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# Mizuho Economic Outlook & Analysis

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October 1, 2021

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## *Automotive industry suffers from parts procurement*

*Japanese firms should prepare for long-term supply chain disruptions*

### < Summary >

- ◆ ASEAN member states continue to suffer from the growing number of COVID-19 confirmed cases due in part to the vaccine rollout delay that has disrupted parts procurement from these countries and compelled global car manufacturers to substantially revise their production plans downward.
- ◆ Japanese car makers are highly dependent on parts procurement from ASEAN countries. In particular, wire harnesses and car radios rely heavily on ASEAN, and this situation can easily become a bottleneck for Japan's domestic production activities.
- ◆ In Malaysia and Vietnam, the number of confirmed cases has recently shown signs of peaking out. However, Vietnam carries the risk of resurging infections because of its low vaccination rate, and Japanese firms may need to consider switching their parts suppliers going forward.

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## **1. Major car manufacturers revised their production plans significantly downward driven by the difficulty of procuring parts from ASEAN**

Global carmakers have revised their production plans significantly downward as it becomes increasingly difficult to procure parts from ASEAN countries.

ASEAN member states saw the number of COVID-19 confirmed cases skyrocket in around June with the outbreak of the more infectious Delta variant (Indian variant) and the delay in vaccine deliveries. Since then, each country has imposed strict restrictions on corporate activities in order to contain the pandemic. For example, some regions in Vietnam, including Ho Chi Minh City, have asked manufacturing companies to prepare lodging houses for their employees and to limit their mobility to commuting between these lodging houses and their worksites. Companies failing to comply with this regulation would be forced to suspend operations. Malaysia ordered manufacturers to suspend production activities with the exception of daily necessities such as foods and semiconductors considered to have a greater impact on supply chains. However, confirmed cases in these countries have continued to rise, impacting even those companies allowed to operate under tight restrictions. Because of strict prevention measures and the spread of infection among employees, many firms in ASEAN had to cease operations. As a result, global car manufacturers were suddenly unable to procure on-vehicle semiconductors from Malaysia and wire harnesses from Vietnam (**Chart 1**) and were forced to downsize their production plans.

Japanese carmakers first devised a plan to maintain their annual production volume by reducing production in August and September, while increasing production in the fall to compensate for summer losses. But as coronavirus infections continued spreading in ASEAN, Japanese automakers could not avoid a downward revision of their production plans. According to the global light vehicle production forecast released by the research company IHS Markit on September 16 (**Chart 2**), the expected production volume in 2021 was revised downward to 75.8 million units, a 6.2% reduction from the previous forecast. Furthermore, projected production in 2022 and 2023 was also cut by 9.3% and 1.1%, respectively, and parts production adjustment is expected to continue for a while on a global scale.

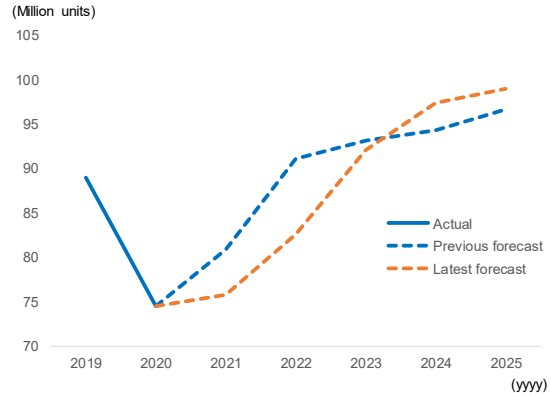
Since Japanese car related firms have long operated in ASEAN member states, the future direction of this area is of great importance for Japan. In this report, we will first review the current situation of the automotive industry's supply chain and discuss the future development of car production based on the status of vaccination in ASEAN countries.

**Chart 1: Cases of parts production adjustment due to COVID-19**

Manufacturer	Parts	Production location	Description
Company A	Semiconductor	Malaysia	More than 100 employees tested COVID-19 positive from mid-July to mid-August. Factory was partially closed.
Company B	Semiconductor	Malaysia	Production capacity in Melaka, Malaysia, constrained due to rising COVID-19 infections (returned to full production in August).
Company C	Semiconductor	Malaysia	Announced an expected reduction in chip deliveries due to partial suspension of a supplier's plant in Johor.
Company D	Automobile lamp	Malaysia	Operation suspended from June to August 17 (resumed operation on August 18).
Company E	Wire harness	Thailand	Factory temporarily closed due to mass infections (resumed operation in mid-August).
Company F	Wire harness	Vietnam	Restrained operation at factory.
Company G	Wire harness	Vietnam	Reduced production.

