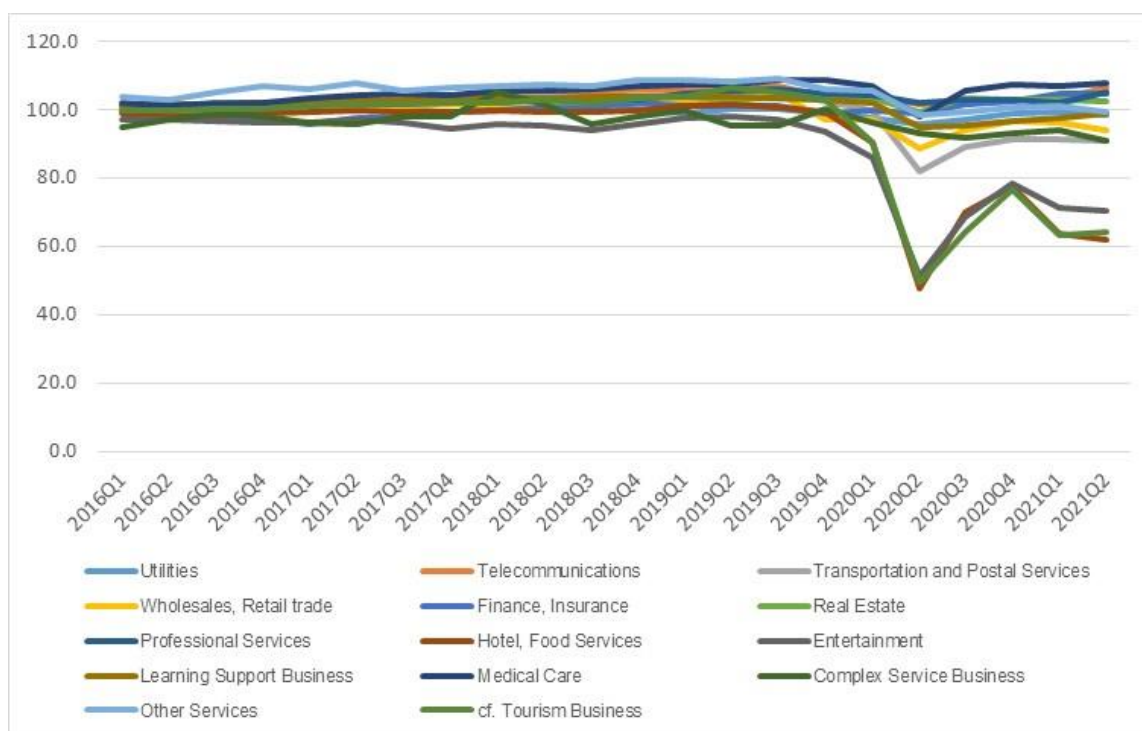
²⁰ As of 1 November, all restrictions on business hours and serving of alcoholic beverages have been lifted. Government of Japan, Cabinet Secretariat, COVID-19 Information and Resources, <https://corona.go.jp/en/>

²¹ Economic and Social Research Institute, SNA (National Accounts of Japan), <https://www.esri.cao.go.jp/en/sna/menu.html>

In Japan, although infections have been controlled by masks and refraining from going out to a certain extent compared to other developed countries – the mortality rate in 2020 is the only one in the G7 that is negative compared to the average (The Economist, 2021) – the lack of progress in expanding the medical system, the prolonged refrain from going out, and the delays in vaccination have led to a significant stagnation of economic activity, especially in the services sector.

Observing the available tertiary industry activity index,²² the decline in entertainment and hotel and food services was severe in the second quarter of 2020 at about half of the 2015 level and is still down more than 30% (Figure 7.3). As a reference, the tourism-related industry is also listed, which also shows no recovery. The transport and mail sector, which is the aggregate figure, declined about 20% in the second quarter of 2020 but recovers gradually thereafter. The recovery to 80% in the second quarter of 2020 was understood to be temporary due to the effect of a consumption stimulus package for hotels and restaurants implemented by the national and local governments.

Figure 7.3: Service Industry Activity in Japan, 2016–2021



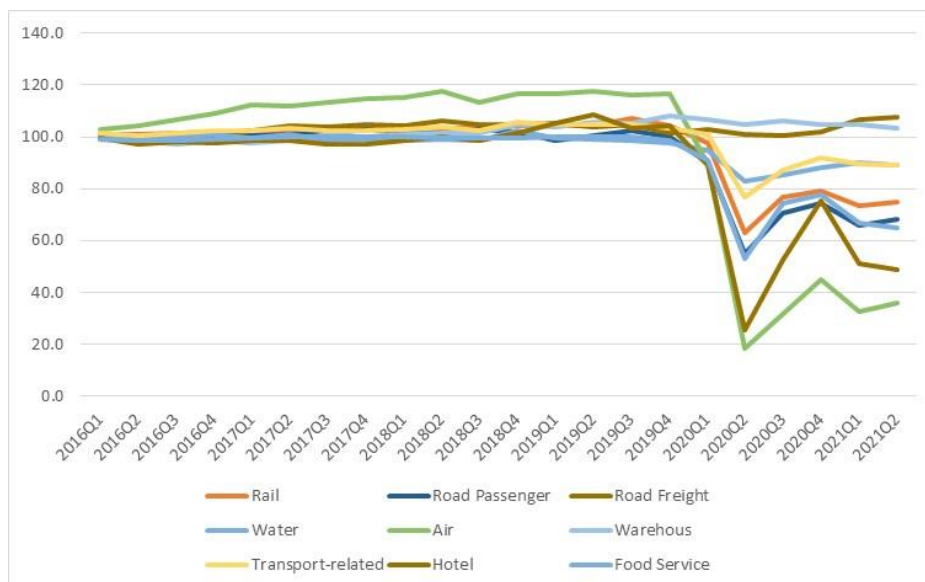
Source: Government of Japan, Ministry of Economy, Trade and Industry, Tertiary Industry (Service Industry) Activity Index, <https://www.meti.go.jp/statistics/tyo/sanzi/index.html>

Using the same database, a breakdown of the transport and mail and hotel and food services sectors shows that hotel and air transport services fell sharply (about 20% of those of 2015) and are still

²² This index is calculated as a weighted average of index series representing the production activity of services in individual industries, weighted by the value added according to the input–output table for the base year. The index provides a unified measure of activity in the tertiary industry and enables the examination of trends in the services sector.

recovering (Figure 7.4). On the other hand, warehouse and road freight were above the 2015 baseline. In particular, road freight increased by more than 5 percentage points since the end of 2020.

Figure 7.4: Transport and Hotel and Food Industries in Japan, 2016–2021



Source: Government of Japan, Ministry of Economy, Trade and Industry, Tertiary Industry (Service Industry) Activity Index, <https://www.meti.go.jp/statistics/tyo/sanzi/index.html>

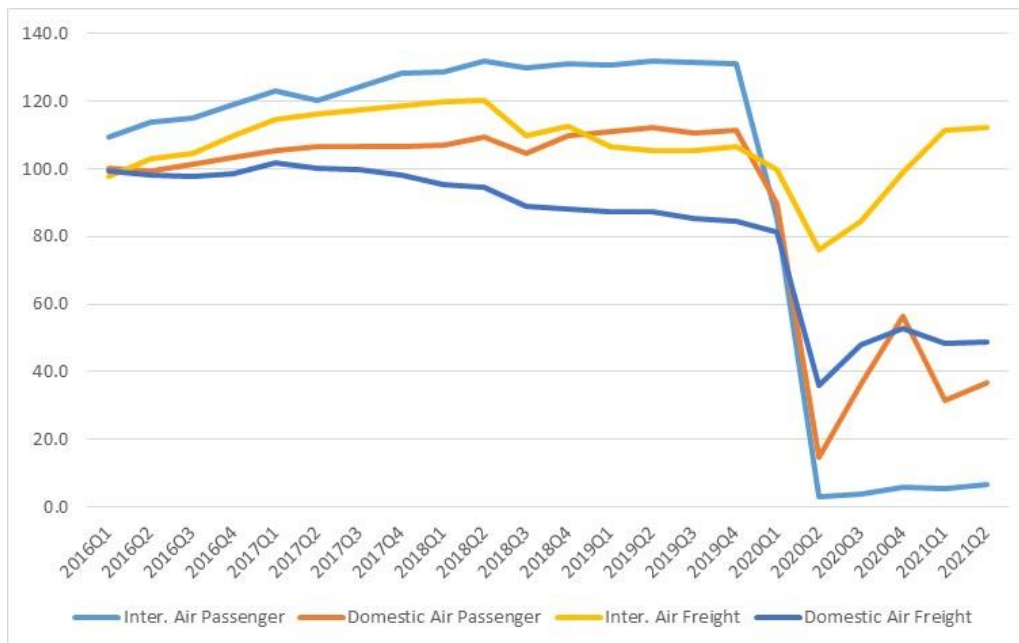
E-commerce has been booming due to nested demand by the pandemic. For example, Yamato Transport, Japan's largest parcel delivery company, recorded a 16.5% increase in delivery volume compared to FY2020, a record high. The volumes of the top three delivery companies (i.e. Japan Post Holdings, Sagawa Express, and Yamato) totalled 4.530 billion boxes in FY2020 (Cargo News, 2021). Before the pandemic, in Japan, redelivery (i.e. delivery made again because the recipient is not at home) became a problem due to the expansion of online shopping. The 20.0% redelivery rate has now decreased because of telecommuting. However, in the second half of 2020, telecommuting fell, and the redelivery rate rose again to 11.4%.

Air transport services have recovered only about 40%, but a closer look at passenger and cargo services – as well as international and domestic services – reveals a different situation (Figure 7.5). Before the pandemic, the number of international passengers increased by more than 30% compared to 2015 due to the expansion of inbound tourism. In Japan, travel restrictions are still imposed on most countries, and even vaccinated people need to be quarantined for 2 weeks as of the end of September 2021. In the second quarter of 2021, the recovery was therefore only less than 10%.²³ The number of foreign visitors from Asia, including China and the Republic of Korea, also fell by 99.3% in 2019, while the number of foreign visitors from Indonesia, Malaysia, Philippines, Singapore, Thailand,

²³ However, the extent of the decline in the first quarter of 2020 was minor, as the infection did not spread in Japan until March 2020. Japan National Tourism Organization, Monthly/Yearly Statistical Data (Foreigners Visiting Japan/Japanese Leaving Japan), Statistics/Data, https://www.jnto.go.jp/jpn/statistics/visitor_trends/index.html

and Viet Nam fell by 97.8%.²⁴ Japanese airlines ANA and JAL are expected to post losses for the second consecutive FY due to slow recovery, especially in international flights that have been suspended for a long time.

Figure 7.5: Air Transport Indexes, Japan, 2016–2021



Source: Government of Japan, Ministry of Economy, Trade and Industry, Tertiary Industry (Service Industry) Activity Index, <https://www.meti.go.jp/statistics/tyo/sanzi/index.html>

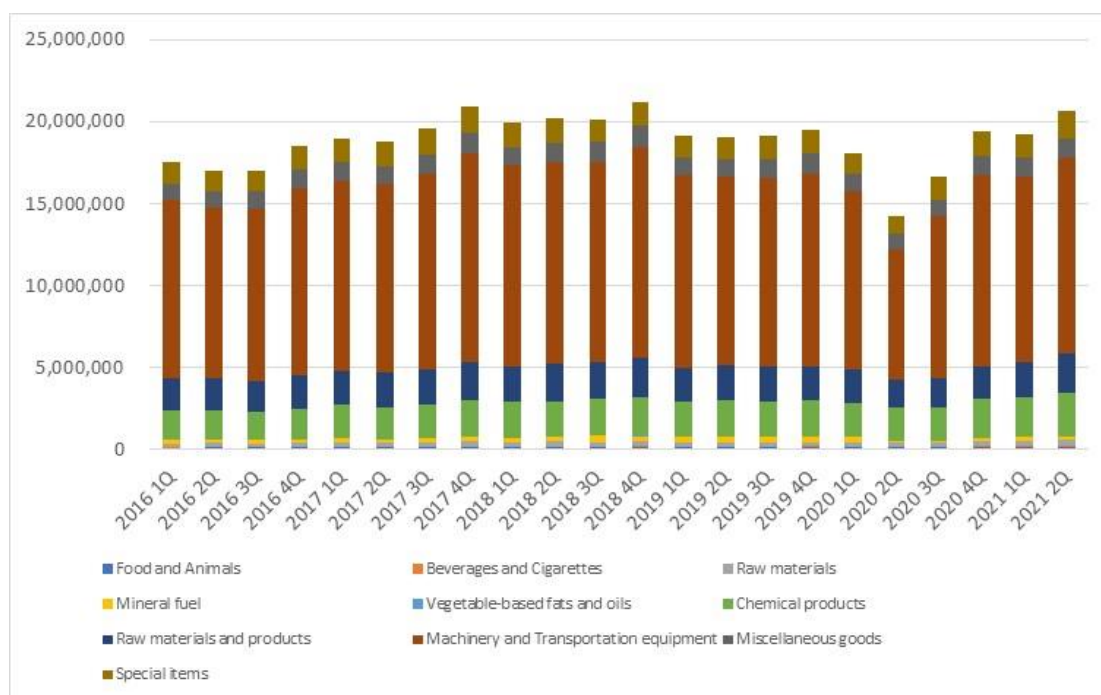
However, international air cargo transport is returning to pre-pandemic levels due to a shift to air freight transport as a result of delays in maritime container transport and higher freight rates as well as demand for vaccine transport. For example, ANA Cargo, which is a member of ANA Holdings, increased its international cargo freight, including passenger aircraft cargo freight, by the demand increases of electric parts and semi-conductors and the level of higher freight rates. Domestic air cargo transport has only recovered by about 50% due to limited belly transport, which was also affected by the cancellation of domestic passenger transport. Domestic air cargo transport had been on a downward trend even before the pandemic since 2017, due to the expansion of low-cost carriers, which limited belly transport and tightened flight schedules. As mentioned earlier, domestic passenger transport also only recovered by less than 40%, due in part to self-restraint in travel and business trips, except in the fourth quarter of 2020 when there was a positive effect from the consumption stimulus package.

As indicated earlier, in terms of Japan's exports and imports, the pandemic impact on exports was significant, and the major decline in exports was in the second quarter of 2020, while import decline was also seen in the third quarter. In absolute values, the exports of machinery and transport

²⁴ The reason for the small decrease in ASEAN was that about 20,000 technical interns from Viet Nam were allowed to enter the country in January 2021. M. Fujisaki (2021), '40,000 Foreign Trainees Enter Japan amid Virus as Others Fired', The Asahi Shimbun, 21 January, <https://www.asahi.com/ajw/articles/14125024>

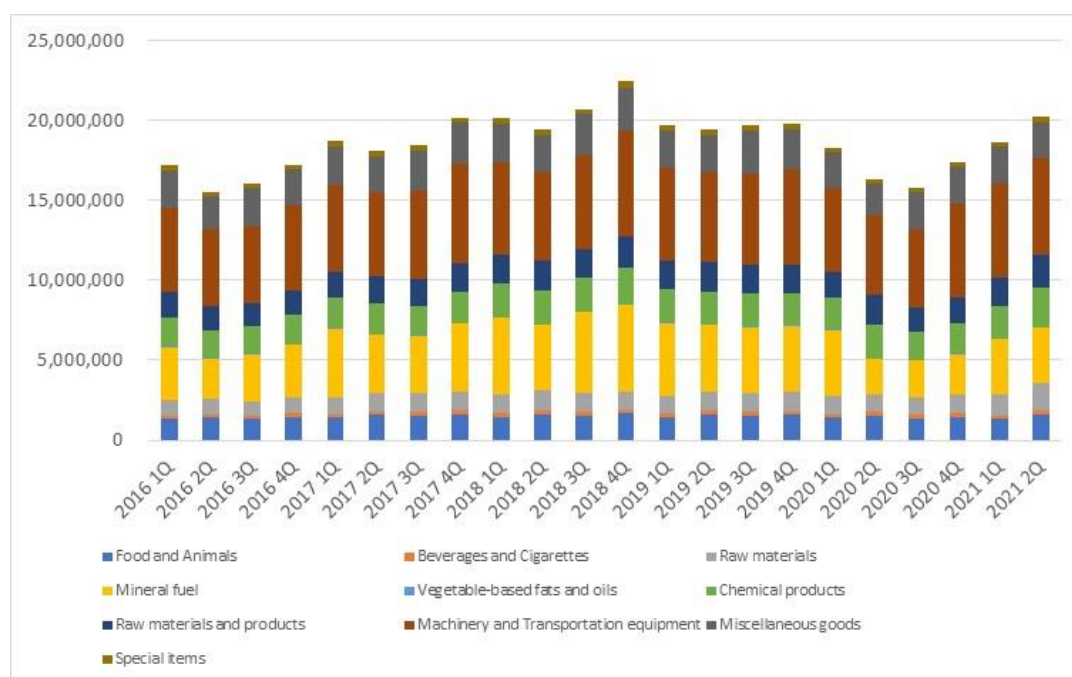
equipment fell significantly but recovered steadily from the third quarter of 2020 and to pre-pandemic levels in the second quarter of 2021 (Figure 7.6). In terms of the share of exports, mineral fuel fell sharply, while the shares of beverages and cigarettes and food and animals increased relatively. On the other hand, in absolute values, the imports of mineral fuel significantly declined and recovered slightly after the fourth quarter of 2020 (Figure 7.7). However, this was about 65% of the pre-pandemic level, even in the first half of 2021. Similarly, the import ratio of mineral fuel has fallen sharply, but the ratio is also recovering. The import ratio of raw materials and products had been increasing continuously before the pandemic.