Source: Made by MHRT based upon various media coverage.

**Chart 2: Outlook of car production by IHS Markit**

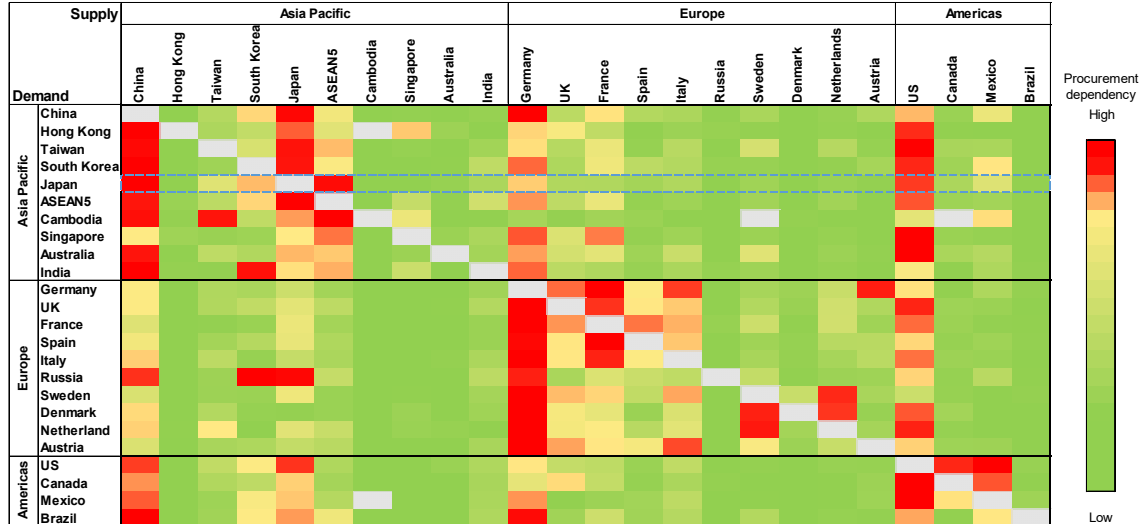


Source: Made by MHRT based upon IHS Markit.

## 2. Japanese carmakers are highly dependent on parts procurement from ASEAN

Here we look at the supply chain structure in the global automotive industry. **Chart 3** maps out the dependence of automotive parts in each country and region. Countries/regions aligned horizontally are on the supply side of automotive parts, and those aligned vertically are on the demand side. The boxes where procurement dependency is high are marked in red. The chart shows the car supply chain divided into blocks of Asia Pacific, Europe and Americas. As for Japan, the majority of parts procurement is from Asia, and its dependence is particularly high on China and ASEAN5. The creation of regional blocks can reduce both parts transportation costs and lead times, making the regional block structure highly efficient. In contrast, when certain nations are no longer able to produce parts, like during the current pandemic, significant damage can result since parts suppliers tend to concentrate in certain countries. If we study Japan's parts dependency on ASEAN5 in the United Nations' trade statistics as of 2019, specific products including wire harness (HS code: 854430, dependence rate: 82.3%), car radio (HS code: 852729, dependence rate: 86.0%), and seat belt (HS code: 870821, dependence rate: 70.1%) are mostly dependent on imports from ASEAN. Thus, we can see that Japan's automobile industry has always faced the risk of parts procurement from ASEAN becoming a bottleneck. We believe the unbalanced structure of the supply chain has triggered the recent suspension of production activities in the automobile industry.