Figure 7.6: Product Categories of Exports, Japan, 2016–2021



Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Figure 7.7: Product Categories of Imports, Japan, 2016–2021



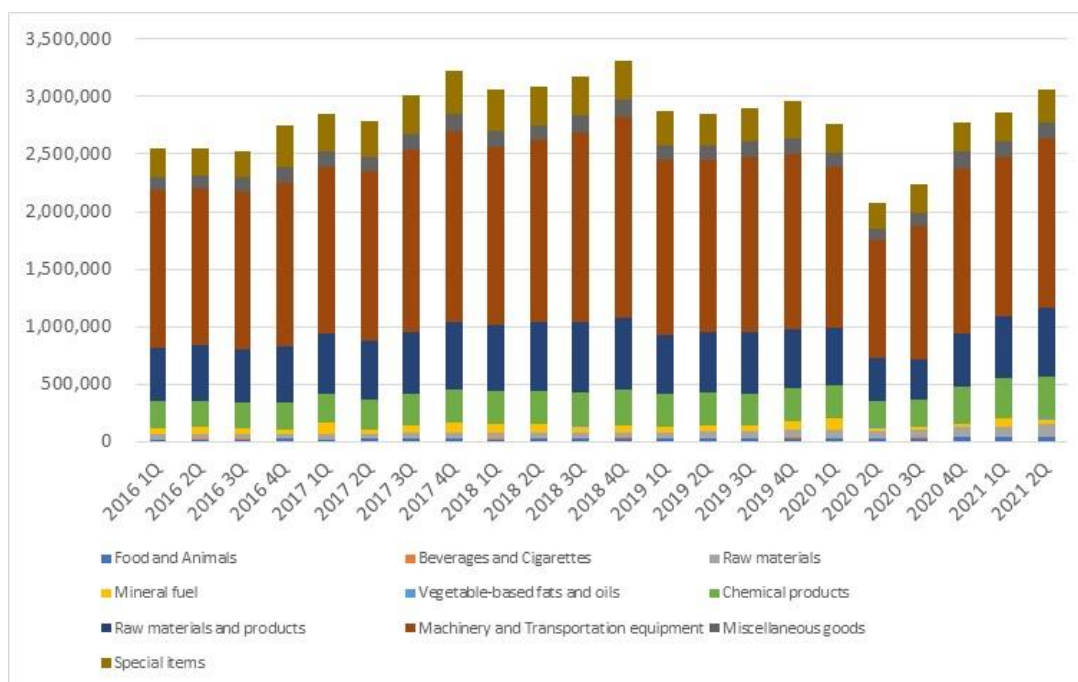
Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

In the second quarter of 2020, the first state of emergency was declared in Japan, which led to the shutdown of schools, stores, offices, and factories, which in turn led to stagnation of exports of various parts. This is believed to have led to lower demand for energy and imported parts in the domestic manufacturing sector, which in turn led to lower demand for fuel. Another reason could be that in 2020, stagnant global demand for fuel caused prices to fall.²⁵ However, since the fourth quarter of 2020, imports (in value) have also recovered steadily due to the stabilisation of the Japanese domestic economy and are now at pre-pandemic 2019 levels.

In terms of the absolute value of exports, the decline in machinery and transport equipment was still severe, but it returned to its pre-pandemic level in the first quarter of 2021 (Figure 7.8). Raw materials and products also experienced a significant decline, although to a lesser extent and have already surpassed their pre-pandemic levels. In terms of the share of exports, the share of vegetable-based fats and oils and raw materials and products increased relative to the decline in mineral fuel. In terms of imports, machinery and transport equipment also fell sharply, but this, too, surpassed the pre-pandemic level (Figure 7.9). On the other hand, the decline in mineral fuel has not recovered to date. In terms of import ratio, the decline in mineral fuel is still evident, while the rise in beverages and cigarettes is not considered to be a direct pandemic impact, as it has shown an upward trend since 2019.

²⁵ International Energy Agency, Oil Market Report, <https://www.iea.org/topics/oil-market-report>

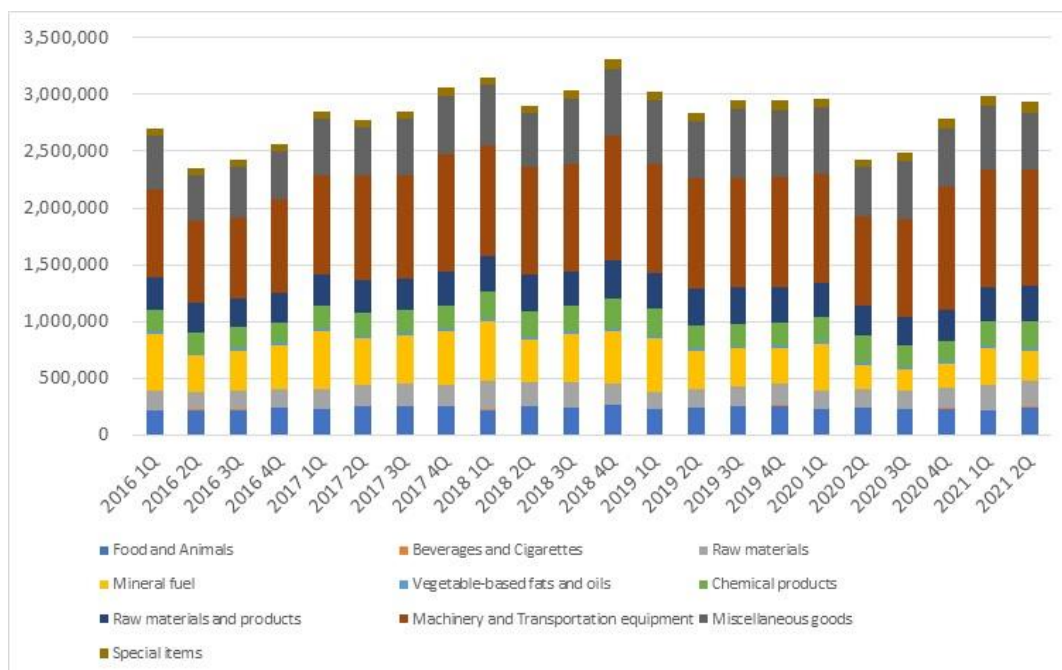
Figure 7.8: Product Categories of Japanese Exports to ASEAN, 2016–2021



ASEAN = Association of Southeast Asian Nations.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Figure 7.9: Product Categories of Japanese Imports from ASEAN, 2016–2021



ASEAN = Association of Southeast Asian Nations.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

To understand the impact trend of the pandemic on Japan's global supply chain with AMS, the relative positioning of trading partners and their share changes are key. Considering the differences in impact, including the difference in the share changes between the world as a whole and AMS, the overall trend of exports to AMS – being higher in raw materials and products and lower in machinery and transport equipment – was unchanged since 2016. However, in the second quarter of 2020, the ratio of machinery and transport equipment decreased further. This is to say that the export cargo of machinery and transport equipment to AMS became relatively small. However, this returned to its original level in the first quarter of 2021.

On the contrary, machinery and transport equipment accounted for a relatively high share of imports from AMS, but the extent of such imports declined in the second quarter of 2020. In other words, the extent of the decline in imports from ASEAN is even greater, but it also recovered. Influenced by above situation, the percentage of mineral fuel (compared to the whole world) increased. However, it is still low compared to the world as a whole. As a result, both imports and exports of machinery and transport equipment had a significant impact on the ASEAN region as compared to the world as a whole.

7.2. Global Production Networks and Global Value Chains between ASEAN and Japan

7.2.1. Supply Network between ASEAN and Japan

As discussed in the previous section, the impact of the pandemic on Japan's trade with AMS – both in absolute and relative terms to the world as a whole – has been significant on machinery and transport equipment (52.2% of total exports and 38.7% of total imports in 2019). On the other hand, it is clear that the trade situation will steadily recover after the second quarter of 2020, returning to the pre-pandemic levels in the first quarter of 2021 (nominal value base).

Based on this background, this section examines the major and detailed trade items between Japan and AMS to obtain suggestions for the global production network and supply chain robustness between Japan and AMS. To check the pre-pandemic situation, 2019 is the baseline. Since the trade statistics are based on declarations – and there are various issues to be resolved²⁶ – Harmonized System (HS) codes are used to obtain an overall trend.²⁷

The major products between Japan and AMS are finished automobiles (8703), auto parts (8708), and integrated circuits (partially auto parts) (8542). By country, differences in the location of finished vehicle assembly plants indicate that Brunei Darussalam, the Lao PDR, and Myanmar import a large

²⁶ For example, in the trade between Japan and AMS, the classification is as large as 8.5% for exports (of the total) and 2.5% for imports. It has also been pointed out that due to tariff rates, the correct classification is not made, amongst other things.

²⁷ Government of Japan, Ministry of Finance, Code Lists – Trade Statistics of Japan, https://www.customs.go.jp/toukei/sankou/code/code_e.htm

number of finished vehicles, while Thailand and Malaysia import a large number of auto parts for assembly of finished vehicles at local plants.

Table 7.1: Main Exports from Japan to ASEAN Member States, 2019 (HS 4-digit code, share of total values)

	Viet Nam		Thailand		Singapore		Malaysia		Brunei Darussalam		Philippines		Indonesia		Cambodia		Lao PDR		Myanmar		ASEAN	
1	8542	0.093	8708	0.090	8901	0.113	8542	0.103	8703	0.241	8542	0.067	8708	0.116	0202	0.142	8703	0.271	8703	0.115	8542	0.055
2	7204	0.038	8542	0.039	7108	0.057	8703	0.055	8414	0.222	8702	0.052	8703	0.027	8429	0.072	8702	0.061	8704	0.075	8708	0.054
3	8536	0.036	7208	0.035	8542	0.045	8708	0.052	7304	0.133	8704	0.042	8409	0.025	8711	0.058	8464	0.057	5407	0.061	8703	0.024
4	7208	0.035	8409	0.028	2710	0.036	8541	0.042	2707	0.077	8708	0.024	7208	0.024	8714	0.051	8704	0.040	7302	0.056	8901	0.024
5	8443	0.024	8541	0.027	8486	0.033	2710	0.036	8413	0.052	8703	0.024	7225	0.023	2710	0.047	0202	0.039	8701	0.037	7208	0.023
6	8543	0.020	7225	0.025	8703	0.028	7108	0.023	2523	0.040	8523	0.023	8704	0.021	8703	0.047	2807	0.036	8708	0.031	8541	0.021
7	8708	0.020	9032	0.020	8541	0.024	8532	0.020	8702	0.037	8536	0.021	8406	0.021	8415	0.040	8429	0.036	7208	0.027	8536	0.017
8	8479	0.019	8414	0.018	8443	0.021	8479	0.016	7307	0.025	8479	0.020	8407	0.016	8708	0.028	6004	0.029	8429	0.022	2710	0.016
9	5407	0.017	8479	0.016	3304	0.019	7404	0.016	8704	0.021	2710	0.020	8483	0.016	8408	0.022	8538	0.025	8711	0.015	7108	0.016
10	8473	0.015	8536	0.015	8507	0.014	7208	0.014	8512	0.011	8473	0.019	8536	0.016	8518	0.020	5516	0.024	5903	0.014	8479	0.015
Sum	0.317		0.313		0.390		0.377		0.859		0.312		0.305		0.527		0.618		0.453		0.265	

ASEAN = Association of Southeast Asian Nations, HS = Harmonized System, Lao PDR = Lao People's Democratic Republic.

Notes: 8407 = spark-ignition internal-combustion engine; 8408 = compression-ignition engine (diesel, etc.); 8409 = parts for internal combustion spark ignition engines; 8413 = pumps for liquids; 8414 = air, vacuum pumps, compressors, ventilating fans, etc.; 8415 = air-conditioning equipment, machinery; 8479 = other machines and mechanical appliances; 8483 = shafts, cranks, gears, clutches, flywheel, pulleys, etc.; 8507 = electric accumulators; 8512 = electric lighting, signal equipment, car electrics; 8517 = electric apparatus for line telephony, telegraphy; 8518 = automobile loudspeaker; 8536 = electrical switches, connectors, etc.; 8541 = electric apparatus; 8542 = integrated-circuit; 8544 = wire harnesses, electrical cables; 8701–8704 = vehicles; and 8708 = parts and accessories for motor vehicles.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Table 7.2: Main Imports from ASEAN Member States to Japan, 2019 (HS 4-digit code, share of total values)

	Viet Nam		Thailand		Singapore		Malaysia		Brunei Darussalam		Philippines		Indonesia		Cambodia		Lao PDR		Myanmar		ASEAN	
1	854 4	0.09 7	851 7	0.06 5	300 4	0.13 4	271 1	0.25 5	271 1	0.93 7	8544	0.119	270 1	0.15 2	620 4	0.14 5	440 2	0.10 8	620 3	0.130	2711	0.084
2	851 7	0.06 6	160 2	0.06 4	848 6	0.07 8	854 2	0.04 1	270 9	0.05 8	4418	0.089	271 1	0.12 3	620 3	0.10 1	640 3	0.09 3	620 1	0.094	8544	0.046
3	440 1	0.03 4	870 8	0.03 7	847 1	0.07 7	854 1	0.03 2	290 5	0.00 4	0803	0.073	854 4	0.05 4	611 0	0.08 7	260 3	0.08 9	620 2	0.078	8517	0.035
4	611 0	0.03 3	844 3	0.02 3	854 2	0.07 6	441 2	0.02 9	030 3	0.00 0	7501	0.062	711 2	0.04 3	420 2	0.08 3	620 4	0.08 8	620 4	0.075	2701	0.026
5	420 2	0.02 8	854 2	0.02 2	491 1	0.05 0	851 7	0.02 9	290 2	0.00 0	8526	0.036	750 1	0.04 3	640 3	0.06 1	620 3	0.08 5	620 5	0.060	8542	0.022
6	640 4	0.02 8	841 5	0.02 1	903 1	0.03 5	850 8	0.02 7	210 2	0.00 0	8542	0.034	400 1	0.04 1	610 9	0.05 9	854 4	0.07 3	621 1	0.055	8708	0.018
7	610 9	0.02 4	847 1	0.01 8	271 0	0.03 1	852 8	0.01 9	030 6	0.00 0	8541	0.032	441 2	0.03 1	610 4	0.04 4	851 7	0.07 1	611 0	0.049	1602	0.015
8	940 3	0.02 2	160 4	0.01 6	381 1	0.02 4	151 1	0.01 9	610 9	0.00 0	8471	0.030	480 2	0.01 7	854 4	0.04 0	330 7	0.04 3	621 0	0.034	8471	0.014
9	870 8	0.02 2	854 4	0.01 6	902 1	0.02 1	271 0	0.01 8	903 1	0.00 0	2603	0.024	870 8	0.01 6	640 4	0.02 9	670 4	0.03 7	420 2	0.033	7501	0.013
10	620 3	0.01 9	852 9	0.01 4	902 7	0.02 0	854 3	0.01 8	285 3	0.00 0	8505	0.021	030 6	0.01 5	640 2	0.02 7	610 4	0.03 6	030 6	0.033	8443	0.013
Sum	0.373		0.296		0.546		0.487		0.999		0.520		0.535		0.676		0.723		0.641		0.286	

ASEAN = Association of Southeast Asian Nations, HS = Harmonized System, Lao PDR = Lao People's Democratic Republic.