**Chart 3: Procurement dependency map of automotive parts**

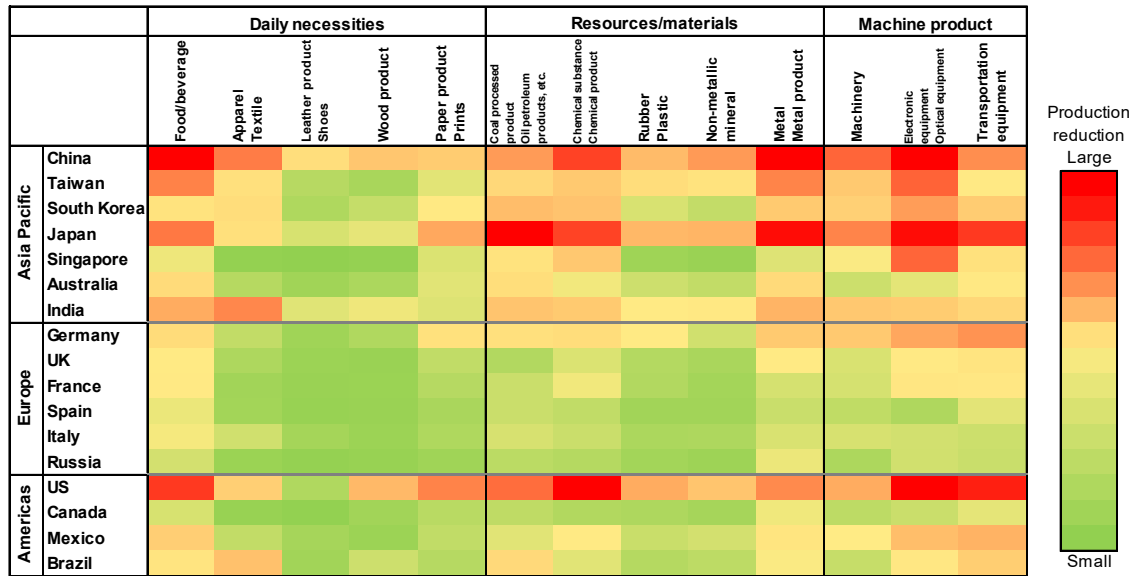


Note: The shaded boxes represent zero transaction or value missing. ASEAN5 = Thailand, Malaysia, Indonesia, Philippines, Vietnam.

Source: Made by MHRT based upon RIETI-TID.

ASEAN has now become a major provider of parts to a wide range of industries beyond the automobile sector. For this reason, if the COVID-19 pandemic continues spreading in ASEAN in the future, we cannot reject the possibility that its negative impact will expand to industries other than automobiles. In view of this, we estimated the impact on a wide range of industries globally if ASEAN were unable to supply different kinds of products (Chart 4). More specifically, we assumed that tough restrictions would be imposed on operations in the order of machine products including electronic/optical equipment, resources and materials including metal and chemical products, and daily necessities including food/beverage and apparel based on restricting the number of personnel allowed to work at offices in Malaysia and Indonesia. Our analysis also assumes that any production decrease in ASEAN will become a bottleneck in the downstream process (production activities will come to an immediate halt due to the inability to switch procurement areas of lost intermediary goods, including parts, to other areas). Our estimate shows there will be a greater impact on China, Japan and the US, and on products such as daily necessities including food/beverages and apparel, resources including coal products and refined petroleum products, and machinery production of electronic/optical equipment and transportation equipment. Since we are now hearing media reports that Japan can no longer import food items such as shrimp and apparel products from Vietnam, we need to be alert to the risk of the impact spreading in the future.

**Chart 4: Bottleneck effect of suspending production in ASEAN**



Note: The red boxes show the more affected countries and sectors. Assuming the production decrease in ASEAN will become a bottleneck, we calculated the minimum production amount of each country using the 2019 input-output table and reflected the direct impact (ripple effect) on the downstream sector. Concerning the indirect impact (indirect ripple effect) from industries directly impacted, we did not reflect this in the above estimate because of the difficulty in identifying the timing of the indirect impact.

Source: Made by MHRT based upon ADB.

### 3. The risk of resurging infections remains. Japanese firms may need to consider switching their parts suppliers

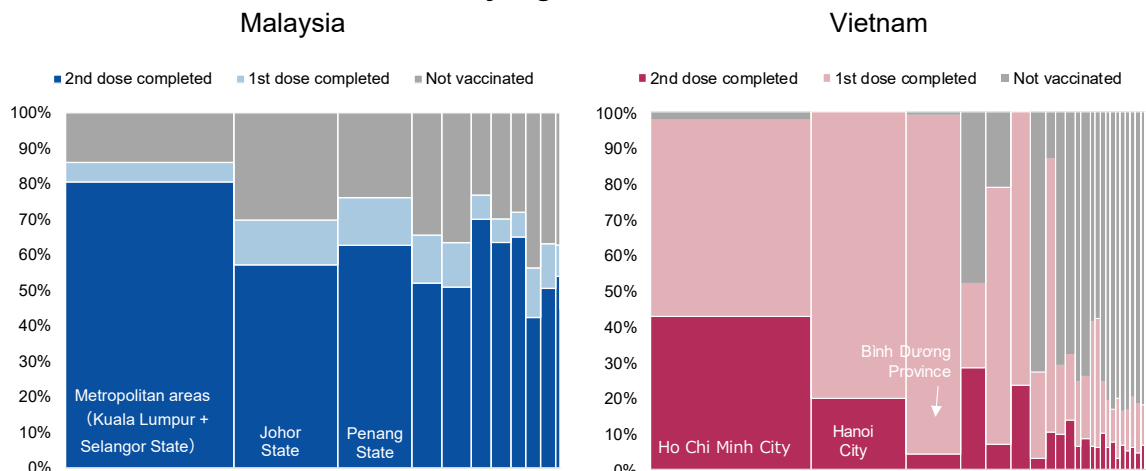
We expect the standstill in parts procurement to gradually recede as the pace of the vaccine rollout picks up, but we also believe the risk of the pandemic resurging remains strong in some countries.