Notes: 8407 = spark-ignition internal-combustion engine; 8408 = compression-ignition engine (diesel, etc.); 8409 = parts for internal combustion spark ignition engines; 8413 = pumps for liquids; 8414 = air, vacuum pumps, compressors, ventilating fans, etc.; 8415 = air-conditioning equipment, machinery; 8479 = other machines and mechanical appliances; 8483 = shafts, cranks, gears, clutches, flywheel, pulleys, etc.; 8507 = electric accumulators; 8512 = electric lighting, signal equipment, car electrics; 8517 = electric

apparatus for line telephony, telegraphy; 8518 = automobile loudspeaker; 8536 = electrical switches, connectors, etc.; 8541 = electric apparatus; 8542 = integrated-circuit; 8544 = wire harnesses, electrical cables; 8701–8704 = vehicles; and 8708 = parts and accessories for motor vehicles.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

As for imports from ASEAN to Japan, excluding mineral resources (2701, 2711) such as coal and petroleum gas from Brunei Darussalam and Indonesia, there was still a large trade of auto parts, such as wiring harnesses and electrical cables (8544) and integrated circuits. Due to the high share of mineral resources, auto parts (8708) accounted for a low 1.8% of the total, the sixth-largest category. In particular, because wiring harnesses are labour-intensive components, many vehicles assembled in Japan use imported products (Itoh and Guerrero, 2020). The characteristics of each country include integrated circuits in Thailand, Singapore, and Malaysia; wire harnesses in Viet Nam, the Philippines, and Indonesia; and auto parts in Thailand. Other than that, apparel-related products in Cambodia, the Lao PDR, and Myanmar; mineral fuel in Brunei Darussalam and Indonesia; and electrical equipment and machinery are the main export items.

Thus, ASEAN had a relatively high share of trade in automotive components, especially electrical components such as wiring harnesses and integrated circuits in addition to auto parts, as well as finished automobiles. The Japanese automobile industry has been fully engaged in automobile production in ASEAN – especially in Thailand – since the 1960s. It began with complete export and assembly of parts, known as complete knock-down, but due to the industrial policies of each country (e.g. import substitution policies), it gradually promoted local part procurement, and Japanese parts suppliers also made progress in ASEAN with various policies. Then, exports of auto parts from Japan, especially metal key components with high freight-carrying capacity, have become the main source of trade due to the progress of local production, while localisation of low value-added goods has progressed.

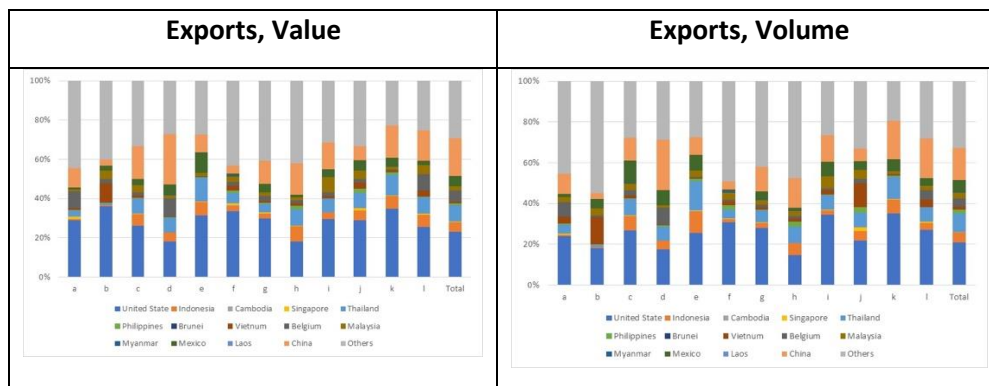
In addition, especially since 2000s, auto parts have been procured within the ASEAN region for the production of world common vehicles (and parts), and their global production networks has become more sophisticated. On the other hand, the horizontal division of labour is progressing on a global scale, with some parts being exported from ASEAN to Japan. For example, Sumitomo Wiring System is the world's top manufacturer of wiring harnesses, but because wiring harnesses are one of the most labour-intensive components, advanced logistics is required, such as manufacturing overseas (mainly in Viet Nam), transporting them in containers, and matching with orders in Japan (Itoh, 2019). These labour-intensive products were initially produced in Thailand, but due to increased labour costs, they have been relocated to countries near Thailand. In addition, Japan's domestic automobile industry also imports labour-intensive auto parts such as wiring harnesses from AMS (mainly Viet Nam) to ensure cost-competitiveness for domestic assembly.

However, this complex supply network has become a discontinuous chain. For example, the supply of auto parts to Japan was disrupted due to the shutdown of parts factories in Viet Nam and Malaysia, and the suspension of production at major assemble factories in Japan has been recently announced (Muramatsu, 2021). Moreover, the impact on the production network is noteworthy, because the production of auto parts and their export to Japan have been stalled, and the decline in production at Japan's domestic assembly plants is expected to continue throughout 2021 (*Nikkei Asia*, 2021). The automotive industry, in particular, has a broad base with many related parts, including materials, in addition to auto parts, and the economic impact of this on the industry, local employment, and regional income is noteworthy (Guerrero and Itoh, 2017).

To provide an overview of the impact of the spread of the pandemic on the supply chain of the automotive-related industry, auto parts (8708)²⁸ are now the focus to identify global changes and regional shifts in the trade structure in 2019 and 2021.

There was no difference in the value base of auto part exports from Japan in 2021, which is annualised, compared to 2019. In terms of volume base, the decrease was about 5.0% (Figure 7.10). Observing the share by country, 8.3% of Japan's auto part exports (after 23.2% for the US and 19.2% for China overall in 2019) were destined for Thailand, followed by 4.9% for Indonesia and 2.1% for Malaysia (in value terms, 17.5% for ASEAN). In terms of both value and volume, the shares of Indonesia and Thailand are expected to decline slightly in 2021, and it is unlikely that there have been any major changes in Japanese destinations related to automobile production. ASEAN as a whole saw its market share decline by 2.3 percentage points in value terms and by 1.8 percentage points in volume terms in 2021.

Figure 7.10: Share of Trade Partners by Auto Parts, Japan, 2019



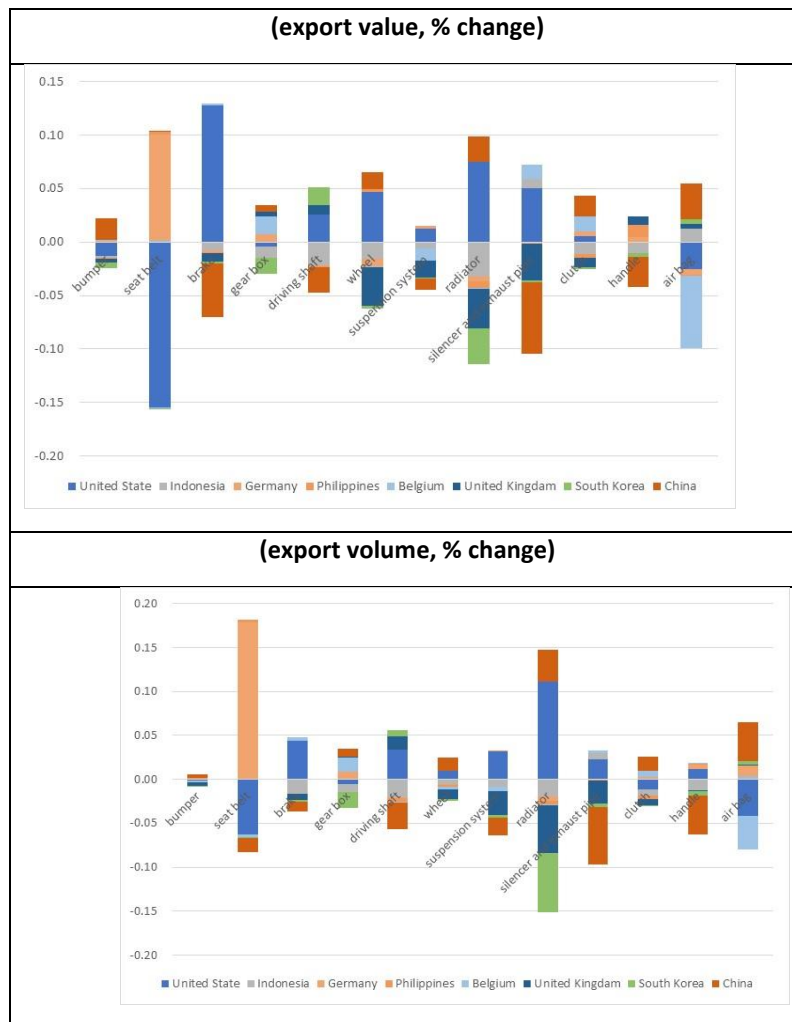
Note: a = bumper, b = seat belt, c = brake, d = gear box, e = driving shaft, f = wheel, g = suspension system, h = radiator, i = silencer and exhaust pipe, j = clutch, k = handle, l = air bag.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Observing the changes in the composition of each component by country, there was no relatively large increase or decrease, but for other components (870899), Indonesia decreased by 5.2 percentage points (volume) and the Philippines increased by 5.2 percentage points (volume), so this may have been a substitution between the two countries (i.e. intermediate processing, since the change in value terms is very small) (Figure 7.11). For example, in ASEAN, Japanese manufacturers (e.g. Toyota) have adopted part relay centres, which is expected to be part of their procurement strategy in the region (Nemoto and Hashimoto, 2010).