We want to first look at the status of vaccination, an important factor when forecasting the outlook of the ASEAN economy. **Chart 5** presents the relationship between the vaccination rate of each region and FDI (Foreign Direct Investment) in Malaysia and Vietnam, two nations that have experienced serious parts supply shortages recently. The bar's height represents the vaccination rate of each region, and the width shows the number of FDI projects. The graph suggests that both nations have prioritized regions with greater FDI projects when launching the vaccine rollout, proof that they have adopted a vaccination strategy that considers their economic situation and supply chains. In the metropolitan areas of Malaysia, around 80% of the people are fully vaccinated, and we can probably say that the vaccination rate is sufficient in this nation. In Vietnam, however, the vaccine rollout is concentrated in Ho Chi Minh City and Hanoi City, and due to delays in vaccine procurement, most people have received only one shot.

The vaccination rate differs in the two countries, but thanks to the implementation of stringent prevention measures, the number of newly confirmed cases and the ICU

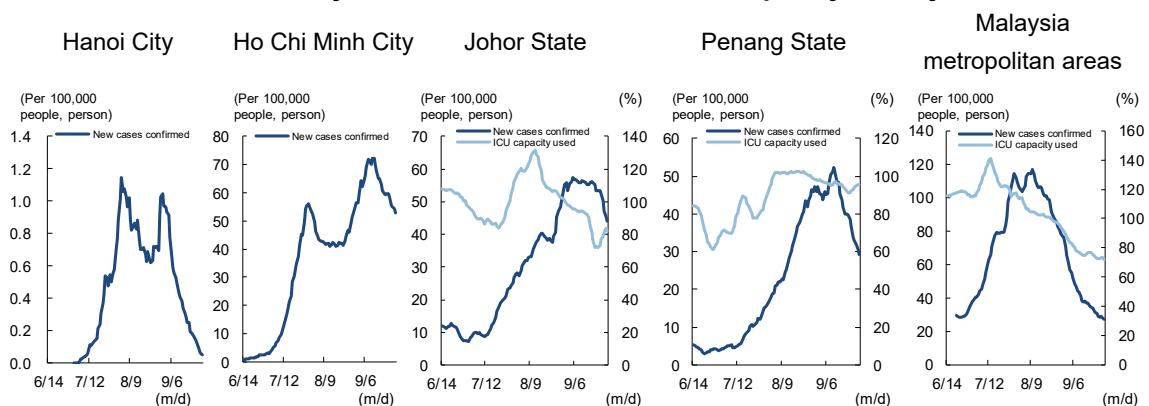
occupancy rate seem to have peaked in the major areas of the two countries (**Chart 6**). In view of this situation, the two governments have started preparations to relax the existing infection prevention measures. For example, Malaysia removed its lockdown-equivalent measure in the metropolitan areas on September 10 and in Johor on September 24, and permission was given to resume the production of automotive parts, iron and steel, and rubber under the restriction of limiting the number of personnel. Also, Vietnam’s Ho Chi Minh City set out a policy to loosen operational restrictions in most areas for companies that improve the vaccination rate of their employees starting from October 1.

**Chart 5: Vaccination rate by region that takes FDI stock into account**



Note: The width of the panel shows the number of FDI projects. (For Malaysia, data represent the cumulative number since 2000, and for Vietnam, since 2001.) The vaccination rate is as of September 29.  
 Source: Made by MHRT based upon the Ministry of Health in Malaysia, Malaysian Investment Development Authority, Ministry of Health in Vietnam, and Vietnam Foreign Investment Promotion Office.

**Chart 6: Newly confirmed cases and ICU occupancy rate by area**



Note: Data are 7-day backward moving averages. The latest data are as of September 28. We presented areas with a low vaccination rate on the left and a high vaccination rate on the right.  
 Source: Made by MHRT based upon the Ministry of Health in Malaysia and Ministry of Health in Vietnam.