²⁸ Since circuits (8542) and wiring harnesses and electrical cables (8544) are used for purposes other than automotive parts, it is necessary to examine them by detailed code classification. In this section, the focus is on automotive parts (8708), whose usage is clear, to examine the supply chain of automotive parts.

Figure 7.11: Trade Partner Changes in Auto Parts, Japan, 2019–2021



Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

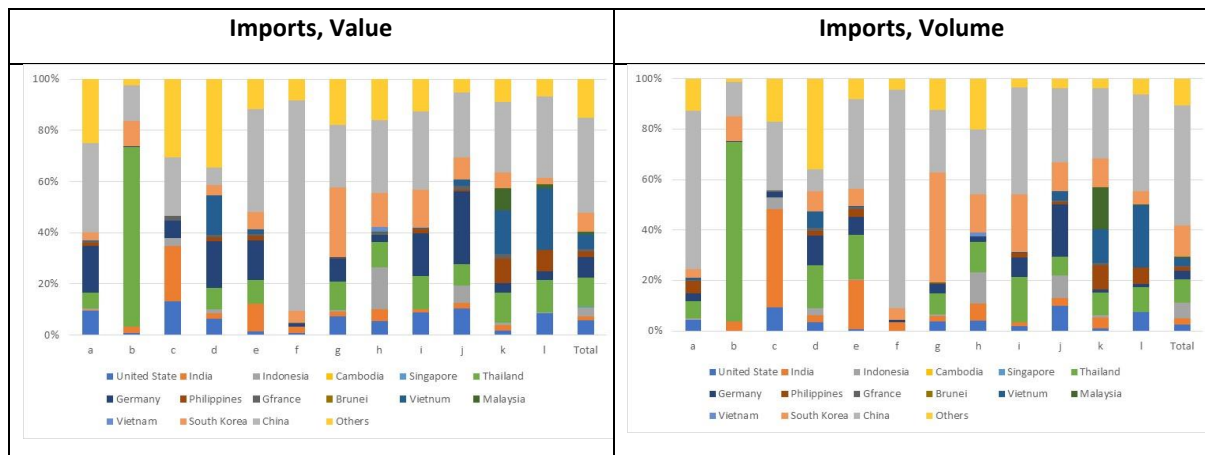
On the other hand, there have been notable changes outside of ASEAN; for example, the destination of seatbelt exports has changed from the US to Germany, radiators from the UK and the Republic of Korea to the US, and silencer and exhaust pipe exports from China to the US (Figure 7.11). It is expected that the destination of auto parts produced by Japanese domestic auto-related manufacturers will be changing in response to the recovery of production systems at assembly factories in various countries and changes in production models.

Imports of auto parts to Japan, which are supposed to be used for the assembly of finished vehicles, fell 10% in value terms and 12% in volume terms, although there were differences depending on the parts,²⁹ indicating the impact of the shutdown of production plants at foreign factories by the pandemic. However, observing the share by country, there were no significant changes in major trading partners, with Thailand accounting for just over 10% of the total and Viet Nam at around 7% (Figure 7.12). In terms of volume, China accounted for about half of the total, followed by the Republic

²⁹ Imports of drive shafts (76.2%), clutches (78.4%), and airbags (79.6%) have declined significantly, with Viet Nam accounting for 28.2% of the global total, especially for airbags.

of Korea at just under 10%. With Thailand at just under 9% and Indonesia at just over 7%, ASEAN was a higher value-added parts supplier than China and the Republic of Korea. ASEAN as a whole saw its market share rise by 0.5 percentage point in value terms and by 0.8 percentage point in volume terms in 2021.

Figure 7.12: Share of Japan’s Trade Partners by Auto Parts, 2019

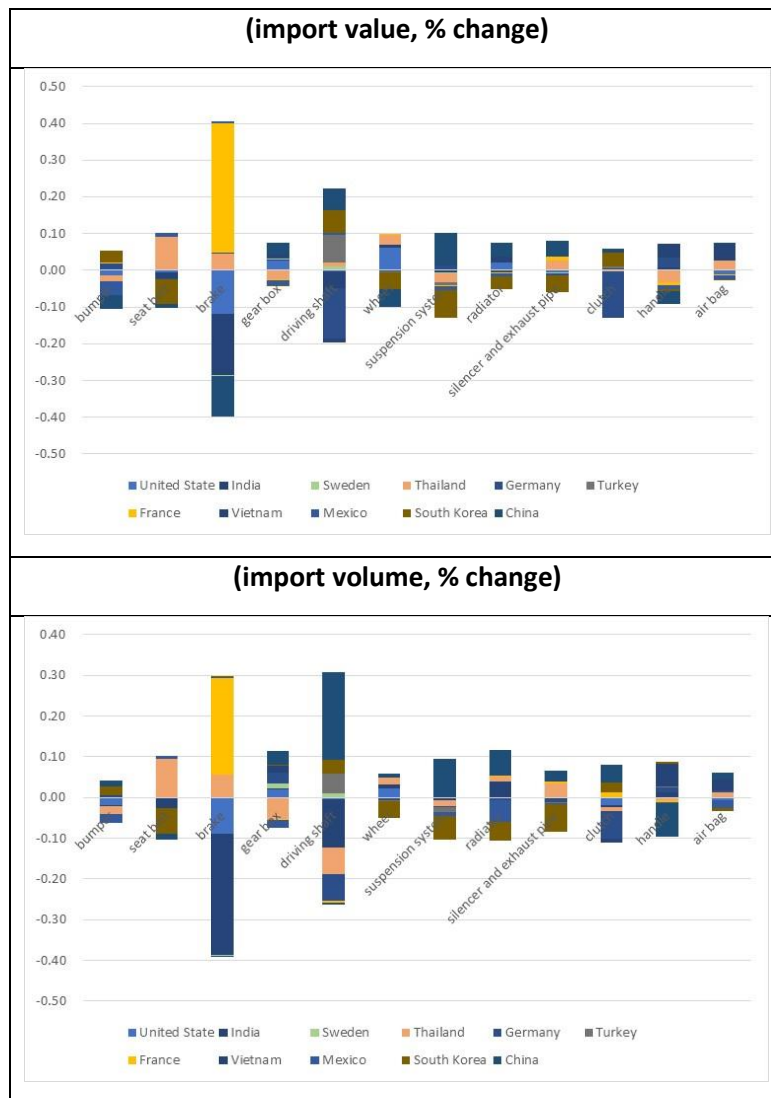


Note: a = bumper, b = seat belt, c = brake, d = gear box, e = driving shaft, f = wheel, g = suspension system, h = radiator, l = silencer and exhaust pipe, j = clutch, k = handle, l = air bag.

Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Observing the composition of each component by country, regional concentration by component can be seen in terms of value, with about 80% of seatbelts imported from Thailand, and just under 30% of airbags and just under 20% of steering wheels imported from Viet Nam. Although the overall trade value/volume declined due to the pandemic, there was no significant decrease in share by country (Figure 7.13). For example, seatbelts in Thailand were up 9.1 percentage points in value terms (shifted from the Republic of Korea), airbags in Viet Nam were up 4.4 percentage points, and handles were up 3.7 percentage points. In terms of volume, there was also a decrease of around 6 percentage points in gear boxes and driving shafts in Thailand, but there was an increasing trend in seatbelts and brakes (also in Thailand) and in wheels in Viet Nam. There was no significant change in the procurement composition of AMS but rather a noticeable increase in the share of parts imported from ASEAN.