However, if various restrictions are loosened in Vietnam, we cannot deny the risk of newly COVID-19 confirmed cases surging with the increase in human mobility due to the

low vaccination rate of people receiving a second shot. **Chart 7** presents our simulation on how the number of newly confirmed cases will fluctuate in the three scenarios of (1) strict lockdown to be maintained, (2) economic activity to be partially resumed (economic activity will recover to the level before the lockdown at around the end of November), and (3) economic activity to be resumed on a full-scale basis. It should be noted that our analysis assumes that one shot of vaccine would not be sufficient to have a full prevention effect. Our simulation result revealed that in Malaysia's metropolitan areas where the vaccine rollout has made progress, the pandemic will be gradually contained even in case 3 where economic activity is resumed on a full scale. On the other hand, in Ho Chi Minh City, the rate of infection is expected to rise again to the previous peak level even in case 2 where economic activity is partially resumed, since the second shot of vaccine has not been widely administered, and the number of confirmed cases will begin to decline only at the end of the year. In view of such risks, the difficulty of procuring parts from ASEAN member states is expected to continue for a while. For this reason, it may be important for firms that procure parts from ASEAN countries to gain access to other parts producing regions in case the supply chain disruptions last longer than expected.

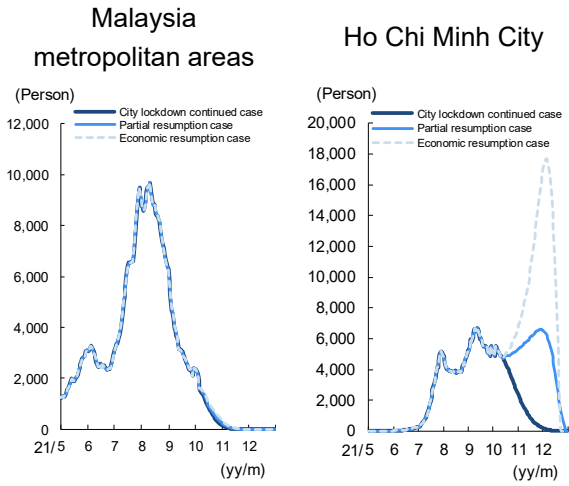
As indicated earlier, the global automobile supply chain is divided into regional blocks, meaning that parts produced in Asia are also manufactured in other regions. This suggests that Japanese firms may be able to switch their procurement routes to regions other than ASEAN. If we look at Japan's import structure for automotive parts (**Chart 8**), some products are mostly dependent on imports from ASEAN. However, the share of such products produced by ASEAN5 in the global export market is limited (horizontal axis). This means that certain countries other than ASEAN5 produce the same products, suggesting the possibility of Japanese companies substituting the usual procurement countries with other regions. But even though the products are the same, we should also pay attention to the possibility of different specifications, hence switching existing suppliers may cause problem.

Some US firms have already begun transferring their production sites from Vietnam. According to a survey conducted by the American Chamber of Commerce in Vietnam from August 23 to 25, to the question of "To what degree has your company already considered shifting manufacturing to other countries?" 20% of the respondent firms said they have already shifted some production, and 14% answered that discussions are underway. This implies that production transfers are moving forward.

As discussed in this report, some ASEAN countries remain exposed to the risk of a resurging pandemic, and the current disruption of the supply chain may last for a longer-than-expected period. We believe that Japanese firms should take some measures to diversify their procurement bases to reduce this risk.

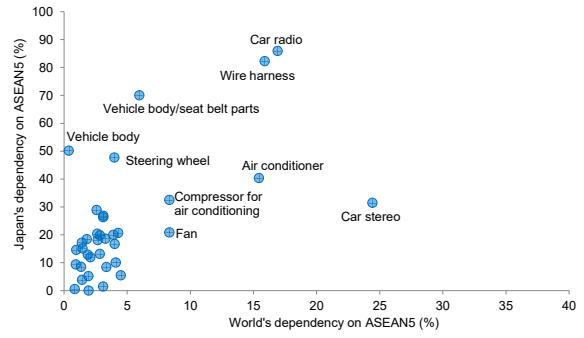


**Chart 7: Estimate of newly confirmed cases**



Note: Data are 7-day backward moving averages. We assumed the pace of vaccination will slow down.  
 Source: Made by MHRT based upon the Ministry of Health in Malaysia, Ministry of Health in Vietnam, and Google LLC, among others.

**Chart 8: Structure of Japan's automotive parts imports from ASEAN**



Source: Made by MHRT based upon UN Comtrade.

## Reference

**Refer to the original Japanese report by clicking the URL below for the reference material.**

<https://www.mizuho-ir.co.jp/publication/report/2021/pdf/insight-as211001.pdf>