Figure 7.13: Japan Trade Partner Changes in Auto Parts, 2019–2021



Source: Government of Japan, Ministry of Finance, Trade Statistics of Japan, https://www.customs.go.jp/toukei/info/index_e.htm

Outside of ASEAN, as with exports, there were significant changes. For example, before the pandemic, brakes were mainly sourced from India, the US, and China, but this has shifted to France (up 35 percentage points) and Thailand. It is also clear that some parts were subject to changes in procurement sources, as Germany's share of the market for driving shafts and clutches shifted to Turkey, Republic of Korea, and China.

Therefore, particularly in the category of auto parts (8708) – although there have been some changes in Japan's part procurement – there was no major shrinkage in market share for ASEAN; in fact, there was an expansion trend of imports in Japan. Even in the third quarter of 2021 and beyond, Toyota planned to reduce global production by 330,000 units in October and up to 150,000 units in November due to operational restrictions in Malaysia and Viet Nam, demonstrating the difficulty of alternative procurement, not only due to technical factors but also due to production costs and procurement logistics issues (*Nikkan Jidosha Shimbun*, 2021).

As a reference, the top three countries (77.4% in total) in terms of Japan's imports of wire harnesses and electric cables (854430) were Viet Nam (37.1%), the Philippines (23.6%), and Indonesia (16.7%) in 2019. Similarly, in Japan's exports, the main overseas bases of Japanese finished vehicle assembly plants were listed as the US (19.7%), Russia (17.0%), and China (11.2%) in 2019. In 2021, the top three countries for imports were also in ASEAN, with 36.7% from Viet Nam, 24.6% from the Philippines, and 15.3% from Indonesia. On the other hand, exports were 29.2% to the US, 13.4% to China, and 11.0% to Russia, and it can be predicted that the concentration of exports from Japan is increasing, especially due to the recovery of production in the US (or the decline in production in Russia).³⁰ However, the number of imports until August 2021 was about 90.8% as compared to the 2019 level. In addition, there was little change in the supply of wiring harnesses and electric cables, only an 0.8 percentage point decrease.

7.2.2. Impacts of the Japanese Economy on ASEAN

As seen previously, the impact – or changes of supply location – on the supply network of auto parts in the trade between Japan and ASEAN was insignificant; in fact, some parts expanded ASEAN's share, which helps explain its importance to the Japanese automobile industry.

As discussed earlier, the Japanese automobile industry has built advanced global production networks to gain cost-competitiveness and to produce world standard vehicles. Due to the pandemic, economic activity is stagnant on a global scale. In the case of a natural disaster, the impact is limited to a certain period of time and area, but in the case of COVID-19, the impact is different.

To understand the transition of the production network and the structure of economic linkages, international input–output tables are now used, including AMS, to clarify the spill-over mechanism of the impact to/from the key industry on the ASEAN economy, the global value chain.³¹ Of the 36 industrial categories, 16 are manufacturing industries. For example, transport machinery is divided into automobiles, trailers, and others, which may be appropriate for analysing global value chains in the automobile industry. In this numerical analysis, 64 countries are classified into Japan, ASEAN countries (8 countries in total), other Asian countries, and others (i.e. the rest of the world).

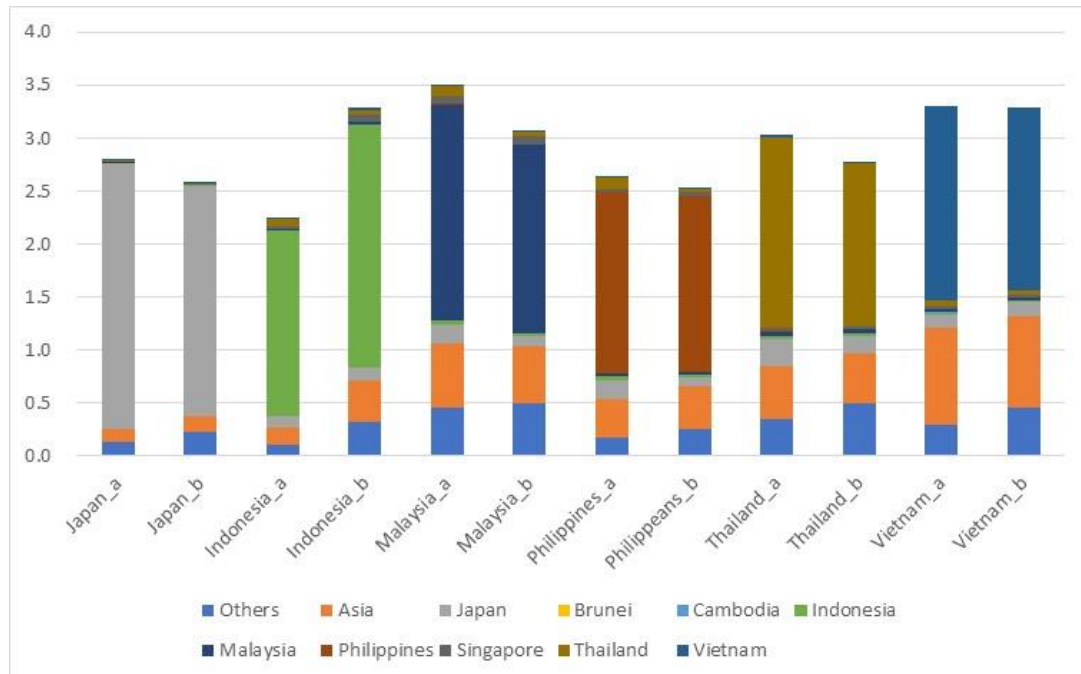
According to the economic spill-over mechanism and each industry, the impact of Japan's domestic automobile industry on the economies of AMS has been small. Rather, for ASEAN as a whole, the results show that Japan's crude oil and petroleum products (0.126 in total), wood and wood products (0.068), and clothing (0.065) had a high impact. This is probably because the ratio of related industries in AMS to Japan's domestic automobile industry was relatively small, or because production spill-overs within the ASEAN region were small due to relatively low value-added auto parts and goods. The

³⁰ The share of integrated circuits (854231) imported by country is 52.7% from Taiwan, 18.1% from the US, and 9.8% from China; likewise, the share of exports is 20.4% in China, 13.0% in the US, and 10.2% in Germany. These are used for purposes other than automobiles, so ASEAN's global position is different. In general, semiconductors and electronic components (8540, 8541) in trade statistics are not categorised as auto parts (Han, 2016).

³¹ OECD, OECD Inter-Country Input-Output (ICIO) Tables, <https://www.oecd.org/sti/ind/inter-country-input-output-tables.htm>

automobile industry had the highest spill-over effect amongst Japanese industries, confirming the importance of global auto parts procurement for Japan (Figure 7.14).

Figure 7.14: Spill-Over Effects to Countries and Regions on Automotive Industries



Note: a = motor vehicles, trailers, and semi-trailers; b = other transport equipment.

Source: OECD, OECD Inter-Country Input-Output (ICIO) Tables, <https://www.oecd.org/sti/ind/inter-country-input-output-tables.htm>; and author.

The picture is different when examining the impact of the automobile industry in AMS, specifically Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, where the spill-over effects of automobile-related industries are attracting attention (Figure 7.14). The spill-over effects of motor vehicles in Malaysia (3.508), Viet Nam (3.300), and Thailand (3.030) and other transport equipment in Viet Nam (3.286), Indonesia (3.283), and Malaysia (3.071) were higher than those of Japan, while the leakage loss of AMS to 'Asia' (i.e. mainly China, Republic of Korea, and India) were large. In particular, the leakage loss to 'Asia' in Malaysia following Viet Nam is significant. It is clear that not only the spill-over effect within the home country – but also the spill-over effect within the ASEAN region – was limited for automobile-related domestic and international demand.

The ASEAN Economic Community was established on 31 December 2015, and tariffs in Cambodia, Lao PDR, Myanmar, and Viet Nam were eliminated in 2018, but such effects are not included in this estimate. In the Greater Mekong Subregion, which includes five countries and two provinces in southern China, the Cross-Border Transportation Agreement was signed by all member countries in 2003 as a trade facilitation measure. In addition, memorandum of understanding on bilateral and trilateral vehicle travel have been signed in sequence. Japanese auto part manufacturers have been producing auto parts in industrial parks in Cambodia and delivering/procuring them to finished vehicle assembly plants in Thailand due to soaring labour costs in Thailand; the part distribution function inside the ASEAN region is also progressing. Further analysis of these impacts on the production network using the latest data and trade statistics of AMS is needed.

At the end of this section, the value-added trade, or global value chain, is estimated to see to what extent the Japanese economy generated value-added trade for the ASEAN economies (UN, 2018). As a result, Japan's aggregate demand generated \$68.62 billion of value added in ASEAN (i.e. eight countries excluding Myanmar and the Lao PDR), equivalent to 1.6% of the total value added of \$4,326.76 billion (Table 7.3). In comparison with the total of \$175.53 billion for 'Asia' excluding Japan and ASEAN, it can be understood that the per capita income growth in ASEAN was less than double that of Asia³² and is a relatively high value-added industry linkage.

Table 7.3: Global Value-Added Trade by Japan (\$ billion)

Country and Region	Value
Others	365.497
Asia	175.530
Japan	3,717.109
ASEAN total	68.620
Brunei Darussalam	1.692
Cambodia	252
Indonesia	15.317
Malaysia	11.040
Philippines	6.894
Singapore	12.053
Thailand	13.893
Viet Nam	7.480
TOTAL	4,326.756

ASEAN = Association of Southeast Asian Nations.

Source: Author.

Indonesia had the largest share at 15.317, followed by Thailand at 13.893 and Singapore at 12.053. Observing the final industry of value added, in Indonesia, minerals accounted for 27.2% of the total, followed by commerce at 13.6%; in Thailand, commerce accounted for 26.8%, followed by agriculture, forestry, and fisheries at 9.8%; and in Singapore, commerce accounted for 27.4% and other business at 13.6%. Similar to the economic spill-over effects mentioned earlier, based on the industrial structure of AMS, it is understandable that the spill-over effects to the manufacturing sector – not only to the automobile industry but also to the value-added sector of each manufacturing sector – were limited because the share of commerce at value added was too big .

³² If the population of the eight AMS was 5.93 million in 2018, and the population of China, Hong Kong, India, Republic of Korea, and Taiwan was 2.90 billion, the per capita value of ASEAN will be \$115.70 and that of the others will be \$61.30.

7.3. Transport Policy

This section summarises the international transport and logistics strategy promoted by the Japan’s Ministry of Land, Infrastructure, Transport and Tourism (MLIT). MLIT oversees three major international issues: transport security, logistics initiatives in East and South-East Asia, and transport and the environment.³³

Some projects being implemented with ASEAN include those on transport security and on transport and environment around the world (Table 7.4 and 7.5). For each of these initiatives, it is collaborating not only with Asia, but the US and Europe.

Table 7.4: Transport Security between Japan and ASEAN

Name	Objective
ASEAN–Japan Maritime Transport Security Programme	To improve maritime security in the ASEAN–Japan region and to support the implementation of the SOLAS Convention by organising policy seminars and cooperating on training of security personnel.
ASEAN-Japan Aviation Security Project	To further improve aviation security by exchanging information and conducting joint surveys on the current status and problems of aviation security measures in each country.

Source: Author.

Table 7.5: Transport and Environment Cooperation between Japan and ASEAN

Name	Objective
Automobile Technical Cooperation Project on Safety and Environment	To contribute to the improvement of automobile safety and the environment, participating countries will cooperate in human resources development and policy coordination regarding automobile inspection, technical standards including accident analysis, certification systems, and publicity of these technical measures.
Urban Public Transport Policy Framework	To promote the use of public transport in urban areas, to improve the urban environment, and to make urban mobility more efficient.
ASEAN–Japan Alternative Fuel Project for Transport Sector	To reduce global warming gases and build an environment-friendly transport network, information on the use of alternative fuels for transport in the ASEAN region will be collected, and a feasibility study will be conducted based on the applicability to Clean Development Mechanism.

Source: Author.

³³ Government of Japan, MLIT, New Issues Being Addressed Internationally, <https://www.mlit.go.jp/sogoseisaku/kotsu/kadai/index.html>

In 2003, MLIT established a basic framework to strengthen cooperation with ASEAN in the transport sector. A new issue for MLIT is the ASEAN–Japan Transport Partnership, a logistics initiative in East and South-East Asia.³⁴ It aims to increase the competitiveness of the ASEAN–Japan region as a production base, take a joint survey on the problems in the logistics network, and discuss improvement measures.

There are 21 programmes between ASEAN and Japan, including regional economic integration, regional and international environmental issues, urgent matters related to road safety, and the introduction of safety facilities using the latest technology. These are critical issues for Japan as well, since bottlenecks within the ASEAN region will affect the growth of Japanese companies, as human flows and logistics within and amongst the region increase.

The Pakse Action Plan, 2014-2023,³⁵ negotiated in December 2013, sets out four main policies: transport facilitation, transport infrastructure, high-quality and sustainable transport, and human resources development. Along with economic development, the demand for cold-chain logistics for foods is on the rise in the ASEAN region. Governments of AMS and Japan launched the ASEAN–Japan Cold Chain Project to support the development of cold-chain logistics in AMS for safe food transport and the reduction of food waste. It aims to implement bilateral policy dialogues and workshops, establish guidelines, encourage human resources development and pilot projects, and promote high-quality logistics equipment.

Indeed, Japan is promoting policies in the medical and food sectors as priorities by using radio-frequency identification to share cargo information in the cold chain in compliance with international certifications, supporting the establishment of consolidation services, and developing refrigerated warehouses and container freight stations in line with international certifications. On 28 May 2020, an international standard was issued to achieve appropriate temperature control in small-lot cold-storage delivery services, which was a joint effort of the public and private sectors. Yamato has already obtained the certification both domestically and internationally. It is necessary for industries and ministries to work together to promote international standardisation in cold-chain logistics so that the healthy development of overseas logistics markets will lead to the strengthening of Japan's industrial competitiveness at large.

The Government of Japan's initiatives are mainly related to the environment and safety, and the policies currently being implemented are also directed towards the cold chain of food and medicine, and the visualisation and integration of logistics information, including port electronic data interchange. While emphasis has been placed on establishing a safe and secure distribution system for intermediate goods and final products, there are few logistics policies that contribute to the development and upgrading of the production systems of Japan and ASEAN. For example, machinery products are a major trade item between Japan and ASEAN, especially the share of electronics and auto parts. The maintenance of a robust production network is key – even in the face of production stoppages and reduced capacity utilisation due to the pandemic. However, it is clear from the empirical analysis that the spill-over effects of the automobile industry and the income effects through trade have been relatively small, probably because the automobile-related industry in AMS mainly

³⁴ AJTP, ATJP Information Center, <https://www.ajtpweb.org/ajtp/info/about.html>

³⁵ AJTP, AJTP Projects, <https://www.ajtpweb.org/ajtp/ajtpprojects/index.html>

handles low value-added parts, and the leakage to other Asian countries such as China from ASEAN is large.

Although some AMS have positioned the automotive industry as a key industrial area to promote innovation and high value-added activities, there are few strong local suppliers, with limited procurement and only general-purpose low value-added parts (Chiengkul, 2019). Many first-tier suppliers have been sourcing parts from Japanese suppliers for quality of parts and transport, total costs including transport costs, and lead time to their factories. As a result, ASEAN local suppliers have had limited opportunities to engage in research and development with transnational corporations, which is why technology transfer for the production of high value-added components to local suppliers has been slow (Intarakumnerd, 2010).

Due to the labour cost increase in Thailand, auto part manufacturers are producing their products in countries around Thailand, specifically in special economic zones such as in Cambodia and the Lao PDR, and delivering them to assembly plants in Thailand and other AMS. The transport infrastructure, or hardware side, has been developed, but in addition to higher forwarder fees, transshipment at the borders, and the resulting single-load problems of cargo, the need for improvements in the software side has been pointed out (JICA, 2016). Although trade facilitation has been promoted, non-tariff barriers in customs clearance and the number of registered vehicles is still limited due to delays in the development of laws in each country, and efforts related to such cross-border logistics are necessary.

To support the global production network of the Japanese manufacturing industry – not only inside Japan but also in other countries – policies leading to the logistics upgrading within the ASEAN region is necessary. Coe (2014) pointed out that the sophistication of logistics contributes to increasing the value of companies in the global economy, and that the integration of logistics and global protection networks will reshape the global economy. In addition, Coe (2020) cited a variety of factors that affect the sophistication of modern logistics, including the development of transport infrastructure, training and securing of workers, creation of social (software) infrastructure, and political issues (laws).

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